



• DESCRIPTION

The IF-band DVB NTC/2210/xT modem combines the advantages of a modulator and a demodulator in one single chassis and has been designed for operation in DVB-S2/DSNG/S mode in both CCM and VCM mode. The modem is primarily meant for the TELCO and IP- world and provides either a GbE interface or either a G703/HSSI interface. VCM mode requires the GbE interface.

Common part of the modem:

The NTC/2210/xT modem has two interface slots that can be equipped with either one (bi-directional) GbE+ASI card (NTC/7015/xx) or either one (bi-directional) Telco card (NTC/3458) which offers a G703 or a HSSI interface:

- 1) For the GbE card, data-rates up to 100 Mbit/s (50 Mbit/s - 50 Mbit/s or any other combination as long as the sum of both rates stays beneath 100 Mbit/s) are supported. Three different ways are foreseen to support data broadcasting over satellite, being Ultra Lightweight Encapsulation (ULE) and Data Piping. In combination with the GbE+ASI card, the Generic Baseband Streaming (GBS) protocol is also supported. For more information, we refer to the datasheet NTC/7015/xx.
- 2) The HSSI interface supports data rates from 0,917 to 52 Mbps, while the G703 interface supports 2 rates in the 2 to 45 Mbps range.

Modulator part of the modem:

The modulator part of the NTC/2210/xT handles baud rates as low as 0.05 and up to 68 Mbaud (60 Mbaud in DVB-DSNG/S), covering all SCPC and MCPC applications. The modulator part is standard equipped with an IF-band output (50 MHz to 180 MHz) providing a modem with IF input.

Demodulator part of the modem:

The FPGA based NTC/2263/xT version handles data rates from 0,256 Mbaud up to 40 Mbaud in QPSK (*), from 0,256 Mbaud up to 30 Mbaud in 8PSK and 16APSK (*) and from 1 Mbaud up to 20 Mbaud in 32APSK. In DVB-DSNG/S mode, data rates from 1-45 Mbaud in QPSK, 8PSK and 16 QAM are supported. For the demodulator part, there are two IFL inputs (950 MHz to 2150 MHz) which are compatible with commercial LNB's. The receiver selects one of its two inputs, supplies power to the LNB, controls band and polarization (voltage, 13/18 Volt and 22KHz) and sends DiSEqC commands if required. Optionally, one L-band input can be fitted with a 50-180 MHz block up converter (NTC/3495, see version and options).

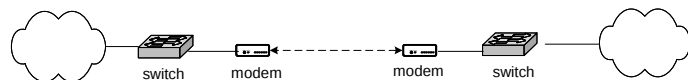
Control and Monitor parameters are available locally on the front panel (LCD display & keyboard) and remotely via a web browser Http interface (RS485/232 and a 10 Base-T Ethernet connection).

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

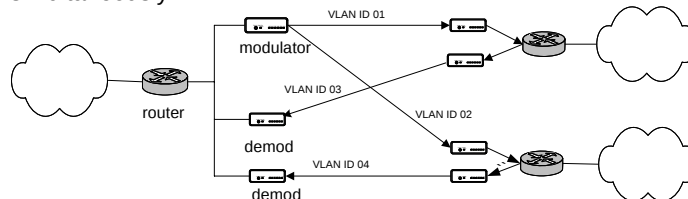
• APPLICATIONS

The NTC/2210/xT modem is used when Telco (GbE or HSSI/G703) based signals need to be transported and received in a transparent and efficient way over a satellite link. In combination with a VLAN enabled device, the modem can work as:

1. Ethernet bridge: All received Ethernet frames with a 802.1Q VLAN tag, will be forwarded over the satellite link without any change. L2 Filtering on MAC header will be supported.



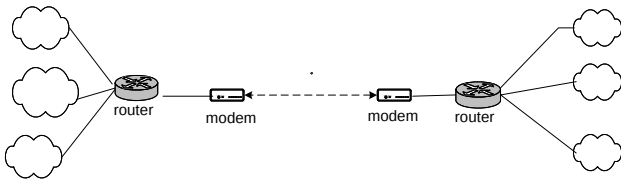
2. VLAN switch: the modem will forward traffic of pre-selected VLANs. Up to 16 different VLANs can be handled simultaneously.



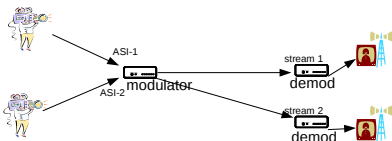
3. IP gateway: Received IP packets (IPv4 + IPv6) present in 802.1Q tagged Ethernet frames, will be forwarded over satellite.



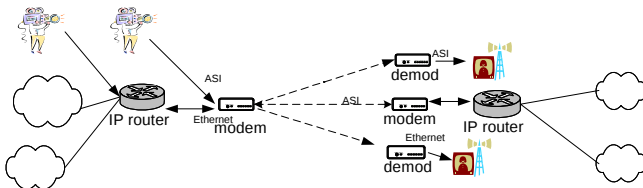
4. IP trunking: the modem will forward the IP traffic of pre-selected VLANs. Up to 16 different VLANs can be handled simultaneously.



5. ASI interfaces: when MPEG-2 TS ASI input data (e.g. video) needs to be transported (and received) over a satellite link.



6. Combined ASI interfaces + Ethernet interface: when Ethernet (or IP) based signals and ASI based signals need to be transported (and received) over a satellite link.



• FEATURES

Common part of the modem:

- Two 1000 Base-T Ethernet interfaces
- Auto switching 10/100/1000Base-T Ethernet interface on UTP (RJ45) connector
- G703/HSSI
- (auto) CCM, VCM mode in combination with the GbE interface card, pilots on, contact Newtec for mixing Short- and Normal Frames
- Data piping mode: Compatible with the DVB specifications for data broadcasting (EN 301 192 V1.2.1).
- Ultra Lightweight Encapsulation (ULE) for transmission of IP datagram's over MPEG-2/DVB systems
- Compatible with draft-ietf-ipdvb-ule-04.txt
- Selectable internal/external clock
- 802.1 Q standard compliant tagged VLAN support: support of 16 VLANs for Tx direction and 16 VLANs for Rx direction
- SW upgradeable to support new features without hardware changes
- Optional Ovenised 10.0 MHz reference frequency and
- External 10.0 MHz reference input/output

- Programmable amplitude equalizer
- Local & remote (RS485/RS232 + HTML web interface (10 Mbps Ethernet) + SNMP/MIB) M&C
- Monitoring & control, using high level instructions on async serial link (RMCP v2, v1 is not supported anymore)

Modulator part of the modem:

- DVB-S2 compliant (EN 302307)
- DVB-DSNG/S compliant (EN 301210 & EN 300421)
- L-band monitoring output (fixed frequency and level)
- Bandwidth efficient QPSK, 8PSK, 16APSK/QAM or 32APSK modulation, with 35%, 25% or even 20% roll-off factor for low satellite cost
- 55 kbit/s up to 68Mbaud interface rate (FEC- and Modulation- dependent)
- IF frequency in the range of 50 to 180 MHz
- Automatic interference rejection filter for low symbol rates
- On board internal reference (25 MHz)

Demodulator part of the modem:

- DVB-S2 compliant (EN302307), DVB-DSNG/S compliant (EN 301210 & EN 300421)
- Dual IFL input: 950 -2150 MHz
- Optional IF input: 50-180 MHz (replaces one L-band input)
- Baud rate in DVB-S2:
 - * QPSK: 0,256 Mbaud to 40 Mbaud (*),
 - * 8PSK, 16APSK: 0,256 Mbaud to 30 Mbaud (*)
 - * 32APSK: 1 Mbaud to 20 Mbaud (Normal Frames only)
- Baud rate in DVB-DSNG/S:
 - * QPSK/8PSK/16 QAM: 1-45 Mbaud
- 35%, 25% or even 20% roll-off factor for low satellite cost
- DiSEqC compatible
- LNB power control

• VERSIONS & OPTIONS

The modular architecture opens various possibilities and application fields: Firmware-package will determine the usage and capabilities of the unit.

1. Baseband Data Interface Modules

The interchangeable baseband data interface modules provides either an Ethernet interface or a Telco interface (G703/HSSI interface, Symmetrical link only).

- NTC/3458.AC.C: HSSI/G703 input/output interface
NTC/3458.x.xA: HSSI-G.703 2 to 52 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 submodule used on NTC/3458
NTC/3344/AA: G.703 at 16.896 Mb/s submodule used on NTC/3458
NTC/3344/AB: G.703 at 34.368 Mb/s submodule used on NTC/3458
NTC/3348/AA: G.703 at 44.736 Mb/s submodule used on NTC/3458
NTC/3349/AA: G.703 at 2.048 Mb/s submodule used on NTC/3458
- NTC/7015/xx: bi-directional IP GbE interface

2. Modem part

The DVB-S2/DSNG/S MODEM is fitted with a modulator board (NTC/7020/xxxx) and a demodulator board (NTC/7041/xxxx). The available modulation schemes and maximum baud rates are part of the firmware capabilities, which are password upgradeable.

Types to be specified for the modem during order:

1) Modulation schemes:

- * DVB-S2/DSNG/S: QPSK + 8PSK
- * DVB-S2/DSNG/S: QPSK + 8PSK + 16APSK/16QAM
- * DVB-S2/DSNG/S: QPSK+8PSK+16APSK/16QAM+32APSK

The selected modulation scheme for modulator and demodulator must be the same

2) Max Baud rates:

- * Modulator part: 5, 15, 30, 45 & 68 Mbaud
- * Demodulator part: 5, 15, 30 Mbaud (the demodulator part handles data rates up to 45 Mbaud in DVB-DSNG/S mode)

The selected maximum Baud rate for modulator and demodulator can be selected differently with the NTC/7015/xx card. If the NTC/3458 card is used, only symmetrical links are possible

possible configurations (always DVB-S2/DSNG/S)

- 1) NTC/7020/BxBx: QPSK + 8PSK
NTC/7041/BABx: QPSK + 8PSK
- 2) NTC/7020/BxCx: QPSK + 8PSK + 16APSK (16QAM)
NTC/7041/BACx: QPSK + 8PSK + 16APSK (16QAM)
- 3) NTC/7020/BxDx: QPSK+8PSK+16APSK(16QAM)+32APSK
NTC/7041/BADx: QPSK+8PSK+16APSK(16QAM)+32APSK

Configuration modulator part:

NTC/7020/BBxx: CCM mode
NTC/7020/BAxx: CCM/VCM/ACM capable mode

VCM mode requires the GbE interface

NTC/7020/BxxA: max 5 Mbaud
NTC/7020/BxxB: max 15 Mbaud
NTC/7020/BxxC: max 30 Mbaud
NTC/7020/BxxD: max 45 Mbaud
NTC/7020/BxxE: max 68 Mbaud

Configuration demodulator part:

NTC/7041/BAxx: DVB-S2/DSNG/S, CCM/VCM/ACM capable mode

VCM mode requires the GbE interface

NTC/7041/BAxB: max 15 Mbaud (DVB-S2/DSNG/S)
NTC/7041/BAxC: max 30 Mbaud (DVB-S2, 40Mbaud in QPSK)
45 Mbaud (DVB-DSNG/S)

For example, if the modem has to work (DVB-S2, CCM mode) in QPSK + 8PSK at a max baud rate of 45 Mbaud at the modulator side and at a max baudrate of 30 Mbaud at the demodulator side, the

- * NTC/7020/BBBD (modulator board) and the
- * NTC/7041/BABC (demodulator board)

have to be ordered. This modem will also work in DVB-DSNG/S mode in QPSK+8PSK at 45 Mbaud
Higher versions of the modem are planned for release end 2006

3. NTC/3495 IF Input board

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

4. 10 MHz Reference Board (optional)

The NTC/7030 modulator board is standard equipped with an internal 25 MHz reference.

In case one needs a 10 MHz reference input and/or output, the following options are available:

- NTC/3462.AB.A: 10 MHz OCXO reference Oscillator (normal use)
- NTC/3462.AA.A: 10 MHz OCXO High Stability Ref. Oscillator (recommended only with carriers < 1MHz)

5. SNMP agent and MIB library (optional)

Needed whenever the unit needs to be controlled over Ethernet via proprietary NMS. (Password upgradeable)

• **DATA SUMMARY**

MODULATOR PART:

DATA INTERFACE INPUTS:

- Single rate G703 w. Ext. clock + HSSI (see data sheet NTC/3458.Ax.x)
- IP Gigabit Ethernet card (see datasheet NTC/7015/xx).

IF-BAND OPERATIONAL OUTPUT

level	: -30/+5 dBm (+/- 3dB)
frequency	: 50 - 180 MHz (adjustable in steps of 50 Hz)
connector	: BNC(F) – 75 Ohm (BNC -50 Ohm on request)
return loss	: 50 Ohm > 14 dB 75 Ohm > 20 dB

L-BAND MONITORING OUTPUT:

level	: -45 dBm
frequency	: 1080 MHz (fixed frequency)
connector	: SMA (F) - 50
return loss (50)	: > 7dB

PHASE NOISE:

10 Hz	: < -50 dBc/Hz
100 Hz	: < -70 dBc/Hz
1 kHz	: < -80 dBc/Hz
10 kHz	: < -85 dBc/Hz
100 kHz	: < -95 dBc/Hz

SPURIOUS : better than 65 dBc @ -10 dBm

Inner FEC coding (LDPC): 1/4, 1/3, 5/12, 1/2, 3/5, 2/3
DVB-S2 3/4, 4/5, 5/6, 8/9, 9/10
16200 and 64800 bit blocks

FEC coding: 1/2, 2/3, 3/4, 5/6 7/8 with QPSK
DVB-DSNG/S 2/3, 5/6, 8/9 with 8PSK
3/4, 7/8 with 16QAM

Bit Mapping: QPSK, 8PSK, 16APSK, 32APSK (DVB-S2)
QPSK, 8PSK, 16QAM (DVB-DSNG/S)

DEMODULATOR PART:

IF-L INPUT: dual input selectable

frequency range	: 950-2150 MHz
return loss	: > 7 dB (75 Ohm-F(F))

level signal : -25 to -65dBm
 adjacent signal : <(C0+7) dBm/Hz with C0=signal level density

IF INPUT (optional)

frequency range : 50-180 MHz

return loss : > 15 dB (75 Ohm/ BNC(F))
 level signal : -15 to -55dBm
 adjacent signal : <(C0+7) dBm/Hz with C0=signal level Density

DATA OUTPUTS:

- Single rate G703 w. Ext. clock + HSSI (see data sheet NTC/3458.Ax.x)
- IP Gigabit Ethernet card (see datasheet NTC/7015/xx).

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

Inner FEC coding (LDPC): 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9
DVB-S2

FEC coding: 1/2, 2/3, 3/4, 5/6 7/8 with QPSK
DVB-DSNG/S 2/3, 5/6, 8/9 with 8PSK
 3/4, 7/8 with 16QAM

Bit Mapping:

QPSK, 8PSK, 16APSK, 32APSK (NF only) (DVB-S2)
 QPSK, 8PSK, 16QAM (DVB-DSNG/S)

COMMON PARTS:**DVB-S2 compliant (EN 302307)**

Multiple Transport Stream/data Input interface

Null-packet deletion
 CRC8 Encoding
 Base Band Signaling
 Base Band Scrambling
 Outer FEC coding (BCH)
 Physical Layer Framing
 Physical Layer Signaling
 Physical Layer Dummy Frame insertion
 Physical Layer Scrambling
 Base Band Shaping (roll-off 0.35, 0.25 and even 0.2)

EXTERNAL 10.0 MHz REFERENCE (optional):

Input level : -3 dBm up to +7 dBm
 Output level : +7 dBm
 Connector : BNC (F) - 50

MONITOR & CONTROL INTERFACES:

- Protocol : HTML (via web browser)
 Connector : RJ-45
 Electrical : Ethernet 10 base-T
- Protocol : RMCP version 2 (version 1 not supported)
 Connector : 9 pin sub-D female
 Electrical : RS-485/RS-232
- Protocol : RMCP v2 over TCP-IP/UDP or SNMP
 Connector : RJ-45
 Electrical : Ethernet 10 base-T

ALARM INTERFACE:

Connector : 9 pin sub-D (F)
 Electrical : dual switch-over contacts

MECHANICAL: 19" sub rack, height: 1RU, weight 6 kg

POWER SUPPLY:

90-130/180-260V, 105VA, 47-63 Hz

TEMPERATURE:

Operational : 0° up to +40°C
 storage : -40° up to +70

Monitoring

All control parameters, alarms (active and memorized), power supply voltages, internal temperature, transmit clock offset, buffer contents, occupied bandwidth, etc.

Control

Interface rate (1 bit/s resol.) and symbol rate (1 baud resol.), FEC-rate and demodulation, IFL and LO frequency (95 Hz resol.), 10.0 MHz source (internal or external), internal PRBS decoder on/off, pre-alarm BER threshold, interface type, interface equalizer, Data framing (MPEG TS internal/external), output selection, spectrum inversion on/off, carrier & clock frequency offset, Channel BER, decoder BER, Eb/No, dummy frame ratio, Sync status, buffer status, alarms. Data framing (MPEG TS internal/external), output selection, spectrum inversion on/off, serial interface hardware and address, user levels, screen saver, etc.

Performances**MODULATOR PART OF THE MODEM:****Interface bit rate vs satellite baud rate in DVB-S2 mode**

Modul.	FEC	Interface Rate (Mbps) (64800 bit FEC frames)			Bandw./Interf.R. (35% Roll-off)	
		50kBaud	1MBaud	65MBaud	-3dB	-26dB
QPSK	1/4	0,025	0,490	31,866	2,040	2,754*
QPSK	1/3	0,033	0,656	42,669	1,523	2,057*
QPSK	2/5	0,039	0,789	51,312	1,267	1,710
QPSK	1/2	0,049	0,989	64,276	1,011	1,365
QPSK	3/5	0,059	1,188	77,240	0,842	1,136
QPSK	2/3	0,066	1,322	85,946	0,756	1,021
QPSK	3/4	0,074	1,487	96,686	0,672	0,908
QPSK	4/5	0,079	1,587	103,168	0,630	0,851
QPSK	5/6	0,083	1,655	107,553	0,604	0,816
QPSK	8/9	0,088	1,766	114,819	0,566	0,764
QPSK	9/10	0,089	1,789	116,260	0,559	0,755
8PSK	3/5	0,089	1,780	115,699	0,562	0,758
8PSK	2/3	0,099	1,981	128,741	0,505	0,682
8PSK	3/4	0,111	2,228	144,828	0,449	0,606
8PSK	5/6	0,124	2,479	161,107	0,403	0,545
8PSK	8/9	0,132	2,646	171,991	0,378	0,510
8PSK	9/10	0,134	2,679	174,148	0,373	0,504
16APSK	2/3	0,132	2,637	171,418	0,379	0,512+
16APSK	3/4	0,148	2,967	192,837	0,337	0,455+
16APSK	4/5	0,158	3,166	205,765	0,316	0,426+
16APSK	5/6	0,165	3,300	214,512	0,303	0,409+
16APSK	8/9	0,176	3,523	229,004	0,284	0,383+
16APSK	9/10	0,178	3,567	231,877	0,280	0,378+

Interface bit rate vs satellite baud rate in DVB-DSNG/S mode :

Satellite baud rate: 50 kBaud to 68 Mbaud
Interface Rate - 188 byte

MPEG frames (Mbps)				Bandw./interf.R 35% roll-off	
Modul.	FEC	50 kbaud	1 Mbaud	60 Mbaud	-3dB -26 dB
QPSK	1/2	0.046	0.922	55.294	1.085 1.465
QPSK	2/3	0.061	1.229	73.725	0.814 1.099
QPSK	3/4	0.069	1.383	82.941	0.723 0.977
QPSK	5/6	0.077	1.536	92.156	0.651 0.879
QPSK	6/7	0.079	1.580	94.789	0.633 0.855
QPSK	7/8	0.081	1.613	96.764	0.620 0.837
QPSK	N.A.	0.092	1.844	110.588	0.543 0.732
8PSK	2/3	0.092	1.844	82.941	0.543 0.678
8PSK	5/6	0.115	2.304	103.676	0.434 0.509
16QAM	3/4	0.138	2.765	124.412	0.362 0.452
16QAM	7/8	0.161	3.226	145.147	0.310 0.388

DEMODULATOR PART OF THE MODEM:**USER RATES:**

sat. baud rate :

QPSK	0,256 to 40 Mbaud
8PSK/16APSK	0,256 to 30 Mbaud
32APSK	1 to 20 Mbaud (Normal Frames only)
interf. rate limit (QPSK FEC1/3)	: 0.08 Mbit/s (min)
(16APSK FEC 8/9)	: 106 Mbit/s (max)

Data rates below 1Mbaud require the use of pilots.

BER PERFORMANCE

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

Config	EN302307 Simulations (**)	Short Frames 1 – 15 Mbaud	Normal Frames	Frames
	Es/No	Es/No	1-35 Mbaud Es/No	>35 Mbaud Es/No
QPSK- 1/3	-1.24	-0.6	-1	-0.9
QPSK- 2/5	-0.3	0.1	0.0	-0.1
QPSK- 1/2	1.00	0.8	1.3	1.4
QPSK- 3/5	2.23	2.7	2.5	2.6
QPSK- 2/3	3.10	3.5	3.4	3.5
QPSK- 3/4	4.03	4.4	4.3	4.4
QPSK- 4/5	4.68	5.0	5	5.1
QPSK- 5/6	5.18	5.7	5.5	5.6
QPSK- 8/9	6.20	6.6	6.5	6.6
QPSK- 9/10	6.42	-	6.7	6.8
8PSK- 3/5	5.50	6.4	6.2	6.9
8PSK- 2/3	6.62	7.1	7	7.1
8PSK- 3/4	7.91	8.5	8.3	8.4
8PSK- 5/6	9.35	10.0	9.7	9.8
8PSK- 8/9	10.69	11.3	11.1	11.2
8PSK- 9/10	10.98	-	11.4	11.5
16APSK- 2/3	8.97	9.6	9.6	9.7
16APSK- 3/4	10.21	10.8	10.7	10.8
16APSK- 4/5	11.03	11.7	11.6	11.7
16APSK- 5/6	11.61	12.2	12.1	12.2
16APSK- 8/9	12.89	13.6	13.4	13.5
16APSK- 9/10	13.13	-	13.6	13.7
32APSK- 3/4	12.73	/	13.5	13.6
32APSK- 4/5	13.64	/	14.4	14.5
32APSK- 5/6	14.28	/	15.0	15.1
32APSK- 8/9	15.69	/	16.4	16.5
32APSK- 9/10	16.05	/	16.7	16.8

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

(*) Measured at L-band and Ku-band (with LNB types: SKW-SX1019, SX700 & SC-series, NJR25365, SMW WDL digE, SMW X-line type C) 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.

FUNCTIONALITIES : EN 302307

automatic spectrum inversion

BER PERFORMANCE for BER 1E-7 after RS in DVB-DSNG/S:

CONFIG	Eb (188 byte)/No (dB)	
	EN 301 210	after RS
	specifications before RS	@ BER < 1E-7 <20 >20
	@ BER = 2E-4	Mbaud Mbaud
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

LNB Phase Noise requirement:

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

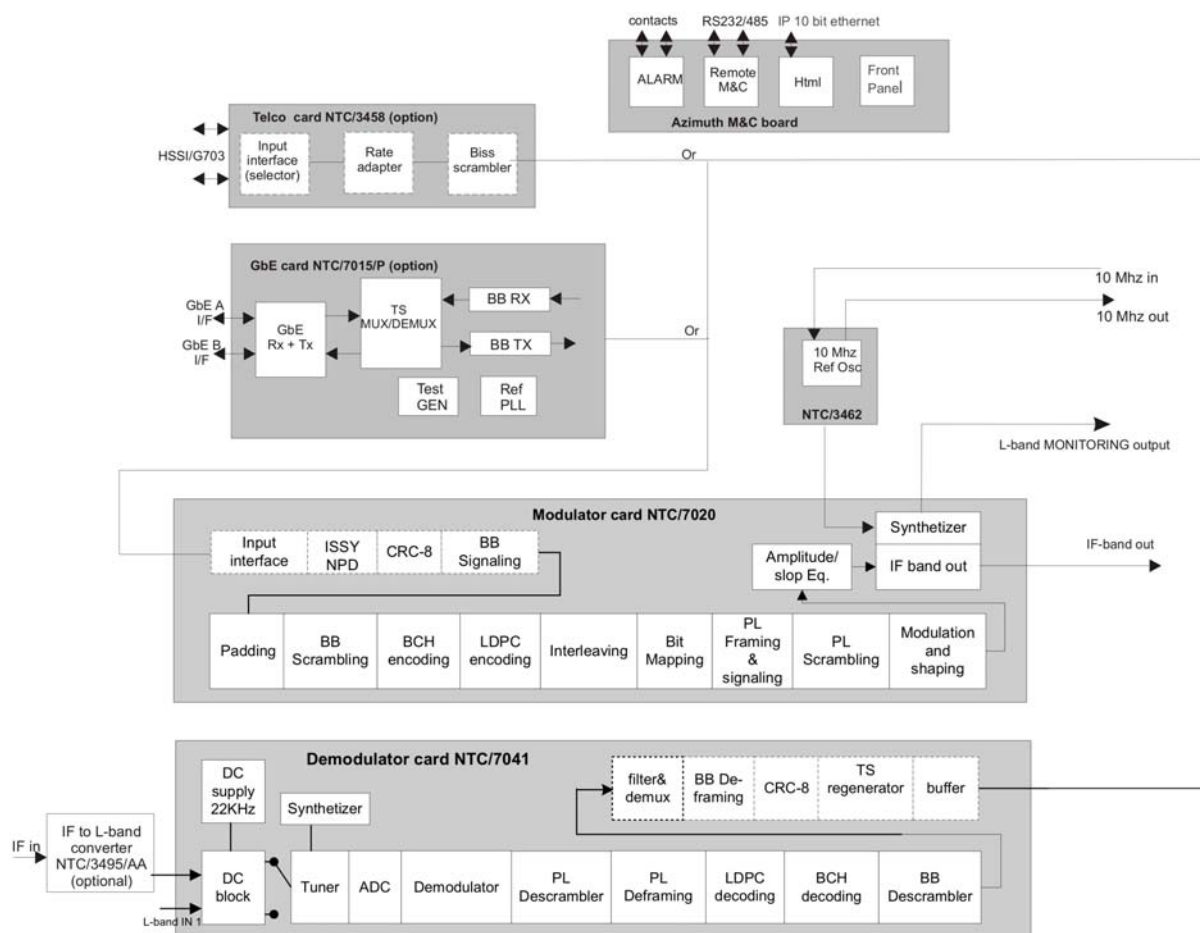
type A (PL-DRO) type B (free running DRO)

< -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 (modcodes) with pilots ON	
LNB supply	: 13/18 V/ 0.35 A
cable loss (100m)	: < 20 dB

BLOCK DIAGRAM



One interface board can be installed: a Gigabit Ethernet interface card or a Telco interface card

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

Other related products

- NTC/2263/xT DVB-S2 L-band satellite demodulator
- NTC/2277/xF DVB-S2 IF-band satellite modulator
- NTC/3458 TELCO HSSI + Single rate G703 w. external Data Clock input
- NTC/3462 10 MHz reference frequency module
- NTC/7015/xx IP GbE + ASI input/output card

Application notes and technical publications

- NTC/2263xF.apn01 performances comparison between NTC DVB-S and S2 demodulators
- NTC/2263xF.apn02 Satmaster inputs for DVB-S

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

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