



TRM74

DVBS/S2/multistream -> DVBT/C
Transmodulator



USER MANUAL V1.0

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1. - Safety considerations

1.1 CONNECTING TO THE MAINS SUPPLY

This product has to be connected to the mains supply. If there is the slightest doubt concerning the type of connection available on the installation, please contact your supplier of electricity. Before carrying out maintenance operation or modification of the installation, the modulator has to be disconnected. Remark : only use the supplied power adaptor.

1.2 OVERVOLTAGE

An overvoltage on the mains supply, can cause shortcircuits or fire. Never overload the power lines.

1.3 LIQUIDS

This module should be protected from splashes. Please assure yourself that no containers containing liquids are placed on this module. Also be aware of other persons splashing liquids on the module.

1.4 CLEANING

Disconnect the module before cleaning. Use only a humid cloth without solvent.

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1.5 VENTILATION

In order to assure an adequate air circulation and to prevent overheating, the ventilation holes should not be obstructed. The module may not be installed in a hermetically sealed environment. Other electronic products or heat producing items may not be placed upon or near the module.

1.6 ACCESSORIES

The use of accessories not manufactured by the manufacturer can cause damage to the module.

1.7 INSTALLATION OF THE MODULE

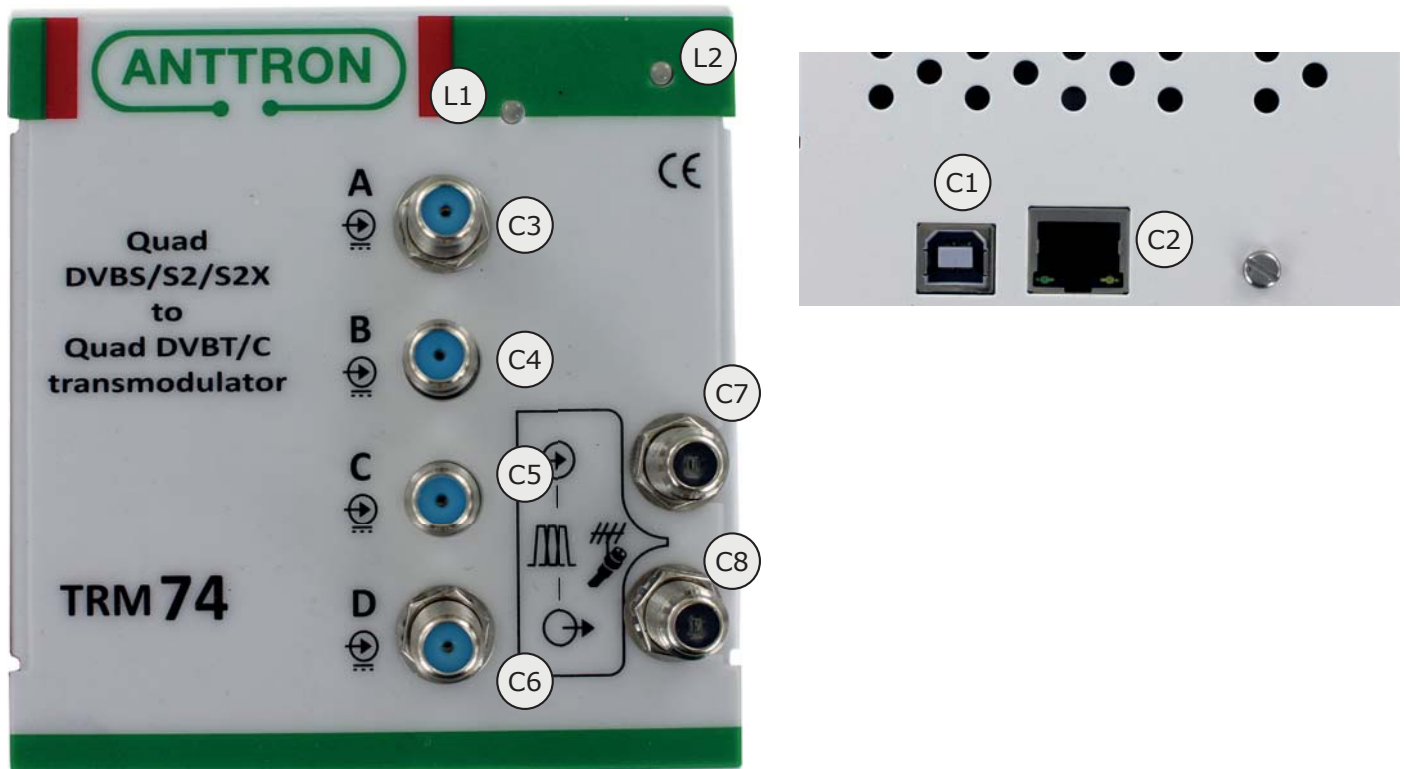
The module must be installed in a place well protected from direct sunlight. All measures have to be taken to avoid installation in humid or sunny place. Do not install near heating elements or other devices producing heat. Assure yourself that the module is placed at least 10 cm from other equipment with is susceptible to electromagnetic radiation. Do not install the module on instable items. A fall can cause physical or material damage.

2 - Function of TRM74

The TRM74 is a transmodulator. It allows to receive satellite programs (DVBS/S2/multistream) from four different satellite transponders. The programs of these transponders can be selected and modulated in DVBT or DVBC . For this, you have available four adjacent DVBT/DVBC channels.

The unit also incorporates BISS decryption. This means that it can decrypt programs using BISS encryption once you have the BISS keys available.

3 - Description of the different elements



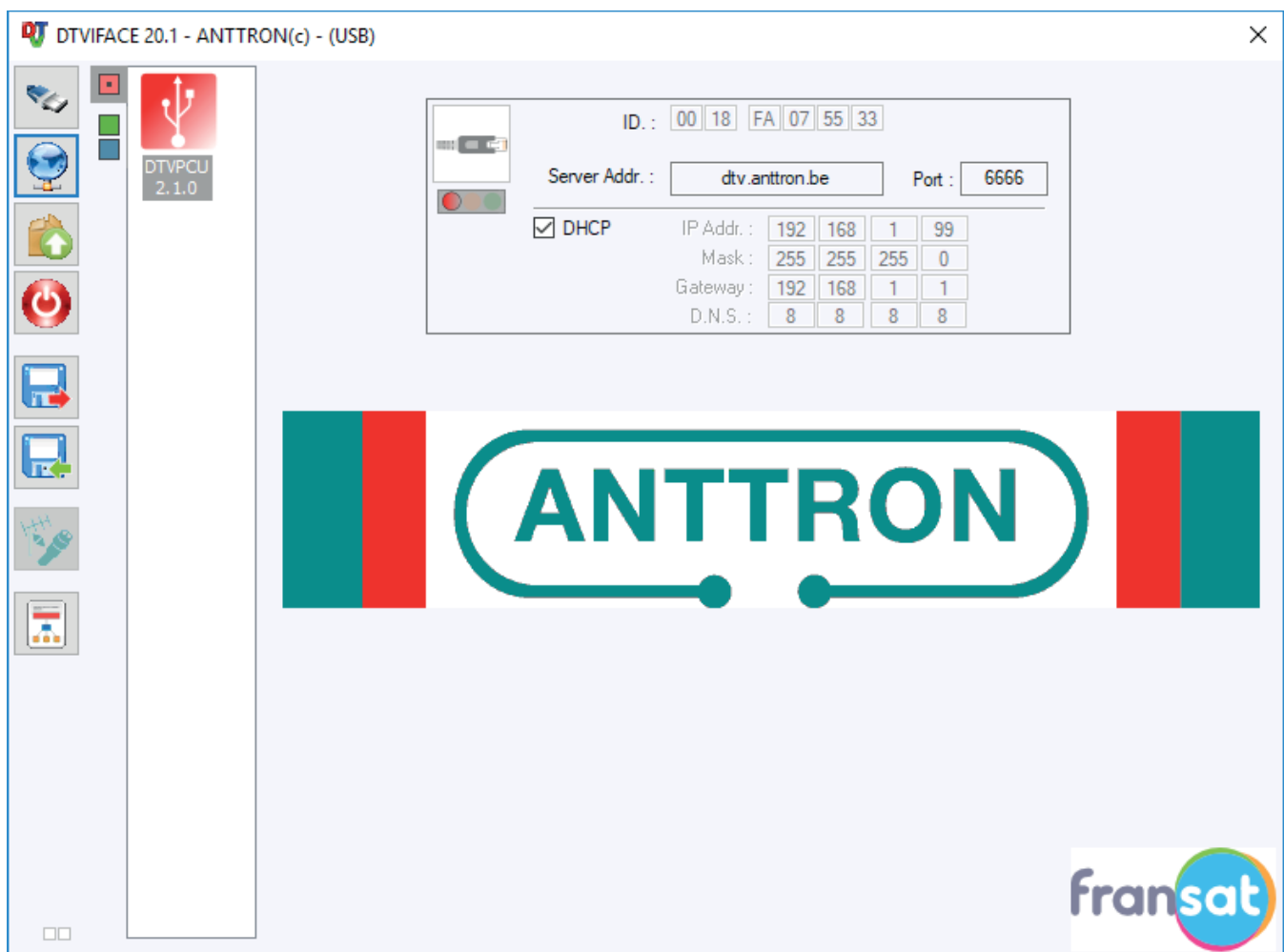
- C1** USB input(for programming the TRM74 by PC)
- C2** RJ45 connection (for programming TRM74 by LAN or over web)
- C3** LNB A input
- C4** LNB B input
- C5** LNB C input
- C6** LNB D input
- C7** RF input (bypass)
- C8** RF output
- L1** Status LED - satellite receiver module (this LED blinks four times green if both tuners are locked, a red blink (first,second, third or fourth) indicates that a tuner is not locked.)
- L2** Status LED - DVBT/C modulator module (this LED blinks green in normal operation, in the case no valid transport stream received by the modulator, it blinks red).

4. - Installing the software DTVIface

Before you can start to configure the TRM74, you need to install the software DTVIface. Please refer to the manual of DTVIface for installing the software on your computer.

5. - Programming the TRM74

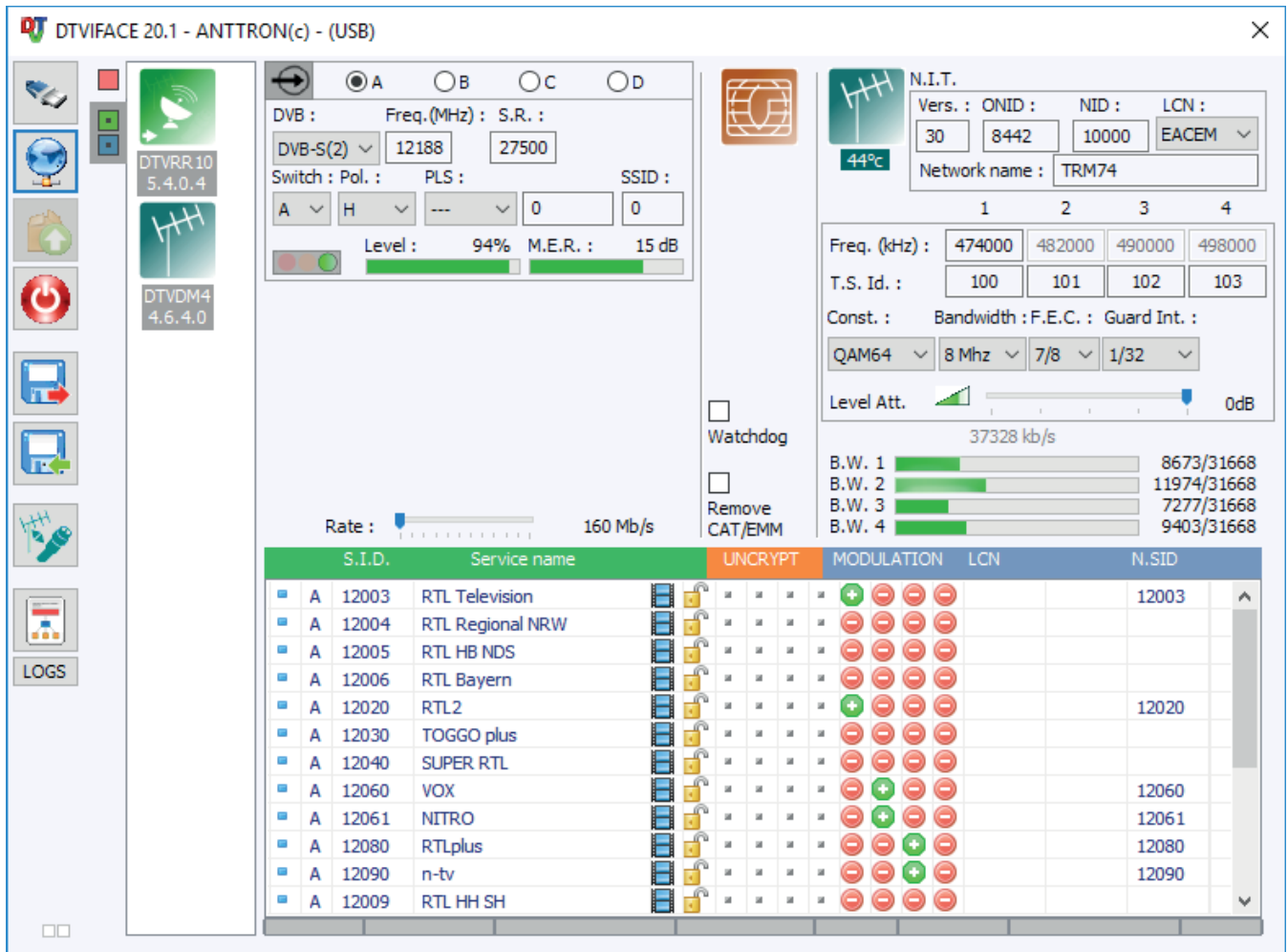
When you first connect the TRM74 with an USB cable to your PC and you launch DTVIface, you will see following screen :



On the left side you see the icons related to the DTVIface functions. (see DTVIface). In the column right to this you have three squares (red square = control unit / green square = satellite receiver module / blue square = quad DVBT/C modulator).

Clicking on the red square gives you information on the network settings which are usefull when you want to program the unit over LAN or over web.

When you click on the green or blue square you enter the settings of the combination receiver/modulator.



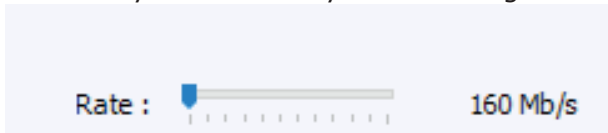
5.1 - Programming the satellite receiver module (DTVRR10)

In the left corner above you can select the tuners A, B, C or D. For each tuner you can input the satellite frequency, symbol rate, polarity and DiSeqc input (in the case you are making connection to a satellite multiswitch.) Furthermore you can enter the PLS system, value and stream in the case you are receiving multistream signals.

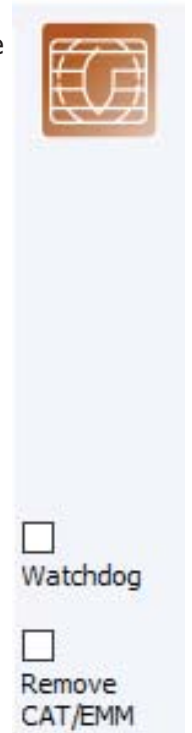
If valid parameters are entered and a satellite signal is present, the LED indication besides Level and S.N.R indication will turn into green indicating that the tuner has locked. At the same time an indication is given on signal strength and quality.

Below these fields you have a slider for rate.

This is only needed for systems having a CI slot, the value can be left at 160 Mb/s in this case.



Also, the indications for watchdog and Remove CAT/EMM are only intended for systems having a CI slot.



5.2 - Programming the modulator module (DTVDM4)


In the right corner above you can program the DVBT/C modulator DTVDM4.

You can enter NIT version, ONID, NID, LCN mode and Network Name.


The four output channels are adjacent. This means that you can enter the output frequency for the first channel only. The frequency of the other channels will be adjusted automatically. Furthermore you can adjust for each channel the T.S. Id. For the group of channels, modulation parameters and output level can be set.

	1	2	3	4
Vers. :	30	8442	10000	EACEM
ONID :				
NID :				
LCN :				
Network name :	TRM74			
Freq. (kHz) :	474000	482000	490000	498000
T.S. Id. :	100	101	102	103
Const. :	QAM64	8 Mhz	7/8	1/32
Bandwidth :				
F.E.C. :				
Guard Int. :				
Level Att. :	0dB			

5.3 - Conversion to DVBC mode (DTVCM4)

The TRM74 has the ability to modulate in DVBC mode as well as in DVBT mode. In order to switch between DVBC and DVBT mode, press the button  in the left column. After confirming your choice the TRM74 will reboot and will be set in DVBC mode.



Now, DVBC modulation parameters can be entered.













To switch back to DVBT mode press the  button again.

	1	2	3	4
Vers. :	5	8442	8442	EACEM
ONID :				
NID :				
LCN :				
Network name :	NoName			
Freq. (kHz) :	474000	482000	490000	498000
T.S. Id. :	100	101	102	103
Const. :	QAM256	8 Mhz	6960	KS/s
Bandwidth :				
S.R. :				
Level Att. :	0dB			

5.4 - Adding programs to the output

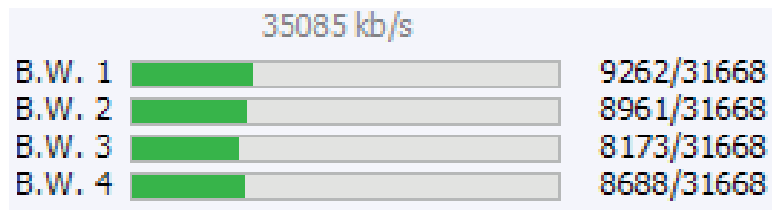
If satellite programs are being received, they will be listed in the table below the settings for input and output. The list contains the origin (input A,B,C or D) the service ID, service name, the symbol for a TV program or radio program and a symbol indicating if it concerns a FTA or scrambled program.

In the modulation column, you have the ability to add this program to one of the four adjacent output channels by double clicking the  symbol. The symbol will change into , indicating that the channel has been added to this specific channel.

<input checked="" type="checkbox"/>	A	12020	RTL2										1		12020
<input checked="" type="checkbox"/>	A	12030	TOGGO plus												
<input checked="" type="checkbox"/>	A	12040	SUPER RTL												
<input checked="" type="checkbox"/>	A	12060	VOX										2		12060
<input checked="" type="checkbox"/>	A	12061	NITRO										3		12061
<input checked="" type="checkbox"/>	A	12080	RTLplus										4		12080
<input checked="" type="checkbox"/>	A	12090	n-tv										5		12090


Furthermore you can add a LCN number to the program and you can change the service ID (most right column) of the program when it is transmitted in the output.

When adding channels to the output channel(s), you will see that the bandwidth occupation for a specific channel increases. It is wise not to exceed about 80% of the channel capacity in order not to create possible overflows.



5.5 - BISS descrambling

BISS scrambled services can be descrambled on the 4 tuner satellite input module DTVRR10 using biss keys that can be entered with DTVIface using the following method.

In the list of programs received, double-click on the padlock  of the program you want to descramble. When the same BISS keys are used for multiple services, you can select those services in the list using CTRL key when single clicking on the services for which you want to enter the keys (multiple selection) and just double-click on the last services maintaining the CTRL key on the keyboard.

The following window is opened allowing you to enter the used keys :

BISS Key ✕

Even : ▾ ■

Odd : ▾ ■

You can now enter a biss key (16 characters) on the even or odd list by typing it on the corresponding dropdown box or selecting it in the list if the key has already been entered.

If the same key is used for even and odd, please fill in the two selection boxes with the same key.

When keys are filled in and are valid you can click on the OK button.

After a few seconds, the services list is refreshed, now showing the real service type (video or audio) in the case PMT was scrambled. A modified padlock is also shown to indicate that biss descrambling is running on the selected service.



6. Technical specifications

SAT inputs (x4 - TRM74)	Frequency	950-2150 MHz
	Input level	-65 dBm à -25 dBm
	Insertion loss	< 2.5 dB
	LNB supply	13/18V - Tone - DiSEqC (300mA each input)
Demodulator/decoder		
DVB-S	Modulation - symbol rate	QPSK - 1....45 MSps
	Code rate (Viterbi)	1/2, 2/3, 3/4, 5/6, 7/8
DVB-S2	Modulation - symbol rate	QPSK/8PSK - 1....45 MSps
DVB-S2	Code Rate (LDPC)	QPSK = 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
		8PSK = 3/5, 2/3, 3/4, 5/6, 8/9,9/10
	Multistream	CCM, ACM, VCM, Multi Input Stream, 16APSK,32APSK,Generic Stream Mode
DVBT output (4 adjacent channels)	Maximum output	> 90 dB μ V
	Attenuation	1 - 20dB (using DTVIface)
	Insertion loss	< 2 dB
	Output frequency	170-230 MHz + 470-862 MHz
	Constellation	QPSK/16QAM/64QAM
	FEC	1/2, 2/3, 3/4, 5/6, 7/8
	Guard interval	1/4, 1/8, 1/16, 1/32
	Mode - MER	2K - >35 dB
DVBC output (4 adjac. channels)	Maximum output	> 90 dB μ V
	Attenuation	1 - 20dB (using DTVIface)
	Insertion loss	< 2 dB
	Output frequency	50-862 MHz
	Constellation	16,32,64,128,256 QAM (EN 300 429)
	Symbol Rate	4 - 6.96 Mb/s
	MER	> 41 dB
	DVB Processing	TsID, NIT version, ONID, NID, Network Name, SID, LCN, HDLCN
Power	Input	100-240 VAC / 50-60Hz / 20 Watt
Dimensions	Length x Height x Width	181mm x 103 mm x 100mm
Weight		1.6 kg
EAN code	TRM74	5420037699681