ANTTRON

TM250HD

HD encoder
DVB-T/DVB-C/IP out

Congratulations on your purchase of the TM250HD !

This 'state of the art' product, is a HD encoder. The video input can be taken from HDMI, PC or Component Video. The audio can be taken from HDMI or analog audio.

After compressing the video into H264 and audio in AAC, the output can be configured as DVB-T, DVB-C modulator or as IP streamer.

Stand-alone configuration is made easy through 4 tact switches and ergonomic menu's. To make the configuration of the TM250HD ultra simple, a special software TMHDIface is available that you can download on our website anttron.com

Contents

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.

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 – Description of the different elements

C1   Power supply input (5V/4A)
C2   USB input (for programming
         the TM250HD by PC)
C3   Ethernet connection RJ45
C4   RF input
C5   RF output

C1   C2   C3   C4   C5

DC input   USB   INPUT   OUTPUT
+5V

C6   C7   C8   C9
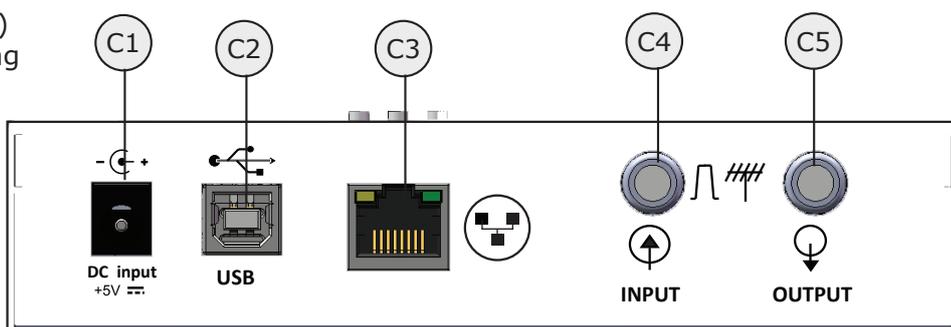
C6   HDMI input
C7   Component video input
C8   PC input
C9   Analog audio input

COMPONENT VIDEO INPUT   AUDIO INPUT
Pb   Y   Pr   L   R

HDMI

HD encoder
DVB-T / DVB-C / IP output

A1   T1
                    T2
            T4
                T3

TM250HD

ANTTRON
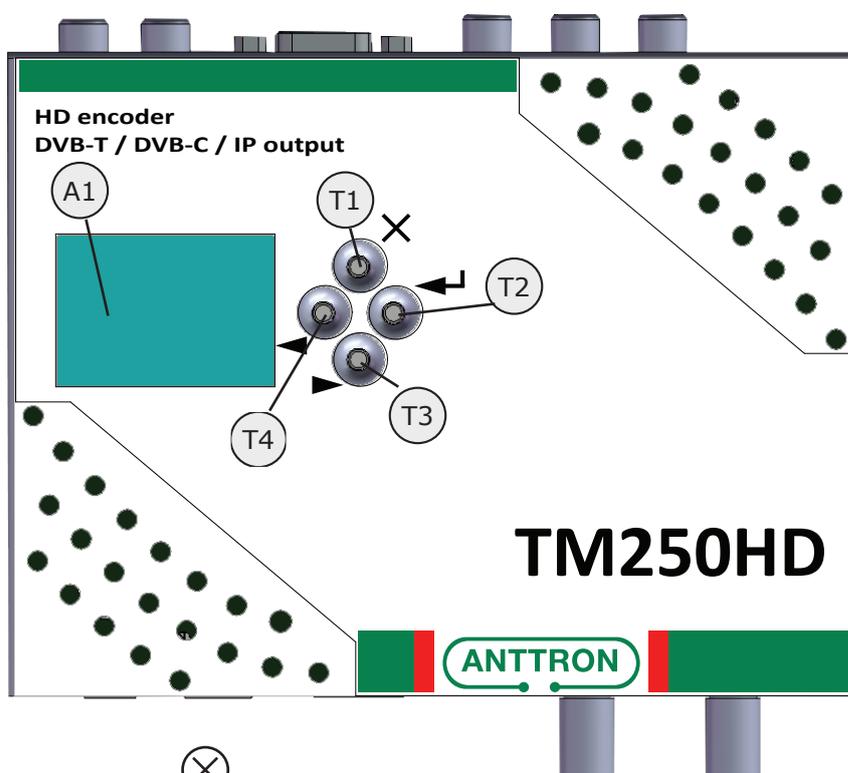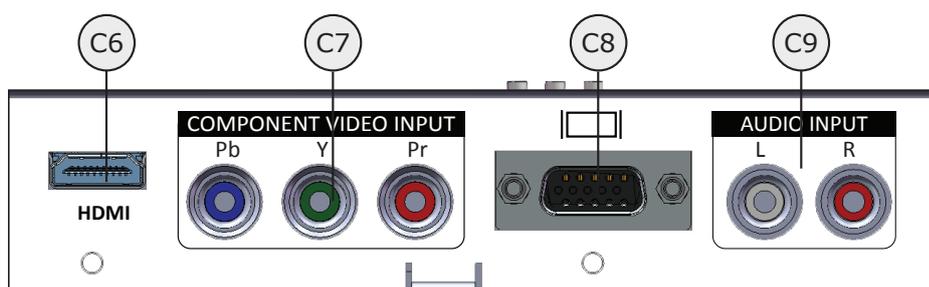
A1   Display

T1   **CANCEL/RETURN** button   ⊗

T2   **ENTER** button   ↵

T3   ▶   (move forward/down) button

T4   ◀   (move backward/up) button

## 3 - Installation and menu structure

3.1 - Installation

Install the TM250HD against a wall using the wall fixation brackets to ensure cooling of the housing through natural convection. (see drawing)
Connect the audio and video source using HDMI, PC, or component VIDEO and ANALOG audio cables.
Connect the RF input cable (if present) and the RF output cable. If the RF input is not used, please connect a 75 ohm terminating resistor to it. Once the modulator installed and the cables connected, please proceed connecting the power supply to the modulator.
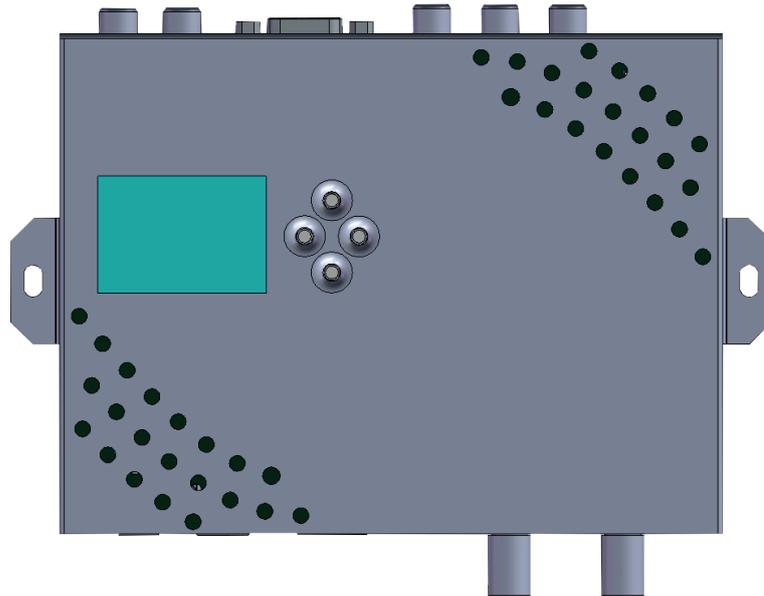
3.2 - Powering up

Plug in the connector of the power supply. The display will show the ANTTRON logo while booting.Once the modulator has booted correctly the main menu will appear.

In the first line the model number is displayed (TM250HD) followed by the installed firmware version.

When the modulator is encoding, the actual resolution is displayed in the bottom line of the display
When the modulator in intiialising, the mention INIT is displayed at the bottom line.

```
TM250HD 4.0

CONFIGURATION
DVB SETTINGS
A/V SETTINGS
TS SETTINGS

1280x720-50fps
```

3.3 - Menu structure

The TM250HD has different menus allowing easy access to the differents parameters and to change them when necessary. Below you will find the structure of the different menus.

```
    MAIN MENU                                      CONFIGURATION

CONFIGURATION                                IP-STREAMER
DVB SETTINGS                                 DVB-T MODULATOR
IP SETTINGS                                  DVB-C MODULATOR
A/V SETTINGS
TS SETTINGS                                       DVB SETTINGS
LANGUAGE
DEFAULT CONFIG.                              FREQUENCY
                                             BANDWIDTH
                                             ATTENUATION
                                             DVB-T
                                             DVB-C


                                                  IP SETTINGS

                                             PROTOCOL
                                             IP ADDRESS
                                             UDP PORT


                                                  A/V SETTINGS

    LANGUAGE          TS SETTINGS            VIDEO SETTINGS
                                             AUDIO SETTINGS
FRANCAIS          NIT RELEASE
ENGLISH           NET ID.
                  ORIG. NET. ID.
                  NETWORK NAME
                  TS ID.
                  PROGRAM ID.
                  LCN ID.
                  L.C.N.
                  HD L.C.N.
                  SERVICE NAME
                  PMT PID
                  VIDEO PID
                  AUDIO PID
                  EIT TITLE
                  EIT TEXT
```

In order to go from one menu to the other use the MOVE **UP/DOWN** keys to select the menu option. Press the **ENTER** button to select this option. Press the **CANCEL** button to go back to the previous menu.

To set parameters, whether you have the option to select a specific value. In the other case some number or text string should be entered. In that case, use the buttons ▶ and ◀ to move to the desired character and press the ENTER button to confirm. Please note the following **SPECIAL CHARACTERS** :

↵ confirm the modified value / x erase all / ← backspace

⇦⇨ move cursor back or forward

4 - Setting up the TM250HD

4.1 - The CONFIGURATION menu

In this menu you can setup your TM250HD as IP streamer, DVBT modulator or DVBC modulator. Select the appropriate option with the buttons ▶ and ◀ and press the ENTER button to confirm.

```
 CONFIGURATION

IP-STREAMER
DVB-T MODULATOR
DVB-C MODULATOR
```
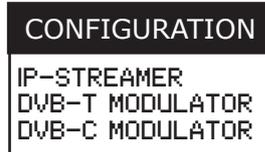
4.2 - The DVB settings menu

If the TM250HD is configured as DVBT modulator or DVBC modulator, you can set in this menu the output frequency, bandwidth, output level and specific parameters for DVB-T or DVB-C.

```
 DVB SETTINGS

FREQUENCY
BANDWIDTH
ATTENUATION
DVB-T
DVB-C
```

```
FREQUENCY
BANDWIDTH
ATTENUATION
DVB-T
```
⊗ ↵
```
FREQUENCY
474000_kHz

↵ x ← ⇦ ⇨ 0123456789
```
Set the output frequency

▶ ↓↑ ◀

```
FREQUENCY
BANDWIDTH
ATTENUATION
DVB-T
```
⊗ ↵
```
6 MHz
7 MHz
8 MHz
```
Select the bandwidth

▶ ↓↑ ◀

```
FREQUENCY
BANDWIDTH
ATTENUATION
DVB-T
```
⊗ ↵
```
ATTENUATION
0_ dB

↵ x ← ⇦ ⇨ 0123456789
```
Set the output level
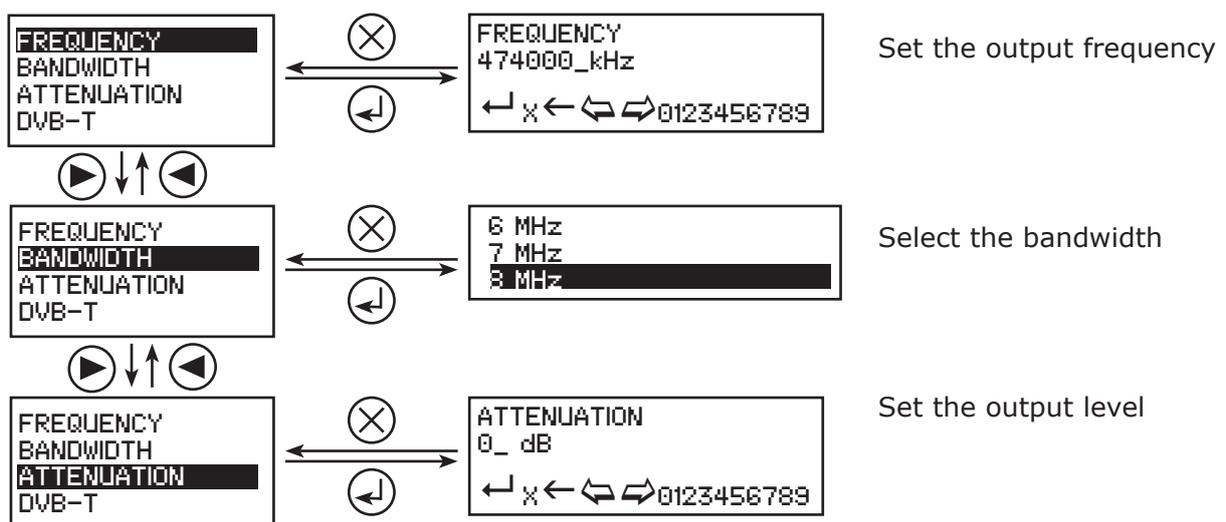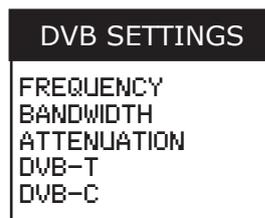
4.2.1 - Setting DVB-T parameters

```
FREQUENCY
BANDWIDTH
ATTENUATION
DVB-T
```
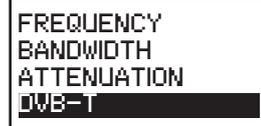
When you select DVB-T and press the ENTER button, the following submenu appears. It allows you to set the DVB-T parameters.

```
MODE
CONSTELLATION
F.E.C.
GUARD INTERVAL
```
⊗ ↵
```
2K
8K
```
Select the mode

```
MODE
CONSTELLATION
F.E.C.
GUARD INTERVAL
```
⊗ ↵
```
QPSK
QAM16
QAM64
```
Select the constellation

```
MODE
CONSTELLATION
F.E.C.
GUARD INTERVAL
```
⊗ ↵
```
1/2
2/3
3/4
5/6
7/8
```
Select the F.E.C.

```
MODE
CONSTELLATION
F.E.C.
GUARD INTERVAL
```
⊗ ↵
```
1/4
1/8
1/16
1/32
```
Select the Guard Interval
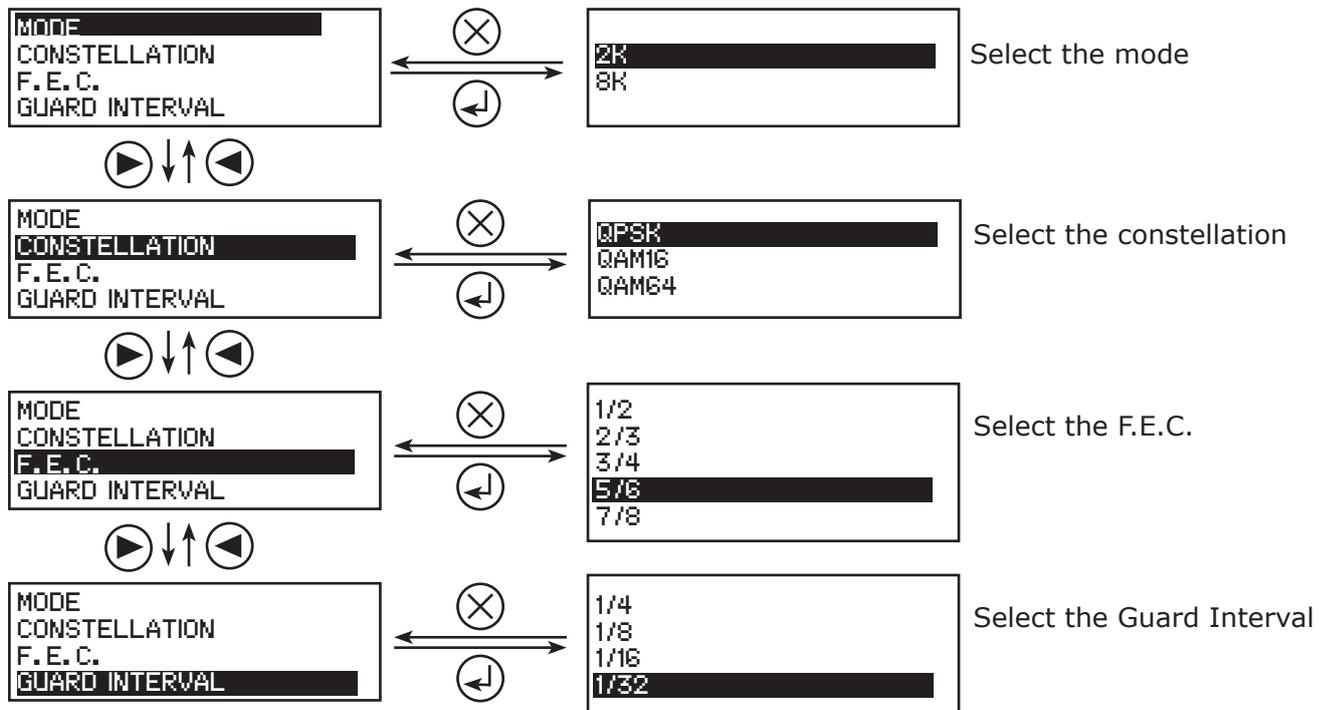
4.2.2 - Setting DVB-C parameters

```
BANDWIDTH
ATTENUATION
DVB-T
DVB-C
```

When you select DVB-C and press the ENTER button, the following submenu appears. It allows you to set the DVB-C parameters.

```
CONSTELLATION
SYMBOL RATE
```
⊗ ↵
```
QAM16
QAM32
QAM64
QAM128
QAM256
```
Select the constellation

```
CONSTELLATION
SYMBOL RATE
```
⊗ ↵
```
SYMBOL RATE
6960_
↵ x←⇦⇨0123456789
```
Set the symbol rate

4.3 - The IP settings menu

```
IP SETTINGS

PROTOCOL
IP ADDRESS
UDP PORT
```
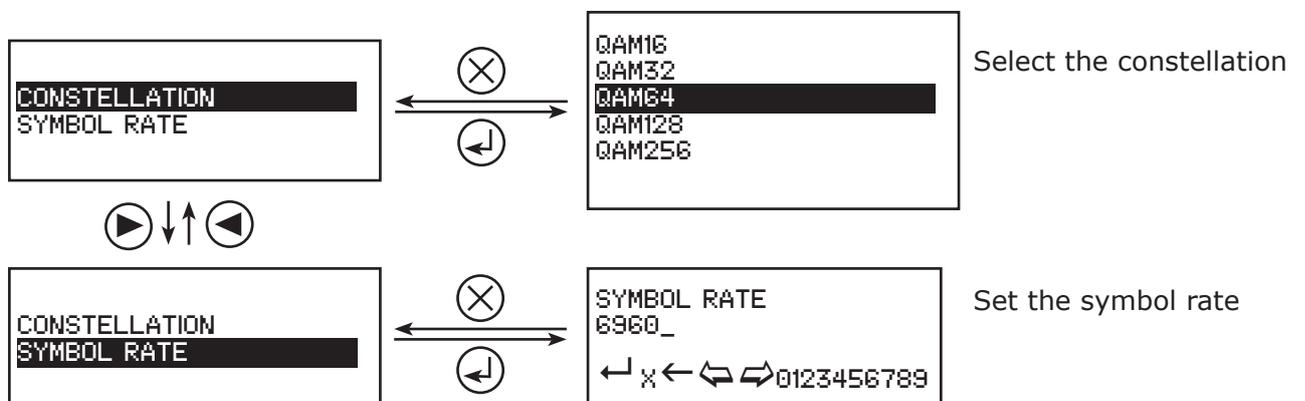
When your TM250HD is configured as IP streamer, the you can adjust the settings in the IP settings menu.

```
PROTOCOL
IP ADDRESS
UDP PORT
```
⊗ ↵
```
TS OVER UDP
TS OVER RTP
```
Select UDP or RTP

▶↓↑◀

```
PROTOCOL
IP ADDRESS
UDP PORT
```
⊗ ↵
```
IP ADDRESS
192.168.1.15_

↵ x ← ⇦ ⇨ 0123456789
```
Set the IP ADDRESS

▶↓↑◀

```
PROTOCOL
IP ADDRESS
UDP PORT
```
⊗ ↵
```
UDP PORT
1234_

↵ x ← ⇦ ⇨ 0123456789
```
Set the UDP PORT nr.
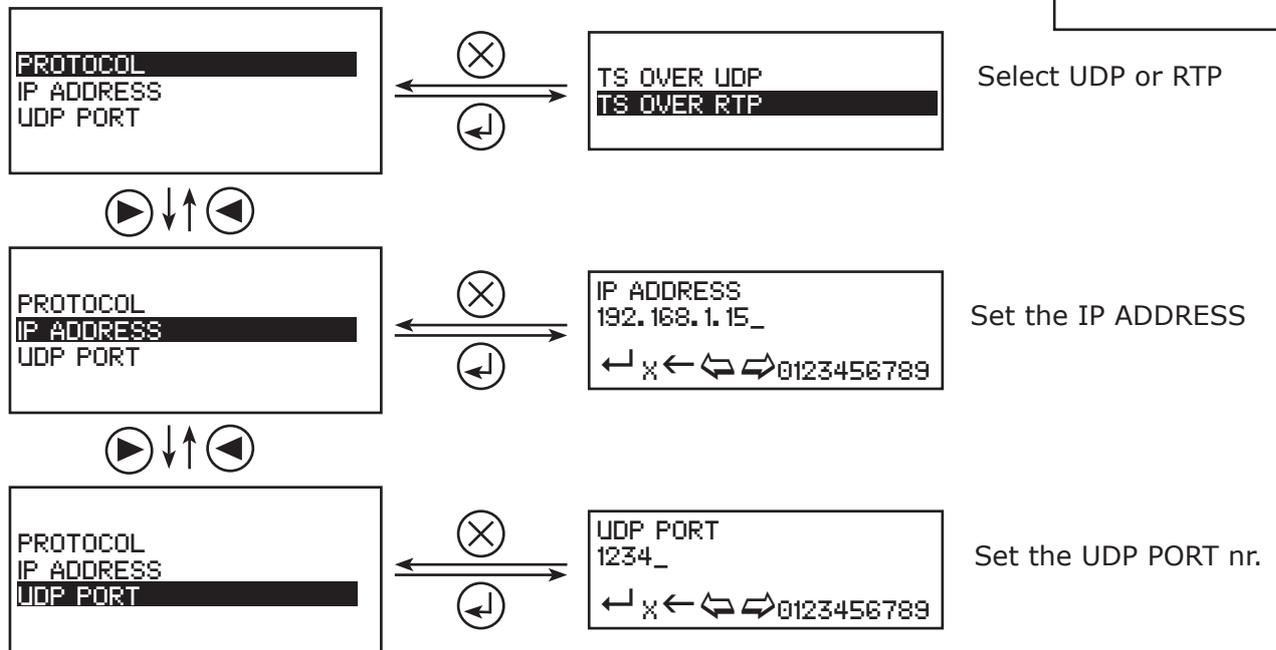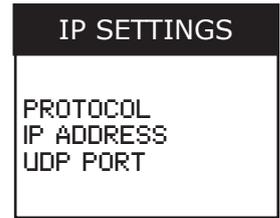
TM250HD – IP Streaming
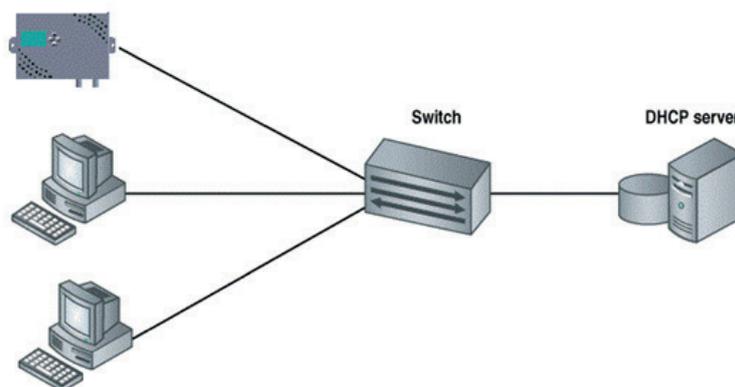
1) Self IP configuration

The TM250HD dynamically obtains its IP address on startup from a DHCP server. For this reason, ensure that it is connected to a router or something else running a DHCP server (like on the figure above) before powering it on. This way network address of the TM250HD, network mask and network gateway are automatically got from the DHCP server.

2) Destination IP configuration

Once you've set the TM250HD in the IP streamer mode, you have to specify the IP address of the destination you want to see the program on (using VLC on a PC for example).
For this, run TMHDIface and correctly set the boxes **❶**,**❷**,**❸** below :

❶ Select the protocol you want to use to encapsulate the DVB stream knowing that UDP takes less bandwidth than RTP and although it is not connection oriented, it is still particularly useful for streaming.

❷ Enter the IP address of the destination PC or device. This address can be an unicast address (the address of a single PC : 192.168.1.11 for example), or a multicast address (a logical iden-tifier for a group of destination devices in a network). In this last case, the multicast address range should be between 224.0.1.0 to 238.255.255.255 because range 224.0.0.0 through 224.0.0.255 is reserved for local purposes and range 239.0.0.0 through 239.255.255.255 is reserved for administrative scoping. When using multicast address, ensure that a capable IGMP router is used.

❸ Select UDP port on which the stream will be carried. In case RTP over UDP protocol was se-lected, use an even number for this port.

3) Program viewing

Once all have been set, the program should be available to be seen on any VLC like client.

For VLC mediaplayer (http://www.videolan.org/vlc/), just open a network stream using the URL udp://@192.168.1.11:1234 replacing :

. udp by rtp if you have chosen the RTP protocol in **❶** ,

. 192.168.1.11 with the address you set in **❷** ,

. 1234 with the port number you set in **❸** .

4.4 - The AV settings menu

In the A/V settings menu, you can set specific parameters for video and audio.

```
VIDEO SETTINGS
AUDIO SETTINGS
```

4.4.1 - Video settings

When you select VIDEO SETTINGS and press the ENTER button, the following submenu appears. It allows you to set the VIDEO parameters.

Select the compression type

```
COMPRESSION
VIDEO RATE
ALLOW VBR
H264 PROFILE
```
```
H264
MPEG2-SD
MPEG2
```

Set the video bit rate

```
COMPRESSION
VIDEO RATE
ALLOW VBR
H264 PROFILE
```
```
VIDEO RATE
12000_

↵ x ← ⇦ ⇨ 0123456789
```

Allow variable bit rate

```
COMPRESSION
VIDEO RATE
ALLOW VBR
H264 PROFILE
```
```
NO
YES
```

Select the H264 Profile

```
COMPRESSION
VIDEO RATE
ALLOW VBR
H264 PROFILE
```
```
MAIN
HIGH
```
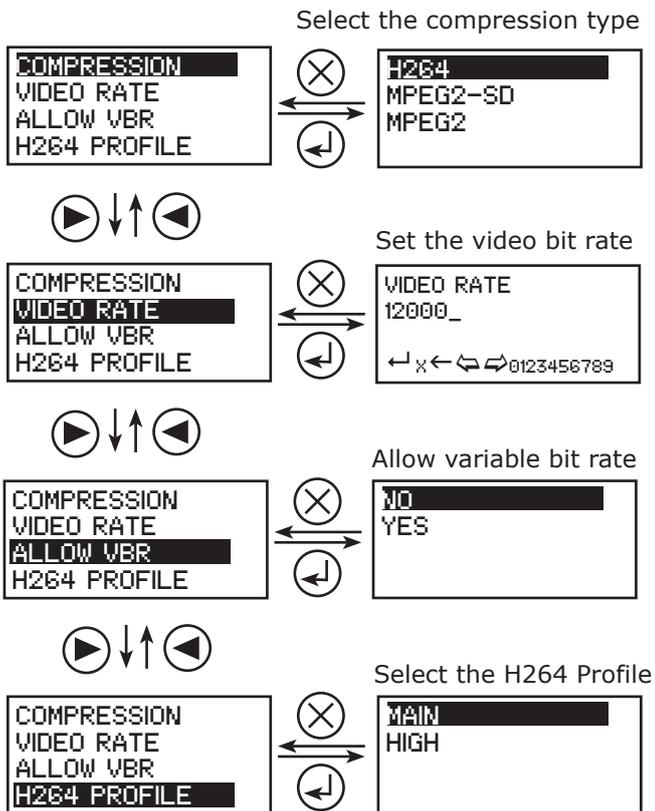
4.4.2 - Audio settings

When you select AUDIO SETTINGS and press the ENTER button, the following submenu appears. It allows you to set the AUDIO parameters.

Select the compression type

```
COMPRESSION
AUDIO RATE
HDMI-PCM VOLUME
```
```
AAC-LC
MPEG1-L2
```

Select the audio bitrate

```
COMPRESSION
AUDIO RATE
HDMI-PCM VOLUME
```
```
192 Kb/s
256 Kb/s
320 Kb/s
384Kb/s
```

Select the audio volume

```
COMPRESSION
AUDIO RATE
HDMI-PCM VOLUME
```
```
x1
x2
x4
```
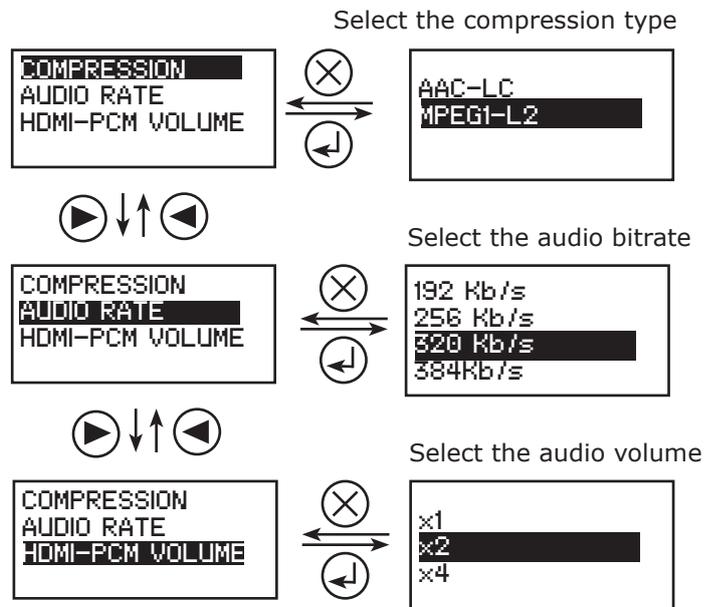
4.5 - The TS settings menu

This menu allows you to adjust specific parameters of the transport stream.

```
TS SETTINGS

NIT RELEASE
NET ID.
ORIG. NET. ID.
NETWORK NAME
TS ID.
PROGRAM ID.
LCN ID.
L. C. N.
HD L. C. N.
SERVICE NAME
PMT PID
VIDEO PID
AUDIO PID
EIT TITLE
EIT TEXT
```

Menu		Value screen	Description
NIT RELEASE NET ID. ORIG. NET. ID. NETWORK NAME	⊗ ↵	NIT RELEASE 27_ ↵x←⇦⇨0123456789	Set the NIT version
NIT RELEASE NET ID. ORIG. NET. ID. NETWORK NAME	⊗ ↵	NET ID. 27_ ↵x←⇦⇨0123456789	Set the Network ID.
NIT RELEASE NET ID. ORIG. NET. ID. NETWORK NAME	⊗ ↵	ORIG. NET ID. 27_ ↵x←⇦⇨0123456789	Set the Original Network ID.
NIT RELEASE NET ID. ORIG. NET. ID. NETWORK NAME	⊗ ↵	NETWORK NAME NoName_ ↵x←⇦⇨0123456789	Set the NETWORK NAME
NET ID. ORIG. NET. ID. NETWORK NAME TS ID.	⊗ ↵	TS ID. 100_ ↵x←⇦⇨0123456789	Set the Transport Stream ID.
ORIG. NET. ID. NETWORK NAME TS ID. PROGRAM ID.	⊗ ↵	PROGRAM ID 1_ ↵x←⇦⇨0123456789	Set the PROGRAM ID.
NETWORK NAME TS ID. PROGRAM ID. LCN ID.	⊗ ↵	EACEM ITC	Select the LCN ID.
TS ID. PROGRAM ID. LCN ID. L.C.N.	⊗ ↵	L. C. N. 1_ ↵x←⇦⇨0123456789	Set the LCN number.

Set the HD LCN number.

Set the Program Name.

Set the VIDEO PMT

Set the VIDEO PID

Set the AUDIO PID

Set the EIT TITLE (*)

Set the EIT TEXT (*)

(*) EIT title and text will pop up on your television screen when pressing the INFO button on the handset of your TV, when watching the program coming from the TM250HD modulator.

4.6- The language menu

Select in this menu your preferential language.

4.7 - Default configuration

When selecting this option, all your modifications will be lost, and the default factory settings will be restored.

5 - Programming using a PC

The settings of the TM250HD can also be changed using a PC.

First, please install the software **TMHDIFace** on your PC. You can download this software from our internet site **anttron.com**
After installation of this software, connect the TM250HD using a USB cable (not included) to your personal computer. Then launch the program **TMHDIface.**

On the display of the TM250HD the message <USB> appears, indicating that the programming is now performed through your PC. The following window appears on your screen.
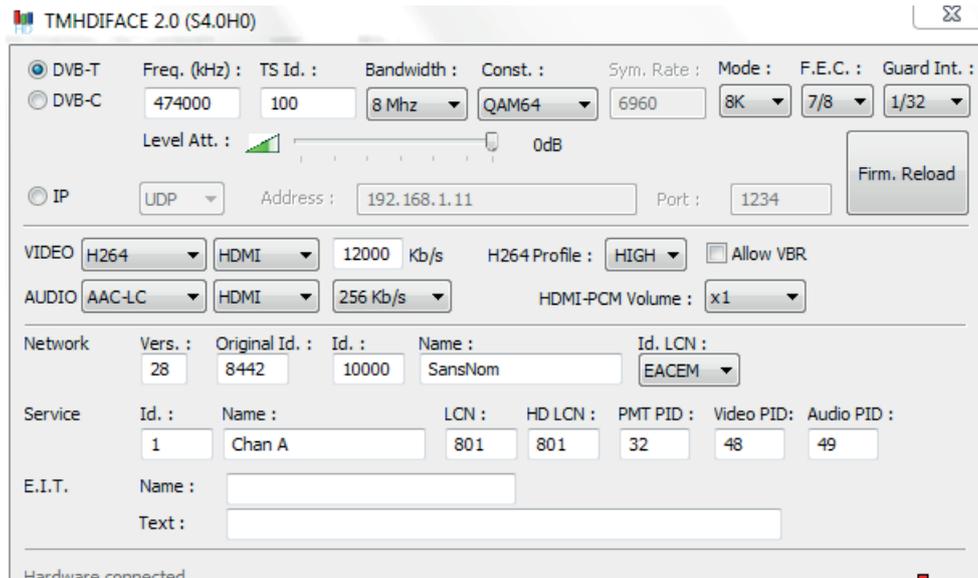
Now, all parameters discussed in Chapter 4 of this user manual can be modified by TMHDIface.

6 - Technical specifications

Video inputs	Input	HDMI - YUV - Computer analog input
	Resolution modes	480p -576p -720p - 1080i - VGA - SVGA - XGA - SXGA
	Compression	H.264 / MPEG2-SD /MPEG-2 – bitrate 5-15 Mb/s
Audio inputs	Input	HDMI – L/R analog audio input
	Sample Rate	HDMI (32kHz / 44.1 kHz / 48 kHz) – Analog (48 kHz)
	Compression	AAC-LC /MPEG1-L2 – bitrate 128-384 Kb/s
DVB Processing	Table insertion	PAT, PMT, SDT, NIT, EIT
	Configuration	Channel/network name, SID, LCN, TSID, ONID, NID, versions, audio, video PIDs…
DVB-T output	Output frequency / level	170-230 MHz + 470-862 MHz / > 80 dBμV
	Constellation - FEC	QPSK/16QAM/64QAM - 1/2, 2/3, 3/4, 5/6, 7/8
	Guard interval	1/4, 1/8, 1/16, 1/32
	Mode - MER	2K/8K - 35 dB
DVB-C output	Output frequency / level	50-862 MHz / > 80 dBμV
	Constellation - Symbolrate	16, 32, 64, 128, 256 QAM (EN 300 429) - 4,00 - 6,96 Msps
IP streaming	Interface	10/100 Base-T
	Streaming	UDP/RTP...
Power	DC 2.1 mm connector	+5V
	Consumption	10 Watts
Dimensions	LxWxH	170x130x35mm
	Weight	0.6 kg
EAN code	TM250HD	5420037699230