DT-504B

QUADRUPLE VIDEO / AUDIO ENCODER WITH MULTIPLEXER AND COFDM OUTPUT

QUICK CONFIGURATION GUIDE

- 0 DG0089 -

PROMAX

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DT-504B

1 INTRODUCTION

The **DT-504B** is a module able to generate a single transport stream in **COFDM** format from several audio / video (**A/V**) analogue signals.

It has 4 Audio / Video analogue inputs. Each **A/V** input has three **RCA** connectors, one for video signal (**VIDEO**) and two more for audio (right and left audio).

Each **A/V** input is coded by means of the **MPEG-2** compression system. Then the resulting signals are processed by a multiplexer that brings together all in one **TS**. This TS is serialized into **DVB-ASI** format and modulated in a **DVB-T** output signal.

Subsequently, the **DVB-T** output signal can be inserted into a television network with the advantages of robustness and high quality that digital technologies offers.
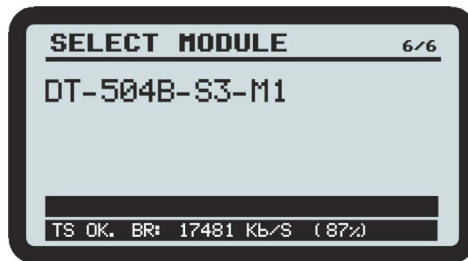

Figure 1.- DT-504B Configuration.

At the bottom, the screen shows the Transport Stream (**TS**) Status, the **bitrate** used in kilobit per second and the percentage of bitrate used relative to total available.

The **DT-504B** module adjusts the compression rate to the total bitrate available, using the modulation parameters.

1.1   SPECIFICATIONS ⚠

A/V inputs
Type   4 independent A/V inputs.
Connector   3 RCA-Female connectors for each input.
                            1 connector (yellow) Composite video.
                            1 connector (white) Audio L.
                            1 connector (red) Audio R.

Video
  Format   PAL, NTSC.
  Level   1 Vpp.
  Impedance   75 Ω.

Audio
  Mode   Selectable Stereo / Mono / Dual / Joint Stereo.
  Level   0.5 Vpp or 1.0 Vpp (selectable).
  Impedance   10 kΩ.
  Bandwidth   20 Hz to 20 kHz.

MPEG-2 Encoder
  Video/Audio encoding
    Format   MPEG-2.
    Video Bitrate   According to DVB-T modulation parameters.
    Audio bitrate   From 32 to 384 kbps selectable.
  Editable parameters   Service Name, Service ID, Video PID, Audio PID, PMT PID.
Available measurements Total bitrate.

Multiplexor
Editable parameters   Network name, NID, NID Original, TS ID.

DVB-T modulator
FFT Mode   2k, 8k.
Channel BW   6 MHz[1], 7 MHz, 8 MHz.
Guard Interval   1/4, 1/8, 1/16, 1/32.
Code Rate   1/2, 2/3, 3/4, 5/6, 7/8.
Constellation   QPSK, 16-QAM, 64-QAM.
Spectral Inv.   ON, OFF.

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[1]Option on request.

RF Output (DVB-T)
  Type   1 multiplex DVB-T.
  Connector   75 Ω F-Type, Female.
  Frequency margin   Adjustable frequency between 474 and 875 MHz, 1 Hz step. (see Options for VHF band output).

Power level (average)   89 dBμV approx., without attenuation.
Variable attenuation from 0 to 33dB approx., 1 dB step.
Frequency stability   10 ppm.
MER   > 37 dB.
  Phase noise SSB   -87 dBc/Hz @ 2 kHz.

Configuration   Through the **DT-800** Control Module in local (keypad) or remote mode (PC). (See DT-800).
Power supply   Via the **DT-800** Control and Power module.
Connector   JST B08P-XL-HDS (Connecting Cable supplied with the DT-800 module).

Voltage and highest
Consumption   +12V 0,99 A;
+5 V 0,67 A.

Operating environmental conditions
Altitude   Up to 2000 m.
Temperature range   From 5 °C to 50 °C.
Max. Relative humidity   80 % (up to 31 °C), decreasing lineally up to 20 % at 50 ºC.
Mechanical features
Dimensions   W. 50 x H. 262 x D. 230 mm.
Weight   1.17 kg.
Mounting   Using DT-900 rack/wall mounting frame.

Included accessories
1 x CC024   BNC/BNC Cable 25 cm.
1 x CC027   BNC/BNC Cable 50 cm.
4 x 0 CO6718   Connector Adapt Aero BNC-H/RCA-M.
1 x 0 MI1714   Instruction for assembly and connection.
1 x 0 MI1934   Menu Tree.
1 x 0 DG0089   Quick configuration guide.

Options
DT-504B-V	VHF option.
Output frequency	From 170 to 650 MHz.

DT-504B-S	ASI option.
TS Output	
Type	1 ASI-TS output.
Connector	BNC female, 75 Ω.
Packets	TS Packets of 188 bytes length.

DT-504B-CO01S	6 MHz option.
Channel Bandwidth	6, 7 and 8 MHz

Minimal configuration needed
1 x DT-800	Power and Control Module
1 x DT-900	Sub-rack framework to install in a rack or on a wall.

RECOMMENDATIONS ABOUT THE PACKING

It is recommended to keep all the packing material in order to return the equipment, if necessary, to the Technical Service.

2 SAFETY RULES ⚠

2.1 General

∗ **The safety could not be assured if the instructions for use are not closely followed.**

∗ Use only with other DT series modules and for power supply and Control those indicated at the Specifications.

∗ Remember that voltages higher than **70 V DC** or **33 V AC rms** are dangerous.

∗ Use this instrument under the **specified environmental conditions**.

∗ The user is not allowed to perform changes inside the equipment. Any change on the equipment must be done exclusively by specialized staff.

∗ Do not obstruct the ventilation system of the equipment.

∗ Use appropriate low-level radiation cables for input / output signals, especially on high level signals.

∗ Follow the **cleaning instructions** described in the Maintenance paragraph.

∗ Symbols related with safety:

⎓	DIRECT CURRENT	│	ON (Supply)
∿	ALTERNATING CURRENT	○	OFF (Supply)
⩘	DIRECT AND ALTERNATING	▣	DOUBLE INSULATION (Class II protection)
⏚	GROUND TERMINAL	⚡	CAUTION (Risk of electric shock)
⏛	PROTECTIVE CONDUCTOR	⚠	CAUTION REFER TO MANUAL
⏄	FRAME TERMINAL	⬛	FUSE
▽	EQUIPOTENTIALITY	♻ ⌧	EQUIPMENT OR COMPONENT TO BE RECYCLED

2.2   Maintenance

2.2.1 Cleaning Recommendations

CAUTION

To clean the cover, take care the instrument is disconnected.

CAUTION

Do not use scented hydrocarbons or chlorized solvents. Such products may attack the plastics used in the construction of the cover.

The cover should be cleaned by means of a light solution of detergent and water applied with a soft cloth.

Dry thoroughly before using the system again.

CAUTION

Do not use for the cleaning of the front panel and particularly the viewfinders, alcohol or its derivatives, these products can attack the mechanical properties of the materials and diminish their useful time of life.

3 NAVIGATION AND EDITION OF VALUES

3.1 Control Module

The **DT-800** control module configures the **DT-504B** module:

1.- After assembling and connecting, turn on the **DT-800**. After scanning, check the **DT-504B** module appears in the list of modules shown on the screen.

2.- Press **ENTER** ENTER to get into the **Password** option and enter the access password (password by default "2008"). If the password is right you will access to the configuration menu.

3.- Use **RIGHT** ▷ or **LEFT** ◁ to move among modules, until finding the **DT-504B**. The LED "**Program**" of the **DT-504B** module should be flickering when the module appears on screen.

4.- Press **ENTER** ENTER to get into the configuration option of the **DT-504B**.

For more information, refer to the manual supplied with the **DT-800** unit control.

3.2 Navigating through the configuration menu

- Press the **LEFT** ◁ or **RIGHT** ▷ key to move between menu options.

- To get into a menu option, press the **ENTER** ENTER or **DOWN** ▽ key.

- To validate a change and exit, press the **ENTER** ENTER key.

- To exit without validating press the **ESCAPE** ESC key.

3.3 Editing a numeric field

1.- Press the **ENTER** ENTER key to get into a menu option.

2.- Press the **RIGHT** ▷ or **LEFT** ◁ key to move the cursor between digits. At the right of the screen, a number shows in what position the cursor is (units, tens, hundreds or thousands).

3.- To change a digit press the **UP** △ or **DOWN** ▽ key.

4.- After editing the numeric field, press the **ENTER** [ENTER] key to confirm and exit the option.

WARNING!

To VALIDATE a change you should press the ENTER [ENTER] or UP △ key. If you press the ESCAPE [ESC] key, the change will not be accepted.

3.4 Editing a text field

1.- Press the **ENTER** [ENTER] key to get into a menu option.

2.- At the right of the screen, there is a letter and a number. The number means the position of the character in the word you are editing. The letter next to the number means the type of character you are using ("A" for capital letters, "a" for small letters, "@" for symbols and "1" for numbers).

3.- Press the **RIGHT** ▷ or **LEFT** ◁ key to move between characters in the word. To delete a character press the **RIGHT** ▷ or **LEFT** ◁ key for one second.

4.- To change a character, press the **UP** △ or **DOWN** ▽ key. To change the type of character (capital letters, small letters, symbols or numbers) press the **UP** △ or **DOWN** ▽ key for one second.

5.- After editing the word, press the **ENTER** [ENTER] key to validate the word and exit the option.

4 DT-504B CONFIGURATION

The main menu of the **DT-504B** module allows you to configure each one of the elements that make-up the module. The main menu has the following options:

- **ENCODER1**
- **ENCODER2**
- **ENCODER3**
- **ENCODER4**
- **MULTIPLEXER**
- **MODULATOR**
- **SAVE**
- **FIRMWARE VERSION**

Next, each option is explained in detail.

4.1 ENCODER

The **DT-504B** module has 4 encoders to digitize the signal. Each encoder, numbered from 1 to 4, has its own configuration menu but the options are the same for each module. Next, the menu options of an encoder are explained:

- **Service Name**.
  Allows you to assign a name to the Audio / Video service that is being digitized by the encoder. It is a text field.

- **Service ID**.
  Allows you to edit the service identifier that is being digitized. It is a numeric field.

- **Video Status**.
  Allows you to enable or disable the video component of the signal that is being digitized.

- **Video PID**.
  Allows you to edit the packet identifier of the video component in the transport stream. It is a numeric field.

- **Audio PID**.

  Allows you to edit the packet identifier of the audio component in the transport stream. It is a numeric field.

- **PMT PID**.

  Allows you to edit the packet identifier of the PMT (Program Map Table). The PMT describes what PIDs have the most important details. It is a numeric field.

- **Bitrate**.

  Allows you to know how many signal bitrate (in kilobits per second) is being transmitted (audio+video+additional data). It is an "only read" field.

- **Audio Bitrate**.

  Allows you to select the bitrate (in kilobits per second) of the audio codified signal. Available values are between 32 and 384 kbits/s.

- **Audio Sensitivity**.

  Allows you to select the maximum level of audio input. Available values are 0,5 Vpp and 1 Vpp.

- **Audio Mode**.

  Allows you to select the audio output. Available options are Stereo, Mono, Dual and Joint Stereo.

- **Aspect ratio.**

  Allows you to change the aspect ratio of the output image. Available options are 4:3 and 16:9.

- **Video std**.

  Allows you to select the television broadcasting system of the input signal. Available options are PAL or NTSC.

- **Service Type**.

  Allows you to select the service type that is being digitized. Available options are Digital TV or Digital Radio.

4.2 MULTIPLEXER

Multiplexer configuration options are:

- **Network Name**.
  Allows you to assign a name to the network distribution. It is a text field.

- **Network ID**.
  Allows you to edit the identifier number of the network where the signal is distributed. It is a numeric field.

- **Orig. Net. ID**.
  Allows you to edit the number that identifies the original network. It is a numeric field.

- **TS ID**.
  Allows you to edit the number that identifies the transport stream. It is a numeric field.

4.3 MODULATOR

Modulator configuration options are:

- **Frequency**.
  Allows you to edit the frequency of the output signal. It is a numeric field.

- **Attenuation**.
  Allows you to adjust the power level of the output signal (in dB). It is a numeric field.

- **FFT Mode**.
  It is the transmitting mode of the signal. Select among available values (2 K or 8 K).

- **Guard Interval**.
  It is the security margin used to ensure that distinct transmissions do not interfere with one another. Select among available values (1/4, 1/8, 1/16, 1/32).

- **Constellation**.
    It is the constellation used to modulate and transmit the signal. Select among available values (QPSK, 16-QAM, 64-QAM).

- **Code Rate**.
    Select the suitable code rate. Select among available values (1/2, 2/3, 3/4, 5/6, 7/8).

- **Channel BW**.
    It is the bandwidth of the channel. Select among available values (7 and 8 MHz; 6 MHz option on request).

4.4   Another Options:

- **Save**.
    Stores all changes made and validated.

    Press **ENTER** [ENTER] to **CONFIRM** you want save changes.

WARNING!
If you do not save the changes made, you will lose them after turning off the control module!

- **Firmware Version**.
    Shows the firmware version of the module.