Televes®

T.OX SERIES

Ref. 563805

EN **HDMI ENCODER/MODULATOR - Dual HDMI Component/IP to QAM/IP**

QUICK INSTALLATION GUIDE

Safety instructions

Caution Statements

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Only use attachments/accessories specified by the manufacturer.
10. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/ apparatus combination to avoid injury from tip-over.
11. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Warning

- Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

Safe operation

- Should any liquid or object fall into the equipment, please refer to qualified personnel for service.

Safe installation

- Ambient temperature should not be higher than 95°F.
- Do not place the equipment near heat sources or in a highly humid environment.
- Do not place the equipment in a place where it can suffer vibrations or shocks.
- Please allow air circulation around the equipment.
- Do not place naked flames, such as lighted candles on or near the product.

Simbology

Equipment designed for indoor use.

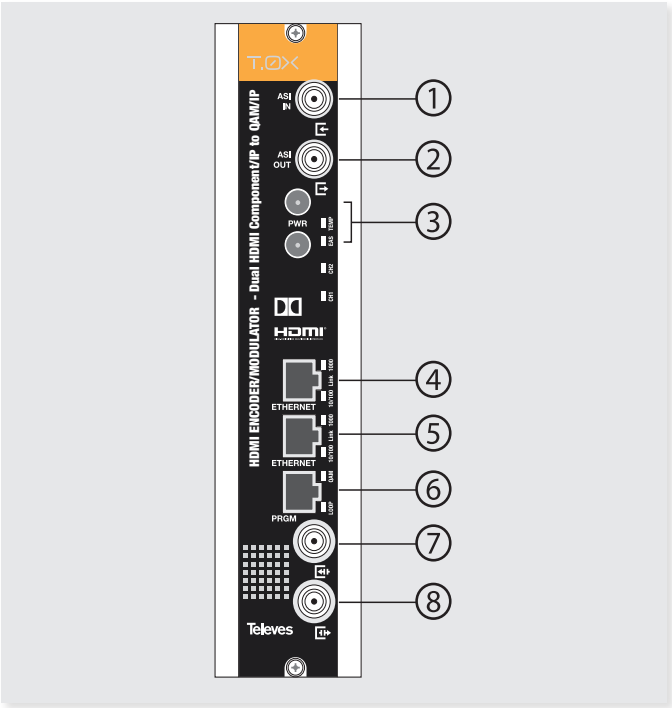
The equipment complies with the CE mark requirements.

This symbol indicate the maximum and minimum temperature limits at which the equipment shall be used.

Responsible party: **Televes USA LLC.** 16596 E. 2nd Avenue Aurora, CO 80011 USA Telephone: +1 (720) 379 3748 televes.usa@televes.com
Manufacturer: Televes S.A.U. Rúa B. de Conxo, 17 - 15706 Santiago de Compostela, A Coruña. Spain www.televes.com

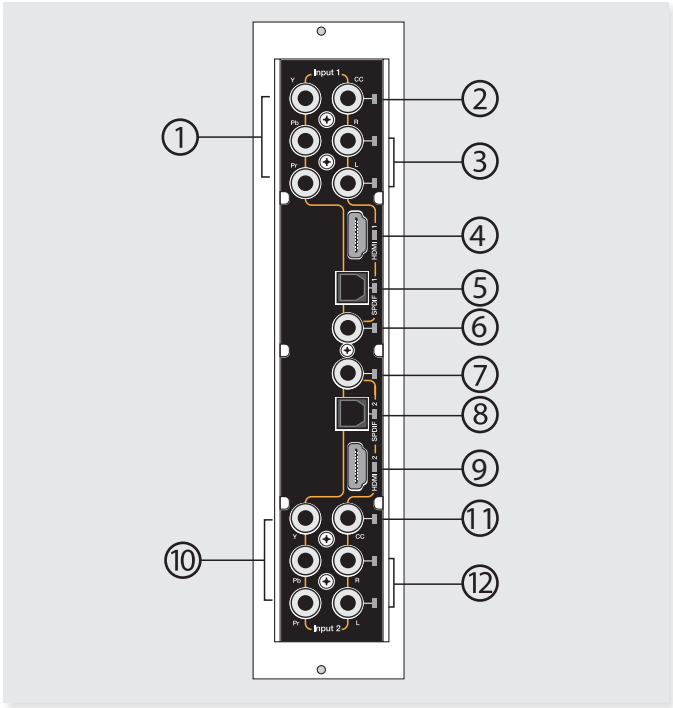
Description of connectors

Front view



1.- ASI input
2.- ASI output
3.- Power connectors
4.- Ethernet connector
5.- Ethernet connector
6.- Programmer connector
7.- RF loop through input
8.- RF output

Rear view



1.- YPbPr component input. Channel 1
2.- Closed Caption (CC) input. Channel 1
3.- Analog (L/R) audio input. Channel 1
4.- HDMI® input. Channel 1
5.- SPDIF digital optical audio input. Channel 1
6.- SPDIF digital coaxial audio input. Channel 1
7.- SPDIF digital coaxial audio input. Channel 2
8.- SPDIF digital optical audio input. Channel 2
9.- HDMI® input. Channel 2
10.- YPbPr component input. Channel 2
11.- Closed Caption (CC) input. Channel 2
12.- Analog (L/R) audio input. Channel 2

LED indicators

Front LED alarms	TEMP	Color	Internal temp	Comment
		Solid green	Normal	Safe
		Slow blink orange	High	Warning
		Fast blink red	Very High	Danger
	CH1 – CH2	Color	Channel status	Comment
		Off	Disabled	Channel disabled
		Solid green	Lock	Input locked and unit encoding audio/video.
		Solid red	Unlock	Input unlocked and unit not encoding audio/video.
		Blinking red	Boot	Unit starting up.
	OUTPUT	Color	Output mode	Comment
		Solid green	Normal	Output RF channel is ON, broadcasting audio/video (normal mode).
		Slow blinking green	Carrier wave, null, or muted	Output RF channel is OFF or in an alternate signal mode.
		Solid orange/red	Normal	Config bitrate doesn't fit in output
	LOOP	Color	Output loop status	Comment
		Solid green	ON	Output loop-through enabled. Units may be daisy-chained using the internal combiner.
		Off	OFF	Output loop-through disabled. Units must be combined using an external combiner.
Back LED indicators	A/V inputs	Indicate the currently selected audio and video inputs and where the input signals should be connected.		

Installation

1. Install all units in the rack and connect them as shown. Each P.S.U. can power a maximum of 6 units, except in the case of using video resolutions of 1080p, in which only 5 units can be powered.

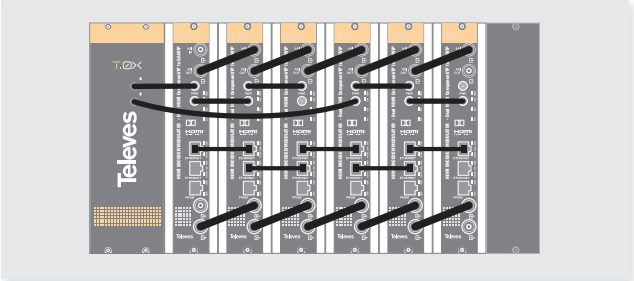


Fig. 1

2. Connect the audio and video input signals to the back of the modules.

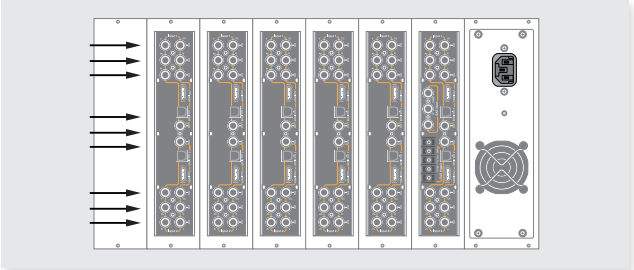


Fig. 2

3. If a network that provides IP addresses through DHCP is available, connect the encoders to the network as shown in fig. 3. If such a network is not available, then a computer will need to be connected as shown in fig. 4.

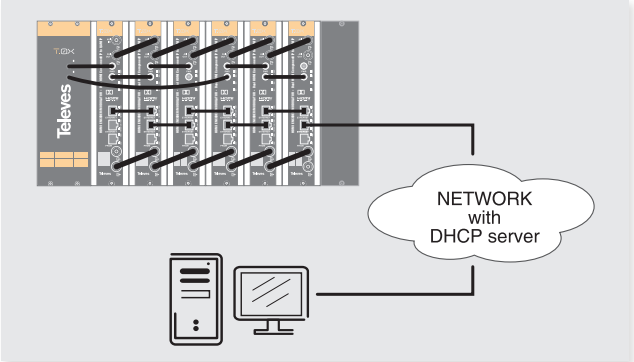


Fig. 3

4. Power on the units.

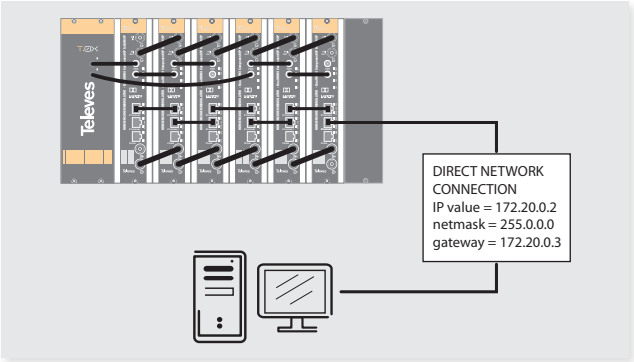


Fig. 4

5. Connect the programmer to each unit and set a unique number in the "# ID" field according to the order of installation of the units in the rack.

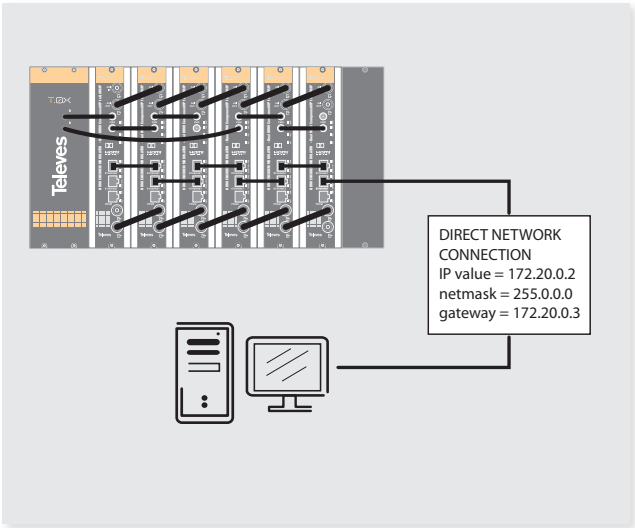


Fig. 5

6. Connect the programmer to a unit, usually the first one, and read the IP address.
Each unit can work as a master controller for the other units. All units can be configured by connecting to only one.

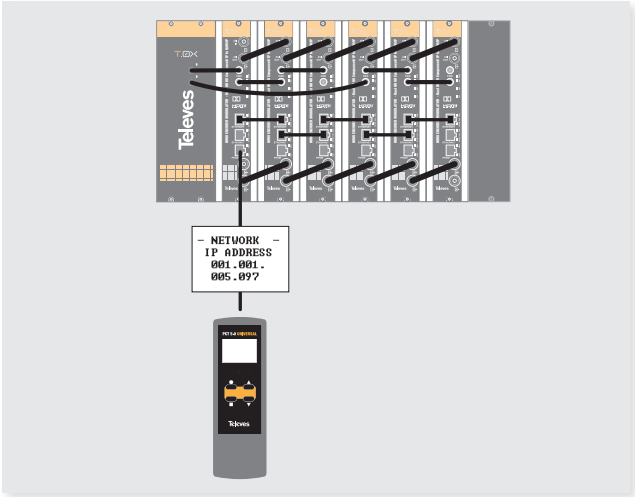


Fig. 6

7. If a network was connected in Step 3 then proceed to step 8. If not, set the address of you computer as follows:

IP value = 172.20.0.2
netmask = 255.0.0.0
gateway = 172.20.0.3

NOTE: *The default factory configuration of the units has an IP address in this range (it should be different for each unit). If a unit was ever provided an address before, manually or through DHCP, this unique address may no longer exist. Resetting to IP factory defaults, will return the original unique private address though.*

8. In your web browser, enter the IP address from Step 6 as the URL.
A login prompt will appear. By default the parameters are:

Login: encoder
Password: encoder

The **Status** > **Summary** page (fig. 7) should appear as the first page.
This provides a summary of all the units installed in the network and the units will be sorted by the number entered in Step 5.

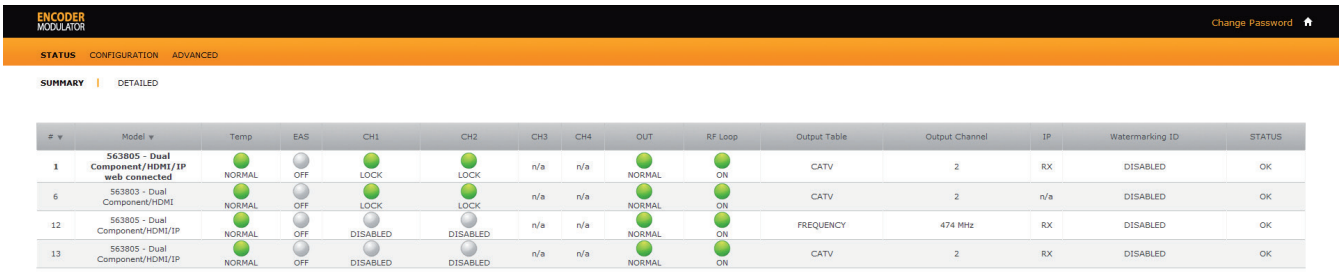


Fig. 7 - Status > Summary

Fig. 8 shows an example of a detailed status page.

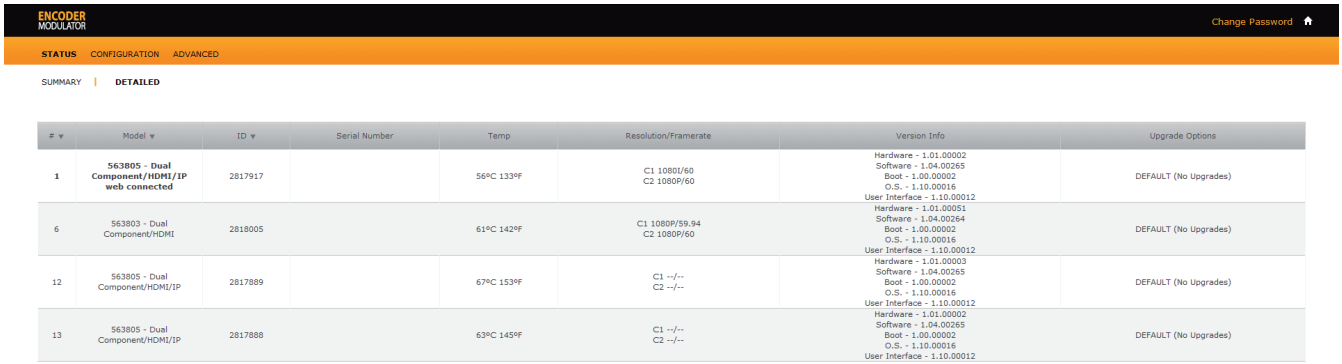


Fig. 8 - Status > Detailed

Note: Resolution/Framerate will indicate the output video resolution only if it is different form the input one.

9. Configure all units:

Select "CONFIGURATION". This page has 5 options, INPUT, TRANSPORT, OUTPUT, IP and NETWORK, shown in figures 9 to 14.

The last column of each configuration page is "Select". Any changes made will be saved only in the units with the "Select" option checked when you click "Apply Selected" is applied to the five tabs that exist under the "Configuration" menu.
Some items have a choice of automatic configuration. For example, the Network Configuration page allows you to change the number assigned in step 5 of the installation process.

The "Auto" option will request confirmation if the parameters of all units set in step 5 have been changed. The order will probably not correspond with the position of the units in the rack.

9.1 INPUT

Configuration of the physical audio and video inputs. It is possible to downscale the input resolution, modify the video codec (MPEG-2 or H.264) or choose between frame or field encoding. If the input resolution is 1080p60/50 and the video is being encoded in MPEG-2 it is necessary to set the "Max Output Resolution" to 1080pHR. and frame/field encoding to "frame". In this setup the output resolution will be 1080P30/25.

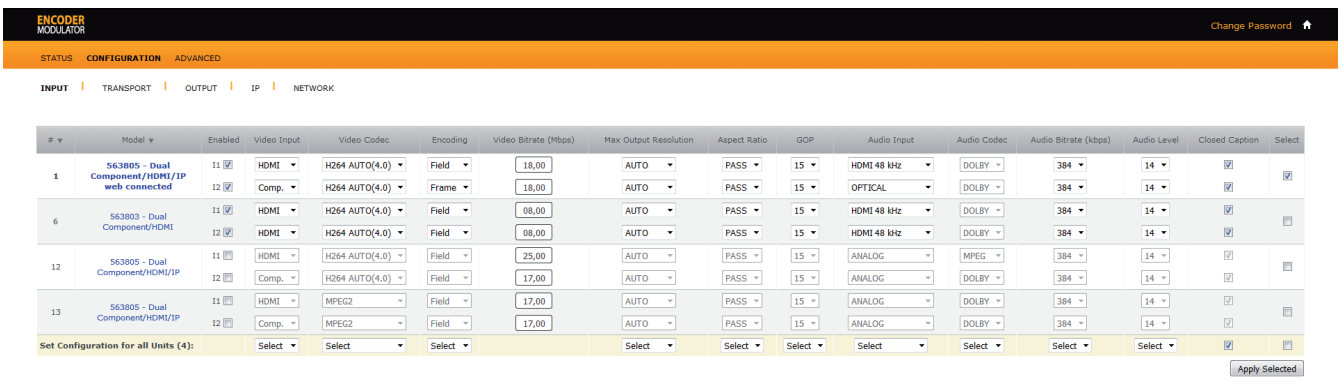


Fig. 9 - Input

9.2 TRANSPORT

Changing the parameters of the output Transport Stream. The TS ID, SID and VCNs of each service shall not overlap with those of another service the same unit.

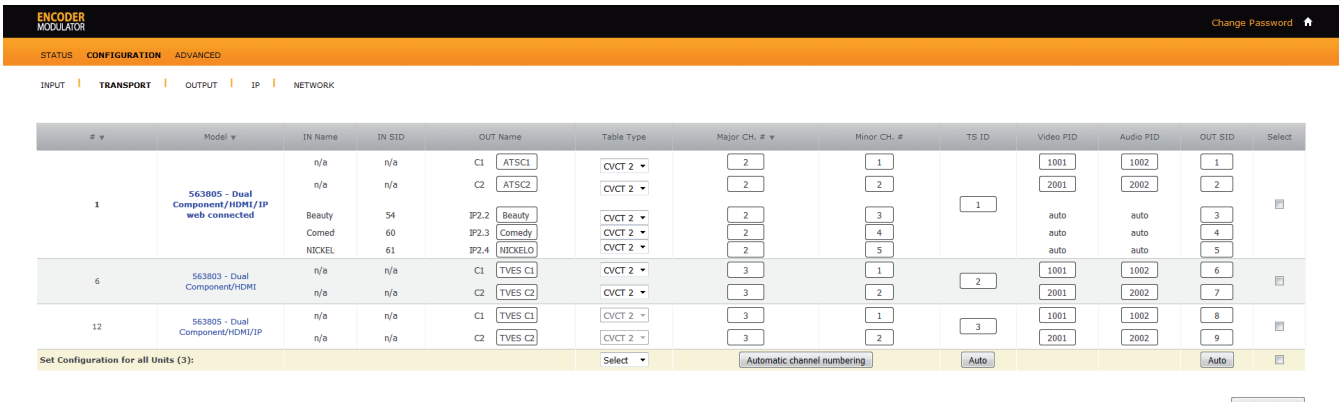


Fig. 10 - Transport

9.3 OUTPUT

Setting the RF output channel. The unit will restart if you switch between QAM A and QAM B.

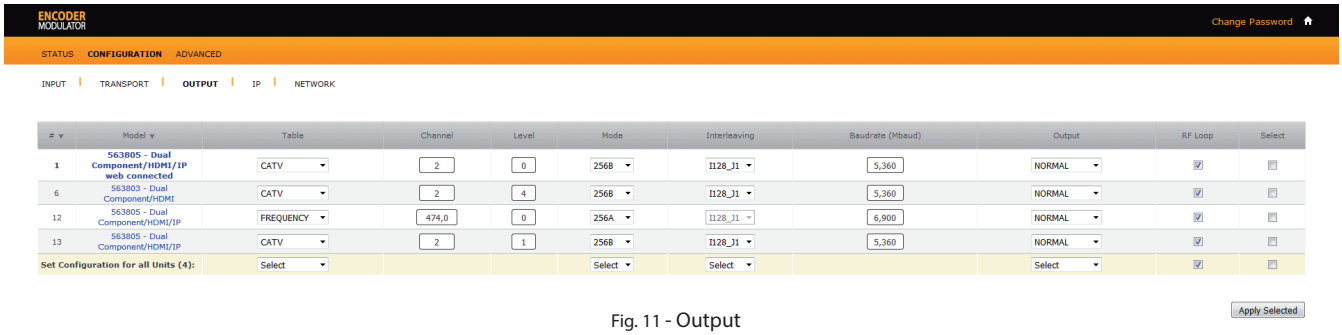


Fig. 11 - Output

9.4 IP

The unit can work in 3 different IP modes: Input, Output and Disabled.

Input: The unit needs to be set in Input mode and have the IP addresses, ports and standard (DVB or ATSC) configured.

Multicast and Unicast IP addresses are allowed.

These parameters can be modified on the IP tab (fig. 12) and then click " Apply Selected"

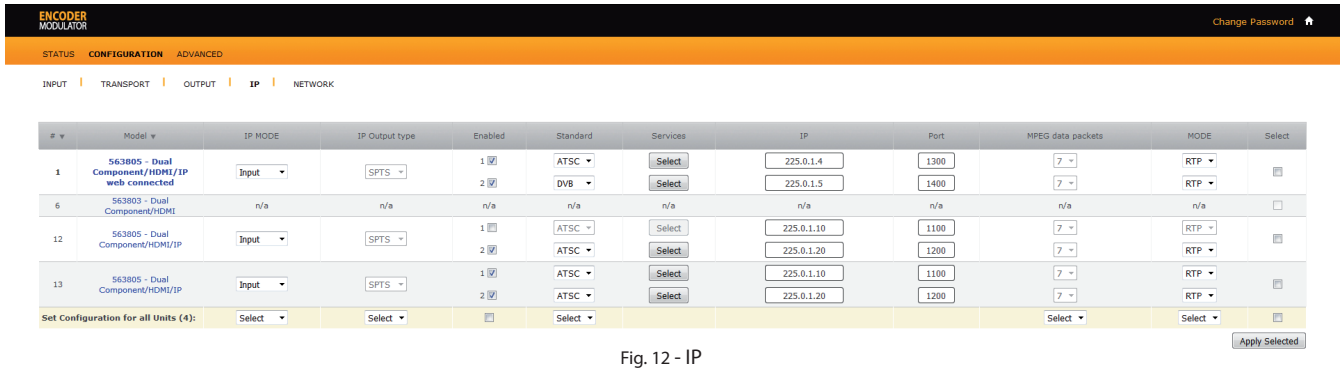


Fig. 12 - IP

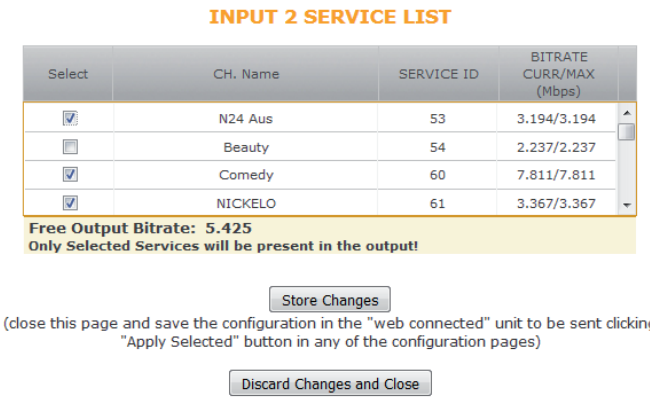


Fig. 13 - IP (2)

It is not possible to configure two equal IP adresses and ports, the Web will warn you that it is not a valid configuration and will not let you apply settings.
Pressing the "Select" button associated to each IP address, a window with the available services will appear.
If no services are shown wait until the end of the scan.

Select the services to transmit through RF paying attention to the free output bitrate and click on "Store Changes".

Finally, to apply the configuration, click "Apply Selected". The selected services will appear in the "Transport" tab next to the services of the physical inputs.

Output: To stream the services of the physical inputs via IP, the unit must be set in Output mode and have the IP addresses, ports, IP output type (SPTS or MPTS) and standard (DVB or ATSC) configured. Multicast and Unicast IP addresses are allowed.

In SPTS mode, the physical input 1 will be streamed through the IP1 and physical input 2 through the IP2.
In MPTS mode, the two physical inputs will be streamed through a single IP.
If any of the physical inputs are disabled, the corresponding IP service will not have transport.

9.5 NETWORK

Configuring network options. Both the IP address and the networkmask may only be changed if DHCP mode is disabled (fig. 14).

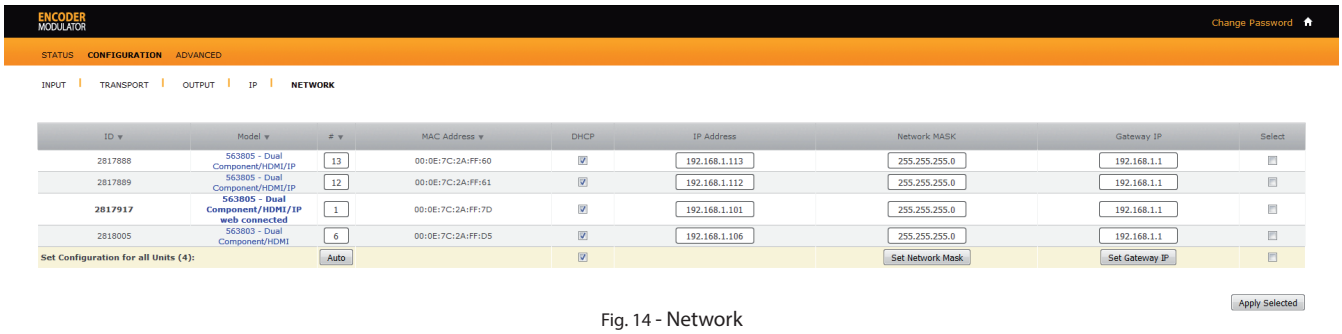


Fig. 14 - Network

10. Complete configuration window:

To change any encoder value from a single window, select "CONFIGURATION". Click on the name of the unit and the page shown in figure 15 is displayed. From this page, you can modify any parameter settings for the selected unit.

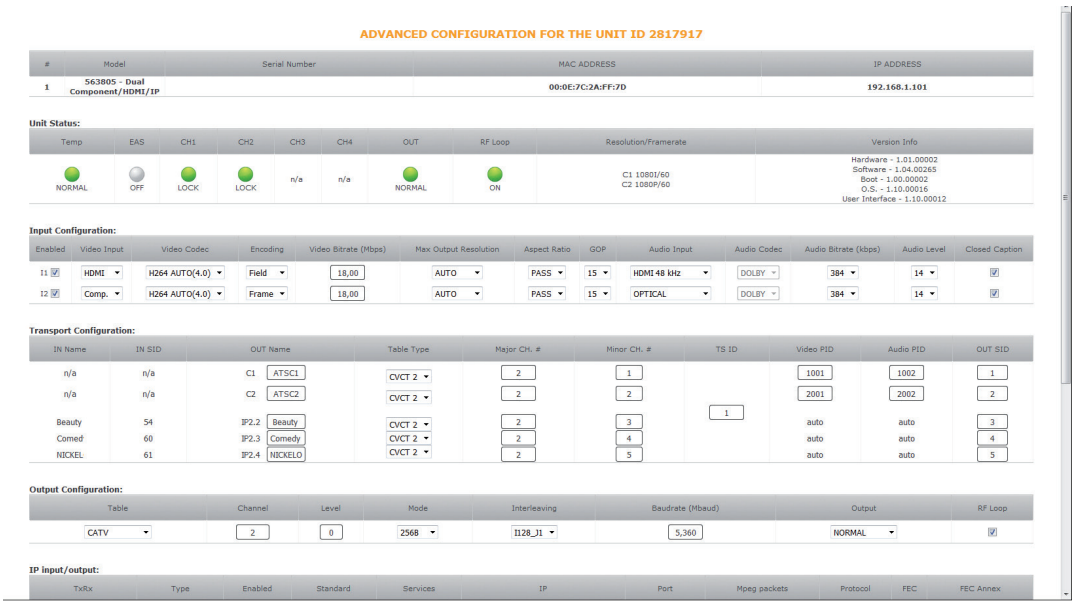
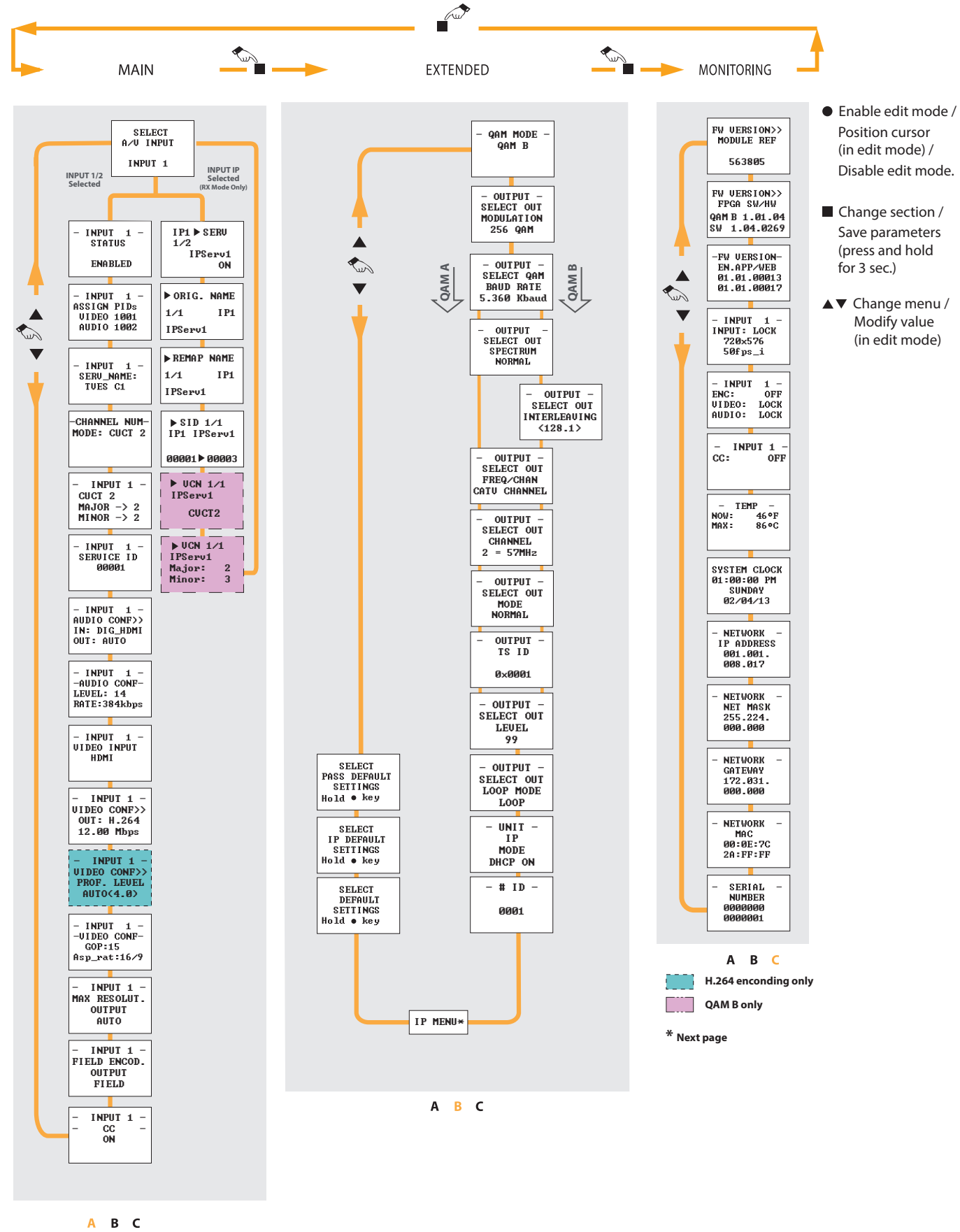


Fig. 15 - Advanced configuration

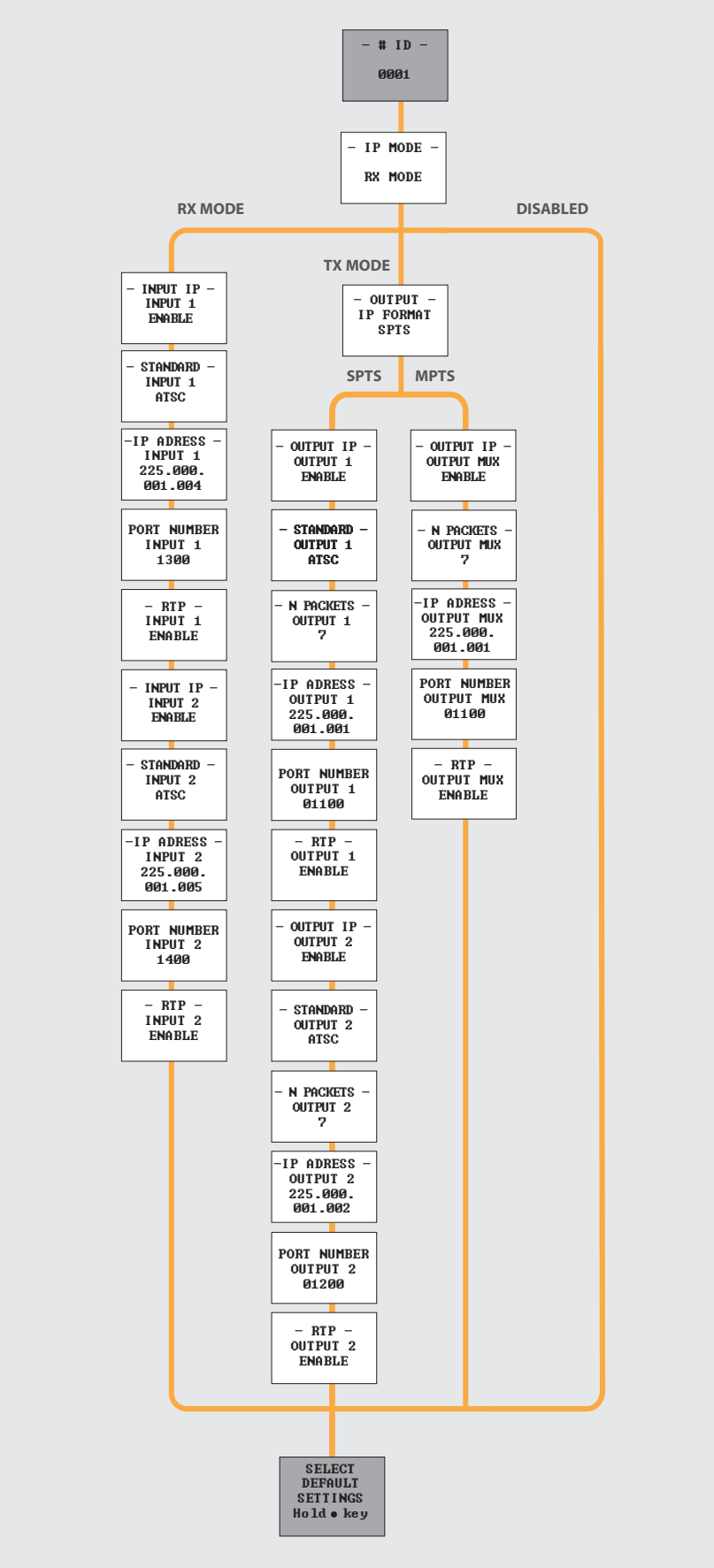
Menu flow chart

For programming Unit operation



IP menu

For programming Unit operation



Technical specifications

Reference				563805
INPUTS	VIDEO	Connectors		2 sets - 3x RCA for Video (Y, Pb, Pr)
	AUDIO	Connectors		2 sets - 2x RCA for Analog Audio (L, R)
				2 sets - 1x RCA for Digital Audio
				2 sets - 1x Toslink for Digital Audio (Optical)
	VIDEO + AUDIO	Connectors		2 sets - 1xHDMI®
	CLOSED CAPTIONING	Connectors		2 sets - 1x RCA (CC in)
	ASI	Connectors		1x BNC
		Format		DVB-ASI
		Standard		wETSI EN 50083-9
	IP	Connectors		2x RJ45 (Switch Gigabit)
		Formats		SPTS or MPTS (UDP/RTP)
ENCODING PROFILE	VIDEO	Output Format		MPEG-2 / H.264(4.0, 4.1, 4.2, 5.1, 5.2) (1)
		Input Resolution		480i, 480p, 576i, 576p, 720p, 1080i &1080p (2) Supports auto-scan for input resolution
		Input Framerate		50Hz, 60Hz (all input Resolutions), 24Hz (only 1080p Input Resolution)
		Output Resolution		Same as input (Auto) or maximum selected output resolution
		Output Aspect Ratio		4:3, 16:9, and pass through
		Output GOP		10, 12, 15, 16, 18, 20, 24 or 30
		Output Transport rate		Variable
		Output Video bit rate		Variable
	AUDIO	Output format		Dolby® Digital AC-3 or MPEG1 Layer 2
		Output Sampling rate	kHz	48, 44.1
		Output bitrate		Variable
	CLOSED CAPTIONING	Format		EIA-608, EIA-708 (3)
OUTPUT	QAM	Connectors		1x "F" Female
		Modulation standards		ITU-A: 16, 32, 64, 128, 256, 512, 1024 QAM
				ITU-B: 64, 256 QAM
		Frecuency Range	MHz	5 - 1002 (supports return path applications)
		Channel plans		CATV STD, T_CHANNELS, Broadcast, Frequency
		Max output level	dBmV	+50 (+40 with loop-through)
		MER	dB	>40 (typ)
		Spurious	dBc	-60
		Impedance	Ω	75
		I/Q Phase Error	°	<1
		I/Q Amplitude Imbalance	%	<1
	ASI	Connectors		1x BNC
		Format		DVB-ASI
	IP	Connectors		2x RJ45 (Switch Gigabit)
		Format		SPTS or MPTS (UDP/RTP)
PSI PARAMETERS		Transport Stream ID		Editable
		Original Network ID		Editable
		Network ID		Editable
		Virtual Channel Number		Editable
		NIT Version		Manual / Automatic
		SDT Version		Manual / Automatic
		Network Name		Editable
		Service PID		Editable
		Service Name		Editable
		Service ID		Editable
MONITORING / CONTROL		Local control		Full configuration with LCD handheld programmer
		Local monitoring		LOOP status LED
				QAM status LED
				TEMP status LED
				CH1/CH2 status LEDs
				wEthernet status LEDs
		Remote monitoring		Centralized web based remote control, management, alarms, and software upgrades
		Control		Daisy-chain integrated ethernet switch
GENERAL		Power supply	V⎓	24
		Power disipation	W	<22.8
		Operating Temperature	ºF / ºC	32 to 95 / 0 to 35

The technical specifications are defined for an ambient temperature of 35 ºC (95 ºF). It shall always be installed with forced ventilation.

(1) The reference 563805 is intended to be used to feed several receivers utilizing only an HDMI source. The output quality of the image cannot be considered analogous as that of the original HDMI source.

(2) 1080p resolution is only supported with MPEG-4 video codec.

(3) For correct CC operation at the output, the maximum output resolution is set to "Auto" or the input and output resolution are both "i" or both "p" at the same framerate.

ENCODER DISCLAIMER

1. TELEVÉS states that the following references:

563803, 563805, 56380501, 56380502, 56380503, 56380504, 56380505, 56380506, 56380507, 56380508, 56380509, 56380510, 563831, 563832, 563833, 563852, 566001, 585301, 585401, hereinafter referred as "Encoder Equipment" or products.

have as sole purpose to provide a technical solution to the need to transfer audiovisual content, originally generated in a device provided with an HDMI® interface, to one or more receivers located at distances greater than 100 linear meters within a room or building. According to the currently available technology, it is not possible to conduct the HDMI® signal at that distance or greater to a multiplicity of receivers, except through a complex and commercially non-viable network deployment, which in no case could ensure the protection of the original audio visual content.

2. TELEVÉS, as the holder of an HDCP license, is not entitled to include in a product such as the aforementioned Encoder Equipment any interface, switch, plug, conductor, button, push-button or other equivalent software solution that allows the output of said content device HDCP decrypted in any analogous form.

3. In order, a) to comply with the license, and b) at the same time provide the purchaser of the product with a technical, legal and feasible solution for the transfer to a multiplicity of receivers at distances greater than 100 linear meters from the audiovisual signal transmitted with HDMI® interface and HDCP encryption, the Encoder Equipments do not allow the output of decrypted audiovisual content in a representation analogous to the HDMI format, but instead compresses the content of the audiovisual signal, converting it into MPEG format. This compressed format allows the transfer of the signal through the use of coaxial cables and its reception through the use of DVB-T / DVB-C / ISDB-T or similar analog tuning interfaces.

4. The user of the products may use the compressed audiovisual format, not analogous to the original HDMI content, in which any of the references cited as Encoders emits its output signal, solely and exclusively for the purpose and conditions defined as follows:

1st) In order to transfer the signal to content displays (monitors, televisions, projectors) located more than 100 linear meters from the one receiving the HDMI® signal with the HDCP encrypted content.

2º) Provided that the devices that allow the user to view content to which the signal is directed within the premises or building (monitors, televisions, projectors) allow normal viewing of HDMI® content while keeping HDCP encryption.

5. Any other use other than that defined in the previous paragraph is expressly prohibited. In particular, the user may not:

a) Reproduce the signal on content viewers not authorized to reproduce HDMI content while maintaining HDCP encryption; nor,

b) Carry out conducts or operations aimed at copying, manipulating or transforming, in whole or in part, the audiovisual signal emitted by the products listed in section 1.

6. The user will be solely responsible in the event of improper use of any of the Encoder Equipments or of the audiovisual signal emitted by them. The user will indemnify and hold TELEVÉS harmless, to the maximum extent permitted by applicable law, against any claim, action or claim, judicial or extrajudicial, from third parties, holders of intellectual or industrial property rights, derived from prohibited actions of in accordance with the previous provisions.

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