

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.



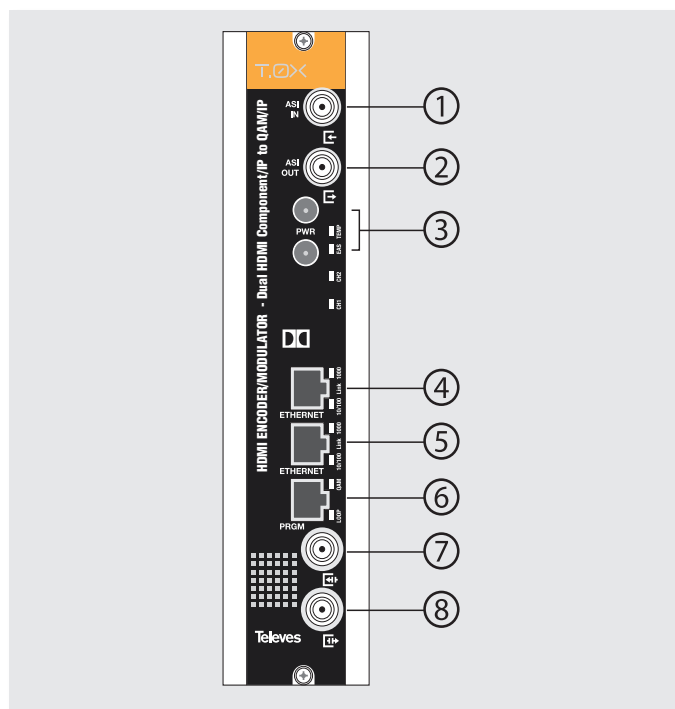
The equipment complies with the CE mark requirements.



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

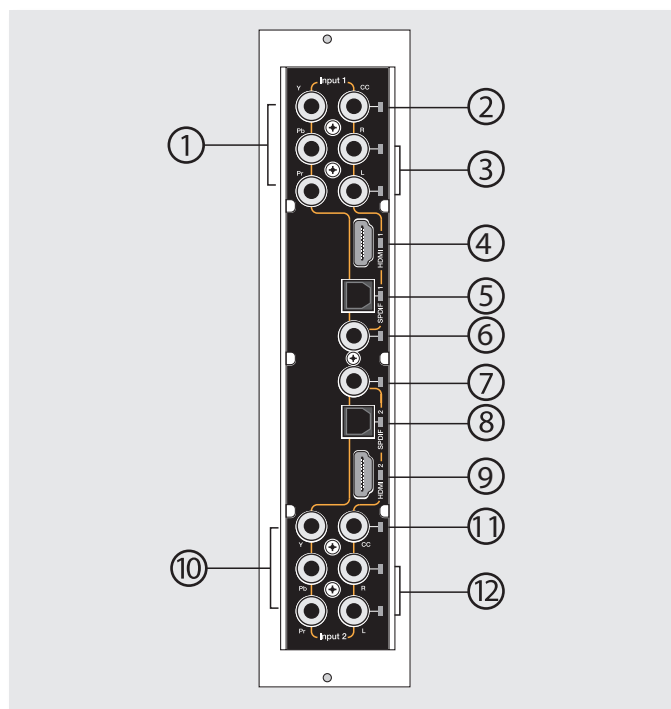
Description of connectors

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

		Color	Internal temp	Comment
		TEMP	Solid green	Normal
		Slow blink orange	High	Warning
		Fast blink red	Very High	Danger
Front LED alarms	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.

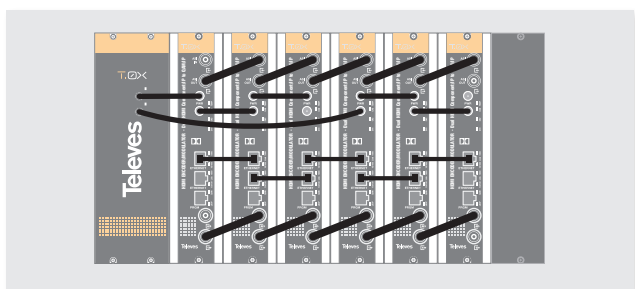


Fig. 1

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

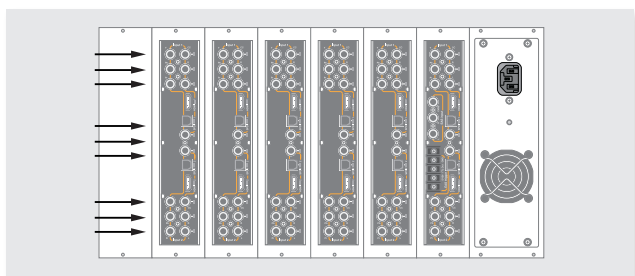


Fig. 2

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.

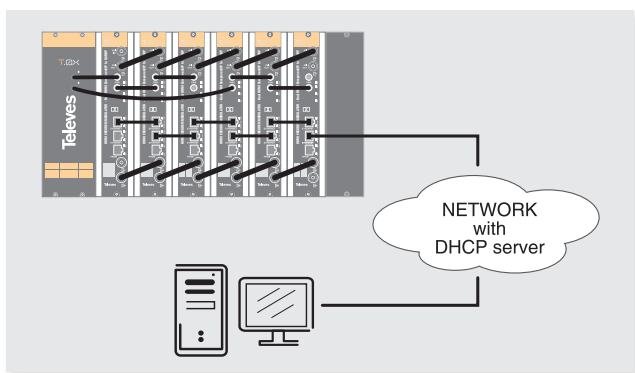


Fig. 3

4. Power on the units.

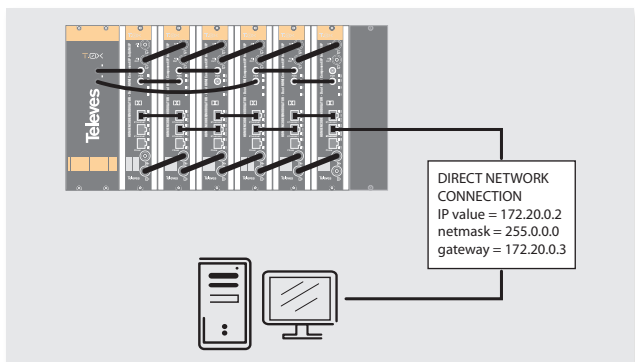


Fig. 4

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.

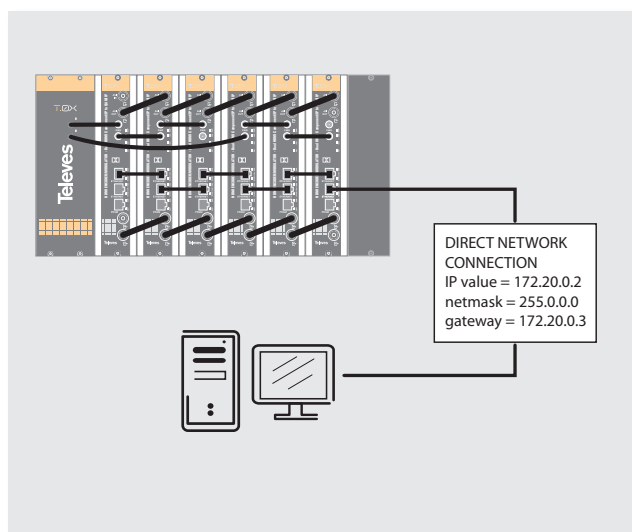


Fig. 5

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.

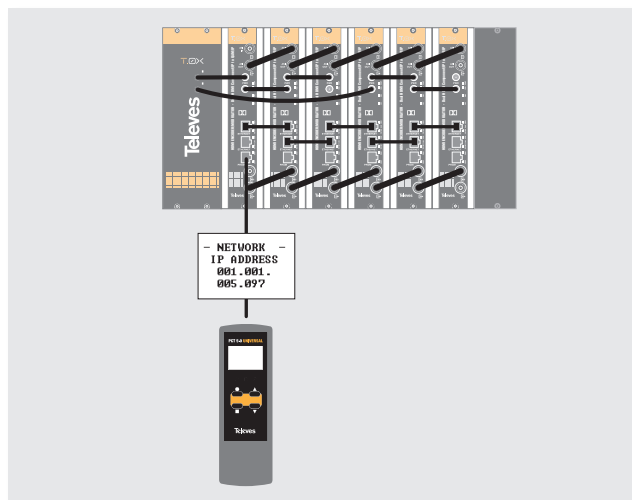


Fig. 6

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

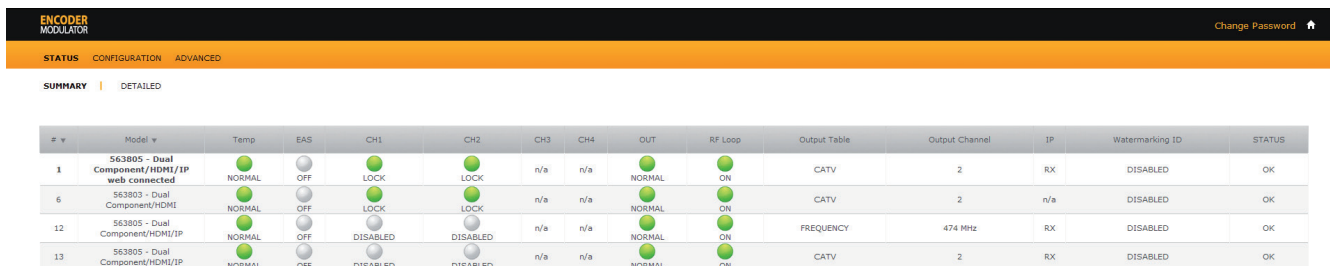
IP value = 172.20.0.2
netmask = 255.0.0.0
gateway = 172.20.0.3

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

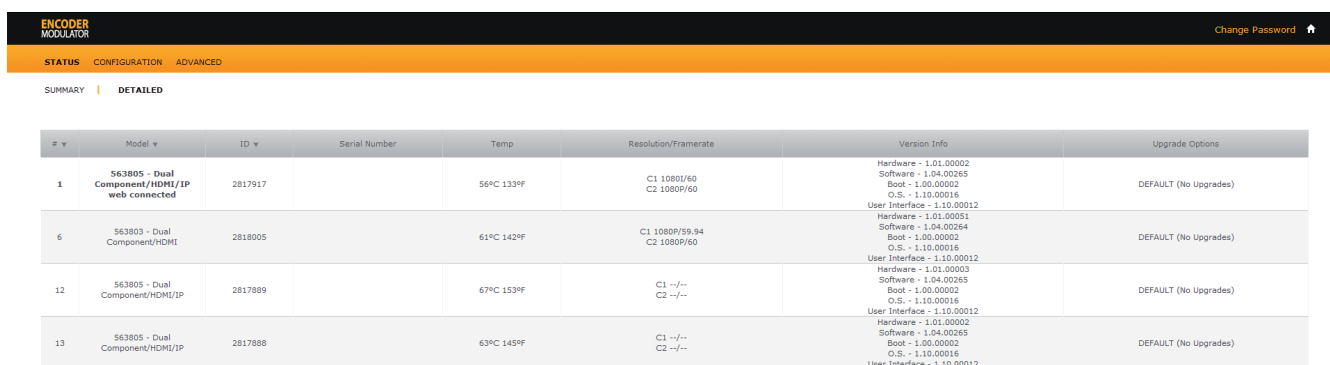
The **Status > Summary** page (fig. 7) should appear as the first page. This provides a summary of all the units installed in the network and the units will be sorted by the number entered in Step 5.



#	Model	Temp	EAS	CH1	CH2	CH3	CH4	OUT	RF Loop	Output Table	Output Channel	IP	Watermarking ID	STATUS
1	563805 - Dual Component/HDMI/IP web connected	NORMAL	OFF	LOCK	LOCK	n/a	n/a	NORMAL	ON	CATV	2	RX	DISABLED	OK
6	563803 - Dual Component/HDMI	NORMAL	OFF	LOCK	LOCK	n/a	n/a	NORMAL	ON	CATV	2	n/a	DISABLED	OK
12	563805 - Dual Component/HDMI/IP	NORMAL	OFF	DISABLED	DISABLED	n/a	n/a	NORMAL	ON	FREQUENCY	474 MHz	RX	DISABLED	OK
13	563805 - Dual Component/HDMI/IP	NORMAL	OFF	DISABLED	DISABLED	n/a	n/a	NORMAL	ON	CATV	2	RX	DISABLED	OK

Fig. 7 - Status > Summary

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



#	Model	ID	Serial Number	Temp	Resolution/Framerate	Version Info	Upgrade Options
1	563805 - Dual Component/HDMI/IP web connected	2817917		56°C 133°F	C1 1080i/60 C2 1080P/60	Hardware - 1.01.00002 Software - 1.04.00265 Boot - 1.00.00002 O.S. - 1.10.00016 User Interface - 1.10.00012	DEFAULT (No Upgrades)
6	563803 - Dual Component/HDMI	2818005		61°C 142°F	C1 1080P/59.94 C2 1080P/60	Hardware - 1.01.00051 Software - 1.04.00264 Boot - 1.00.00002 O.S. - 1.10.00016 User Interface - 1.10.00012	DEFAULT (No Upgrades)
12	563805 - Dual Component/HDMI/IP	2817889		67°C 153°F	C1 --/-- C2 --/--	Hardware - 1.01.00003 Software - 1.04.00265 Boot - 1.00.00002 O.S. - 1.10.00016 User Interface - 1.10.00012	DEFAULT (No Upgrades)
13	563805 - Dual Component/HDMI/IP	2817888		63°C 145°F	C1 --/-- C2 --/--	Hardware - 1.01.00002 Software - 1.04.00265 Boot - 1.00.00002 O.S. - 1.10.00016 User Interface - 1.10.00012	DEFAULT (No Upgrades)

Fig. 8 - Status > Detailed

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

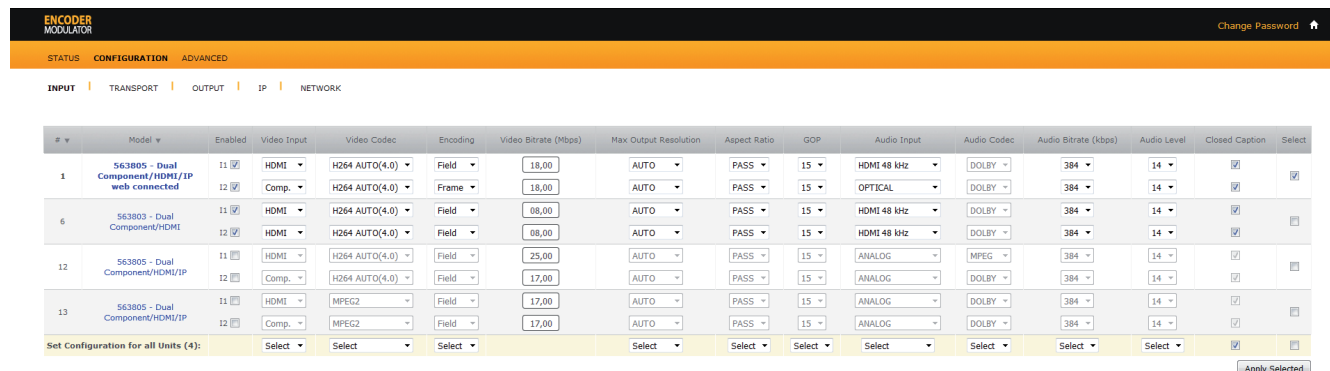
The last column of each configuration page is "Select". Any changes made will be saved only in the units with the "Select" option checked when you click "Apply Selected" is applied to the five tabs that exist under the "Configuration" menu.

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.



#	Model	Enabled	Video Input	Video Codec	Encoding	Video Bitrate (Mbps)	Max Output Resolution	Aspect Ratio	GOP	Audio Input	Audio Codec	Audio Bitrate (kbps)	Audio Level	Closed Caption	Select
1	563805 - Dual Component/HDMI/IP web connected	<input checked="" type="checkbox"/>	HDMI	H264 AUTO(4,0)	Field	18,00	AUTO	PASS	15	HDMI 48 kHz	DOLBY	384	14	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<input checked="" type="checkbox"/>	Comp.	H264 AUTO(4,0)	Frame	18,00	AUTO	PASS	15	OPTICAL	DOLBY	384	14	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	563803 - Dual Component/HDMI	<input checked="" type="checkbox"/>	HDMI	H264 AUTO(4,0)	Field	08,00	AUTO	PASS	15	HDMI 48 kHz	DOLBY	384	14	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input checked="" type="checkbox"/>	Comp.	H264 AUTO(4,0)	Field	08,00	AUTO	PASS	15	HDMI 48 kHz	DOLBY	384	14	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12	563805 - Dual Component/HDMI/IP	<input type="checkbox"/>	HDMI	H264 AUTO(4,0)	Field	25,00	AUTO	PASS	15	ANALOG	MPEG	384	14	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	Comp.	H264 AUTO(4,0)	Field	17,00	AUTO	PASS	15	ANALOG	DOLBY	384	14	<input type="checkbox"/>	<input type="checkbox"/>
13	563805 - Dual Component/HDMI/IP	<input type="checkbox"/>	HDMI	MPEG2	Field	17,00	AUTO	PASS	15	ANALOG	DOLBY	384	14	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	Comp.	MPEG2	Field	17,00	AUTO	PASS	15	ANALOG	DOLBY	384	14	<input type="checkbox"/>	<input type="checkbox"/>
Set Configuration for all Units (4):			Select	Select	Select	Select	Select	Select	Select	Select	Select	Select	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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

INPUT 2 SERVICE LIST

Select	CH. Name	SERVICE ID	BITRATE CURR/MAX (Mbps)
<input checked="" type="checkbox"/>	N24 Aus	53	3.194/3.194
<input type="checkbox"/>	Beauty	54	2.237/2.237
<input checked="" type="checkbox"/>	Comedy	60	7.811/7.811
<input checked="" type="checkbox"/>	NICKELO	61	3.367/3.367

Free Output Bitrate: 5.425
Only Selected Services will be present in the output!

Store Changes

(close this page and save the configuration in the "web connected" unit to be sent clicking "Apply Selected" button in any of the configuration pages)

Discard Changes and Close

Fig. 13 - IP (2)

It is not possible to configure two equal IP addresses 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).

ID	Model	#	MAC Address	DHCP	IP Address	Network-MASK	Gateway IP	Select
2817888	563805 - Dual Component/HDMI/IP	13	00:0E:7C:2A:FF:60	<input checked="" type="checkbox"/>	192.168.1.113	255.255.255.0	192.168.1.1	<input type="checkbox"/>
2817889	563805 - Dual Component/HDMI/IP	12	00:0E:7C:2A:FF:61	<input checked="" type="checkbox"/>	192.168.1.112	255.255.255.0	192.168.1.1	<input type="checkbox"/>
2817917	563805 - Dual Component/HDMI/IP web connected	1	00:0E:7C:2A:FF:7D	<input checked="" type="checkbox"/>	192.168.1.101	255.255.255.0	192.168.1.1	<input type="checkbox"/>
2818005	563805 - Dual Component/HDMI	6	00:0E:7C:2A:FF:D5	<input checked="" type="checkbox"/>	192.168.1.106	255.255.255.0	192.168.1.1	<input type="checkbox"/>
Set Configuration for all Units (4):		Auto		<input checked="" type="checkbox"/>		Set Network Mask	Set Gateway IP	<input type="checkbox"/>

Fig. 14 - Network

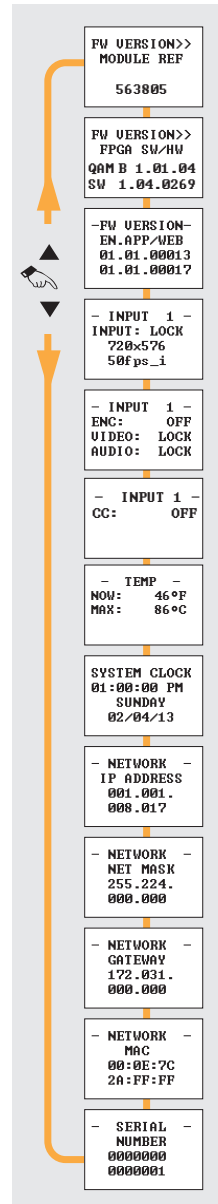
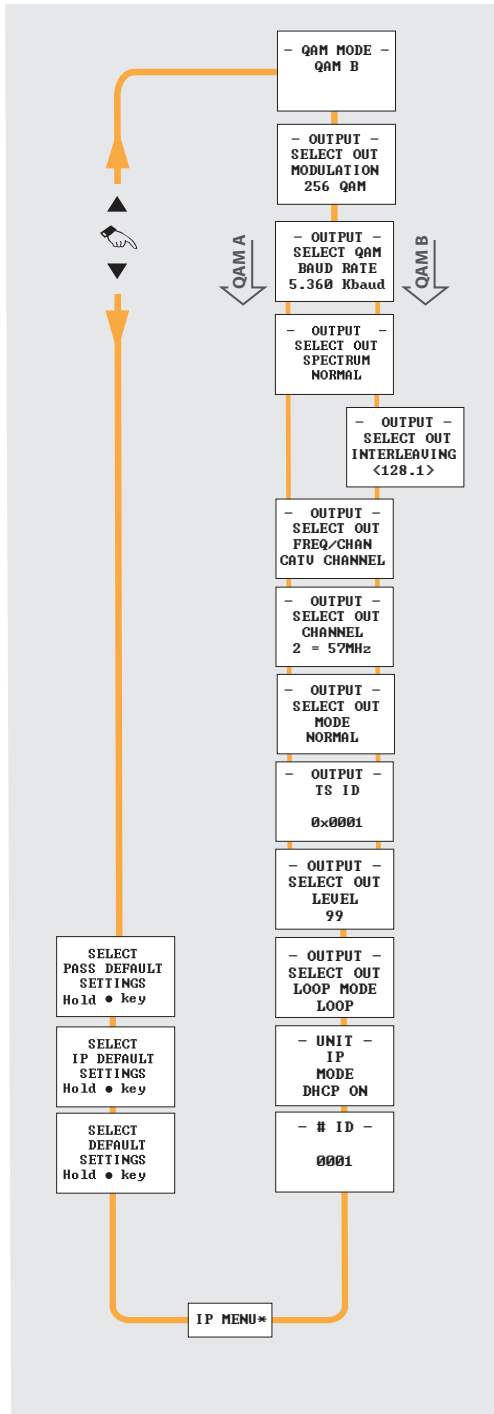
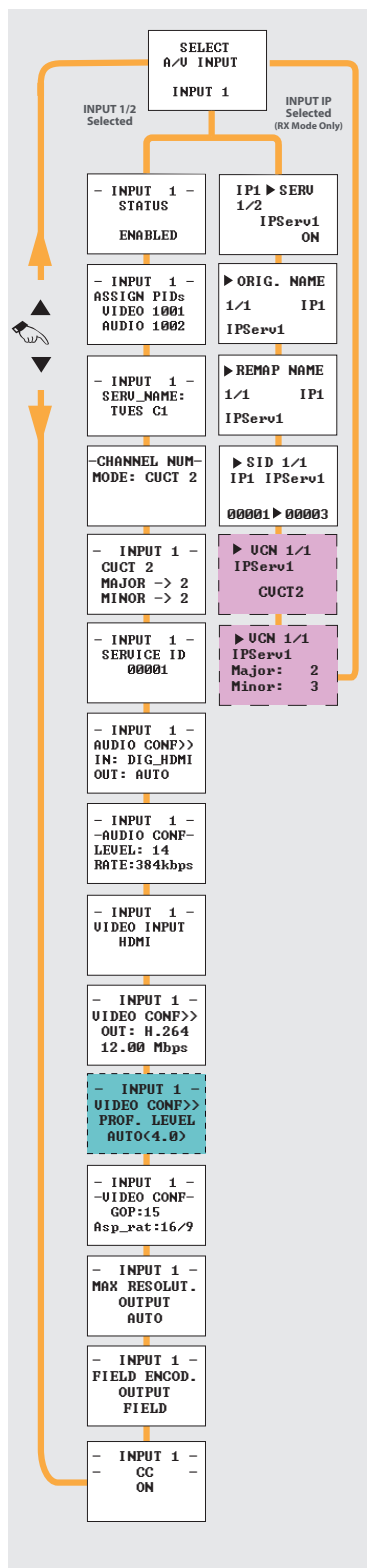
10. Complete configuration window:

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



- Enable edit mode / Position cursor (in edit mode) / Disable edit mode.
- Change section / Save parameters (press and hold for 3 sec.)
- ▲ ▼ Change menu / Modify value (in edit mode)

A B C

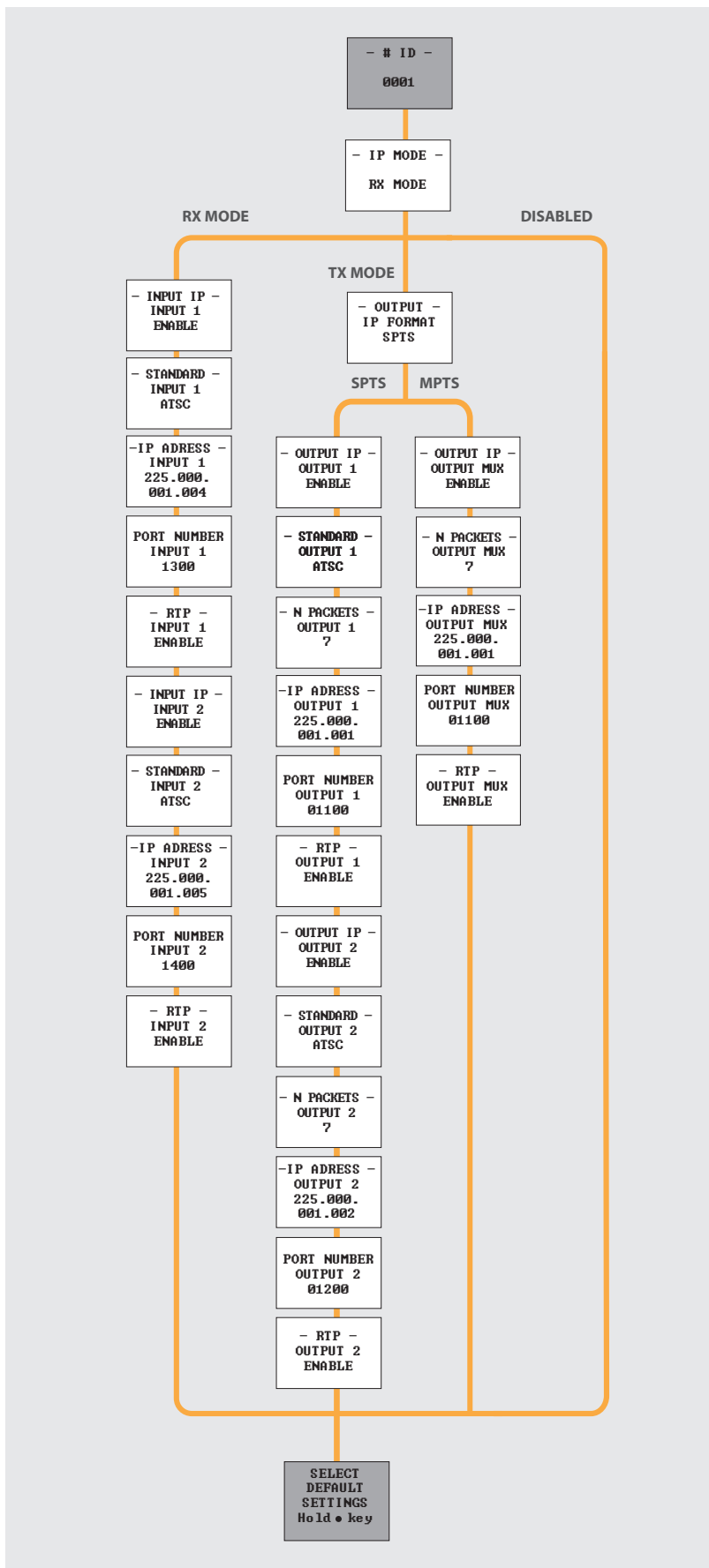
H.264 encoding only

QAM B only

* Next page

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)	
		Connectors	2 sets - 1x RCA for Digital Audio	
		Connectors	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		ETSI 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)	
		Input Resolution	480i, 480p, 576i, 576p, 720p, 1080i & 1080p ⁽¹⁾ 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 ⁽²⁾		
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	+55 (+43 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		
Remote monitoring	Centralized web based remote control, management, alarms, and software upgrades			
Control	Daisy-chain integrated ethernet switch			
GENERAL	Power supply	V _{DC}	24	
	Power disipation	W	<22.8	
	Operating Temperature	°F / °C	32 to 95 / 0 to 35	

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

(1) 1080p resolution is only supported with MPEG-4 video codec.

(2) 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.

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