

Televes®



T.OX SERIES

Refs. 563803, 563831

EN HDTV ENCODER/MODULATOR - Dual Component/HDMI to QAM
HDTV ENCODER/MODULATOR - Dual Component/HDMI to QAM (EAS)

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 113°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.



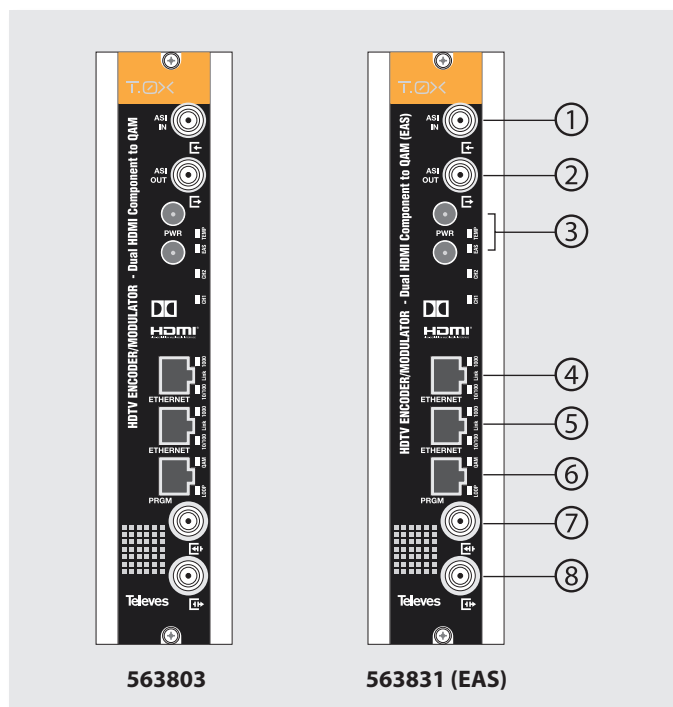
The equipment complies with the CE mark requirements.



The terms HDMI, HDMI High-Definition Multimedia Interface, HDMI Trade dress and the HDMI Logos are trademarks or registered trademarks of HDMI Licensing Administrator, Inc.

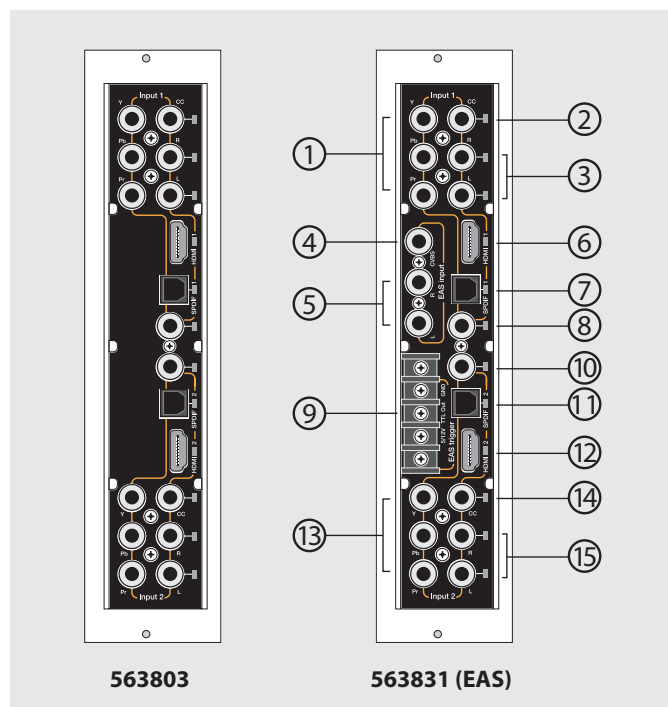
Description of connectors

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.- EAS CVBS input (563831 only)
- 5.- EAS L/R analog audio input (563831 only)
- 6.- HDMI® input. Channel 1
- 7.- SPDIF digital optical audio input. Channel 1
- 8.- SPDIF digital coaxial audio input. Channel 1
- 9.- EAS control (563811 only)
- 10.- SPDIF digital coaxial audio input. Channel 2
- 11.- SPDIF digital optical audio input. Channel 2
- 12.- HDMI® input. Channel 2
- 13.- YPbPr component input. Channel 2
- 14.- Closed Caption (CC) input. Channel 2
- 15.- 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
	EAS	Color	EAS status	Comment
		Solid green	ON	An alarm has been triggered and the system is broadcasting common EAS audio and video.
		Off	OFF	No alarm present. Each encoder in the system is broadcasting its own content.
	CH1 – CH2	Color	Channel status	Comment
		Off	Disabled / EAS	Channel disabled or unit in EAS mode.
		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.
	QAM	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.
	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 in Figure 1.

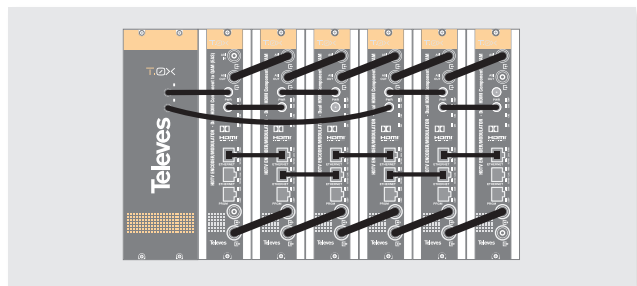


Figure 1

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

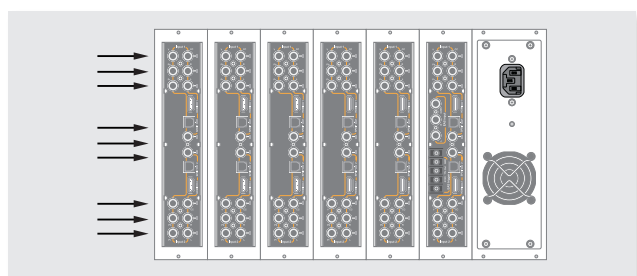


Figure 2

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

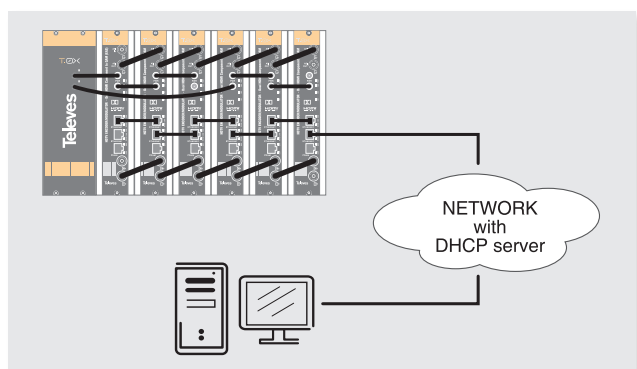


Figure 3 - Rack with DHCP server.

4. Power on the units.

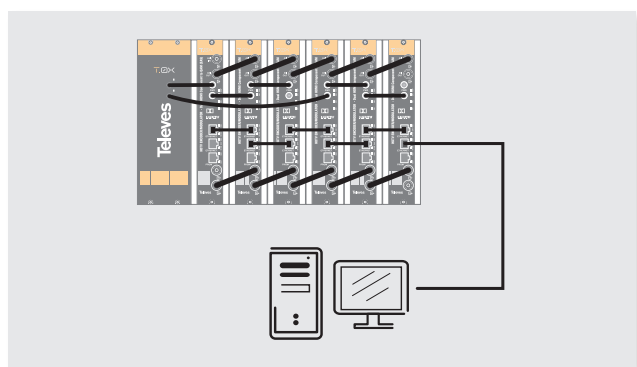


Figure 4 - Rack without DHCP server.

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.

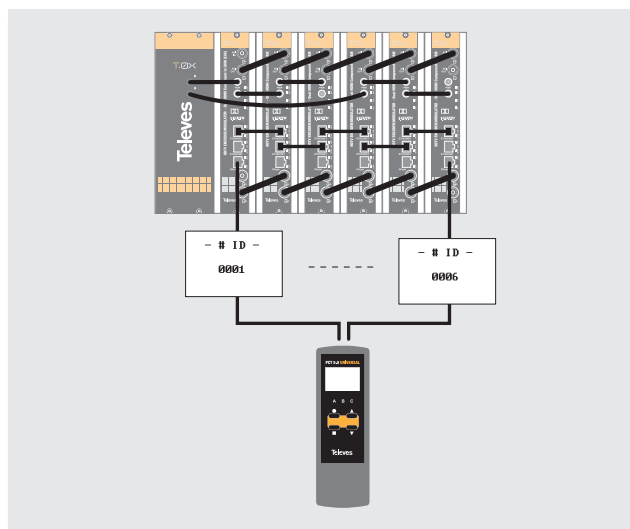


Figure 5 - Set a # number different for each unit.

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.

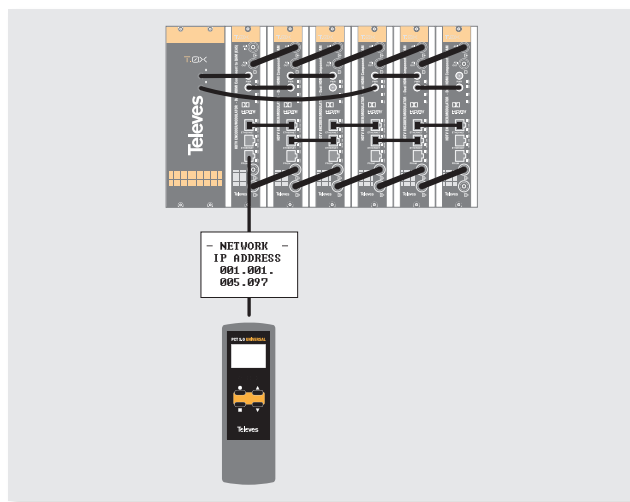


Figure 6 - Read the IP address of one unit.

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.

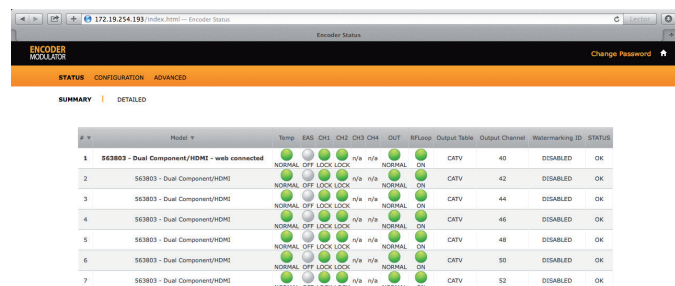
8. In your web browser, enter the IP address from Step 6 as the URL. A login prompt will appear. By default the parameters are:

Login: encoder
Password: encoder

The **Status > Summary** page 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.

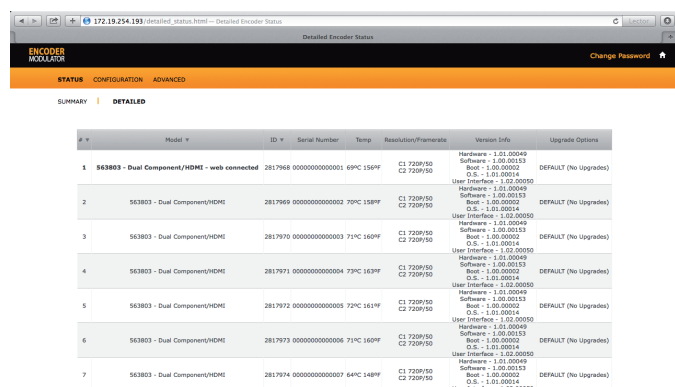
The “Change Password” option only changes the password of the encoder currently logged in to. To change the password for the remaining modules, each one will need to be logged into with its unique IP address and the change made for each.



#	Model	Temp	EAS	CH1	CH2	CH3	CH4	OUT	RF Loop	Output Table	Output Channel	Watermarking ID	STATUS
1	563803 - Dual Component/HDMI - web connected	OK	OK	OK	OK	OK	OK	OK	OK	CATV	40	DISABLED	OK
2	563803 - Dual Component/HDMI	OK	OK	OK	OK	OK	OK	OK	OK	CATV	42	DISABLED	OK
3	563803 - Dual Component/HDMI	OK	OK	OK	OK	OK	OK	OK	OK	CATV	44	DISABLED	OK
4	563803 - Dual Component/HDMI	OK	OK	OK	OK	OK	OK	OK	OK	CATV	46	DISABLED	OK
5	563803 - Dual Component/HDMI	OK	OK	OK	OK	OK	OK	OK	OK	CATV	48	DISABLED	OK
6	563803 - Dual Component/HDMI	OK	OK	OK	OK	OK	OK	OK	OK	CATV	50	DISABLED	OK
7	563803 - Dual Component/HDMI	OK	OK	OK	OK	OK	OK	OK	OK	CATV	52	DISABLED	OK

Figure 7 - Status > Summary tab.

Figure 8 shows an example of a detailed status page.

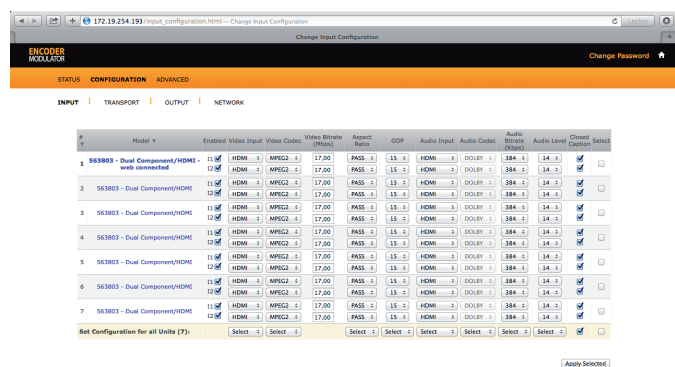


#	Model	ID #	Serial Number	Temp	Resolution/Framerate	Version Info	Upgrade Options
1	563803 - Dual Component/HDMI - web connected	2817968	0000000000000001	69°C 156°F	C1 720P/50 C2 720P/50	Hardware - 1.01.00049 Software - 1.00.00013 Boot - 1.00.00002 User Interface - 1.02.00050	DEFAULT (No Upgrades)
2	563803 - Dual Component/HDMI	2817969	0000000000000002	70°C 158°F	C1 720P/50 C2 720P/50	Hardware - 1.01.00049 Software - 1.00.00013 Boot - 1.00.00002 User Interface - 1.02.00050	DEFAULT (No Upgrades)
3	563803 - Dual Component/HDMI	2817970	0000000000000003	71°C 160°F	C1 720P/50 C2 720P/50	Hardware - 1.01.00049 Software - 1.00.00013 Boot - 1.00.00002 User Interface - 1.02.00050	DEFAULT (No Upgrades)
4	563803 - Dual Component/HDMI	2817971	0000000000000004	73°C 163°F	C1 720P/50 C2 720P/50	Hardware - 1.01.00049 Software - 1.00.00013 Boot - 1.00.00002 User Interface - 1.02.00050	DEFAULT (No Upgrades)
5	563803 - Dual Component/HDMI	2817972	0000000000000005	72°C 161°F	C1 720P/50 C2 720P/50	Hardware - 1.01.00049 Software - 1.00.00013 Boot - 1.00.00002 User Interface - 1.02.00050	DEFAULT (No Upgrades)
6	563803 - Dual Component/HDMI	2817973	0000000000000006	71°C 160°F	C1 720P/50 C2 720P/50	Hardware - 1.01.00049 Software - 1.00.00013 Boot - 1.00.00002 User Interface - 1.02.00050	DEFAULT (No Upgrades)
7	563803 - Dual Component/HDMI	2817974	0000000000000007	64°C 148°F	C1 720P/50 C2 720P/50	Hardware - 1.01.00049 Software - 1.00.00013 Boot - 1.00.00002 User Interface - 1.02.00050	DEFAULT (No Upgrades)

Figure 8 - Status > Detailed tab.

9. Configure all units:

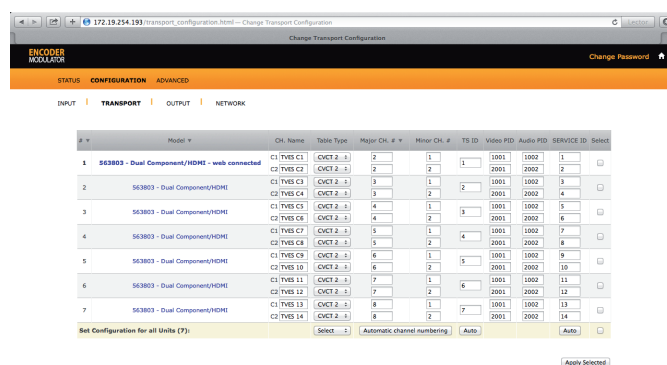
Select “CONFIGURATION”. This page has 4 options, INPUT, TRANSPORT, OUTPUT, and NETWORK, shown in Figures 9, 10, 11, and 12 respectively. For each configuration page, the last column is “Select”. Any changes made, will be saved only to the units with this associated “Select” box checked when “Apply Selected” is clicked. This applies to all 4 of the sections under the Configuration Menu.



#	Model	Enabled	Video Input	Video Codes	Video Bitrate (Mbps)	Aspect Ratio	GOP	Audio Input	Audio Codes	Audio Bitrate (Kbps)	Audio Level	Closed Caption	Select
1	563803 - Dual Component/HDMI - web connected	12	HDMI - 1	MPEG2 - 1	17.00	PASS - 1	15 - 1	HDMI - 1	DOLBY - 1	384 - 1	34 - 1	34 - 1	☒
2	563803 - Dual Component/HDMI	12	HDMI - 1	MPEG2 - 1	17.00	PASS - 1	15 - 1	HDMI - 1	DOLBY - 1	384 - 1	34 - 1	34 - 1	☒
3	563803 - Dual Component/HDMI	12	HDMI - 1	MPEG2 - 1	17.00	PASS - 1	15 - 1	HDMI - 1	DOLBY - 1	384 - 1	34 - 1	34 - 1	☒
4	563803 - Dual Component/HDMI	12	HDMI - 1	MPEG2 - 1	17.00	PASS - 1	15 - 1	HDMI - 1	DOLBY - 1	384 - 1	34 - 1	34 - 1	☒
5	563803 - Dual Component/HDMI	12	HDMI - 1	MPEG2 - 1	17.00	PASS - 1	15 - 1	HDMI - 1	DOLBY - 1	384 - 1	34 - 1	34 - 1	☒
6	563803 - Dual Component/HDMI	12	HDMI - 1	MPEG2 - 1	17.00	PASS - 1	15 - 1	HDMI - 1	DOLBY - 1	384 - 1	34 - 1	34 - 1	☒
7	563803 - Dual Component/HDMI	12	HDMI - 1	MPEG2 - 1	17.00	PASS - 1	15 - 1	HDMI - 1	DOLBY - 1	384 - 1	34 - 1	34 - 1	☒

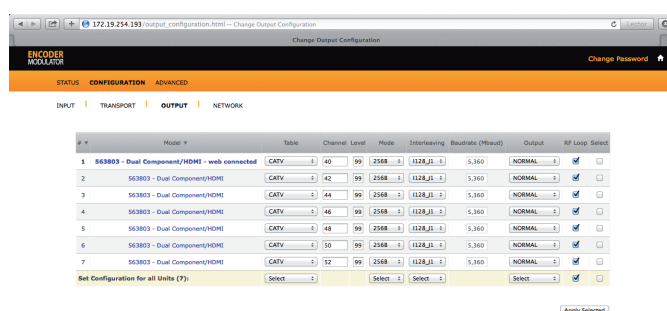
Figure 9 - Configuration > Input tab.

Some items have an automatic configuration option, such as “Automatic channel numbering” shown in figure 10.



#	Model	CH Name	Table Type	Major CH #	Minor CH #	TS ID	Video PID	Audio PID	SERVICE ID	Select
1	563803 - Dual Component/HDMI - web connected	C1 TVES C1	CVC2.2 - 1	2	1	1	1001	1002	1	☒
2	563803 - Dual Component/HDMI	C2 TVES C2	CVC2.2 - 1	2	2	1	1001	1002	2	☒
3	563803 - Dual Component/HDMI	C1 TVES C3	CVC2.2 - 1	3	1	2	1001	1002	3	☒
4	563803 - Dual Component/HDMI	C2 TVES C4	CVC2.2 - 1	3	2	2	1001	1002	4	☒
5	563803 - Dual Component/HDMI	C1 TVES C5	CVC2.2 - 1	4	1	5	1001	1002	5	☒
6	563803 - Dual Component/HDMI	C2 TVES C6	CVC2.2 - 1	4	2	2	1001	1002	6	☒
7	563803 - Dual Component/HDMI	C1 TVES C7	CVC2.2 - 1	5	1	4	1001	1002	7	☒
8	563803 - Dual Component/HDMI	C2 TVES C8	CVC2.2 - 1	5	2	2	1001	1002	8	☒
9	563803 - Dual Component/HDMI	C1 TVES C9	CVC2.2 - 1	6	1	5	1001	1002	9	☒
10	563803 - Dual Component/HDMI	C2 TVES C10	CVC2.2 - 1	6	2	2	1001	1002	10	☒
11	563803 - Dual Component/HDMI	C1 TVES C11	CVC2.2 - 1	7	1	6	1001	1002	11	☒
12	563803 - Dual Component/HDMI	C2 TVES C12	CVC2.2 - 1	7	2	2	1001	1002	12	☒
13	563803 - Dual Component/HDMI	C1 TVES C13	CVC2.2 - 1	8	1	7	1001	1002	13	☒
14	563803 - Dual Component/HDMI	C2 TVES C14	CVC2.2 - 1	8	2	2	1001	1002	14	☒

Figure 10 - Configuration > Transport tab.

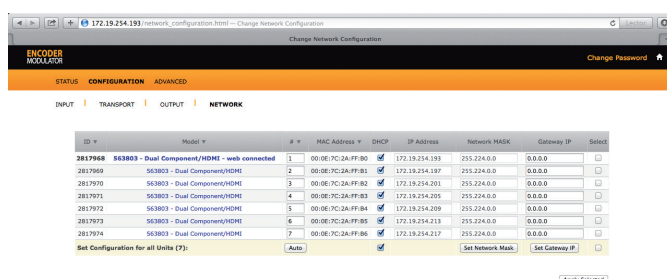


#	Model	Table	Channel	Level	Mode	Interleaving	Baudrate (Mbaud)	Output	RF Loop	Select
1	563803 - Dual Component/HDMI - web connected	CATV	1	40	50	2568 - 1	1128.11 - 1	5.360	NORMAL - 1	☒
2	563803 - Dual Component/HDMI	CATV	1	42	50	2568 - 1	1128.11 - 1	5.360	NORMAL - 1	☒
3	563803 - Dual Component/HDMI	CATV	1	44	50	2568 - 1	1128.11 - 1	5.360	NORMAL - 1	☒
4	563803 - Dual Component/HDMI	CATV	1	46	50	2568 - 1	1128.11 - 1	5.360	NORMAL - 1	☒
5	563803 - Dual Component/HDMI	CATV	1	48	50	2568 - 1	1128.11 - 1	5.360	NORMAL - 1	☒
6	563803 - Dual Component/HDMI	CATV	1	50	50	2568 - 1	1128.11 - 1	5.360	NORMAL - 1	☒
7	563803 - Dual Component/HDMI	CATV	1	52	50	2568 - 1	1128.11 - 1	5.360	NORMAL - 1	☒

Figure 11 - Configuration > Output tab.

The network configuration page allows a change to the Number assigned in Step 5. This option also has an “Auto” assignment feature.

The “Auto” option will ask for confirmation since it will overwrite the settings of all units set in Step 5 and the ordering will likely not be as the units were placed in the rack.



#	Model	MAC Address	DHCP	IP Address	Network MASK	Gateway IP	Select
1	563803 - Dual Component/HDMI - web connected	00:0E:7C:2A:FF:80	☒	172.19.214.193	255.224.0.0	0.0.0.0	☒
2	563803 - Dual Component/HDMI	00:0E:7C:2A:FF:81	☒	172.19.214.197	255.224.0.0	0.0.0.0	☒
3	563803 - Dual Component/HDMI	00:0E:7C:2A:FF:82	☒	172.19.214.201	255.224.0.0	0.0.0.0	☒
4	563803 - Dual Component/HDMI	00:0E:7C:2A:FF:83	☒	172.19.214.205	255.224.0.0	0.0.0.0	☒
5	563803 - Dual Component/HDMI	00:0E:7C:2A:FF:84	☒	172.19.214.209	255.224.0.0	0.0.0.0	☒
6	563803 - Dual Component/HDMI	00:0E:7C:2A:FF:85	☒	172.19.214.213	255.224.0.0	0.0.0.0	☒
7	563803 - Dual Component/HDMI	00:0E:7C:2A:FF:86	☒	172.19.214.217	255.224.0.0	0.0.0.0	☒

Figure 12 - Configuration > Network tab.

10. Change configuration of one unit:

Select “CONFIGURATION”. Click on the Model name of the desired unit and the page below will be shown. From this page you can change any parameter of the configuration of the desired unit.

ADVANCED CONFIGURATION FOR THE UNIT ID 2817968

#	Model	Serial Number	MAC ADDRESS	IP ADDRESS
1	563803 - Dual Component/HDMI	0000000000000001	00:0E:7C:2A:FF:80	172.19.214.193

Unit Status:

Temp	EAS	CH1	CH2	CH3	CH4	OUT	RF Loop	Resolution/Framerate	Version Info
				N/A				C1 720P/50 C2 720P/50	Hardware - 1.01.00049 Software - 1.00.00013 Boot - 1.00.00002 User Interface - 1.02.00050

Input Configuration:

Enabled	Video Input	Video Codes	Video Bitrate (Mbps)	Aspect Ratio	GOP	Audio Input	Audio Codes	Audio Bitrate (Kbps)	Audio Level	Closed Caption
	HDMI - 1	MPEG2 - 1	17.00	PASS - 1	15 - 1	HDMI - 1	DOLBY - 1	384 - 1	34 - 1	
	HDMI - 1	MPEG2 - 1	17.00	PASS - 1	15 - 1	HDMI - 1	DOLBY - 1	384 - 1	34 - 1	

Transport Configuration:

CH Name	Table Type	Major CH #	Minor CH #	TS ID	Video PID	Audio PID	SERVICE ID
C1 TVES C1	CVC2.2 - 1	2	1	1	1001	1002	1
C2 TVES C2	CVC2.2 - 1	2	2	1	1001	1002	2

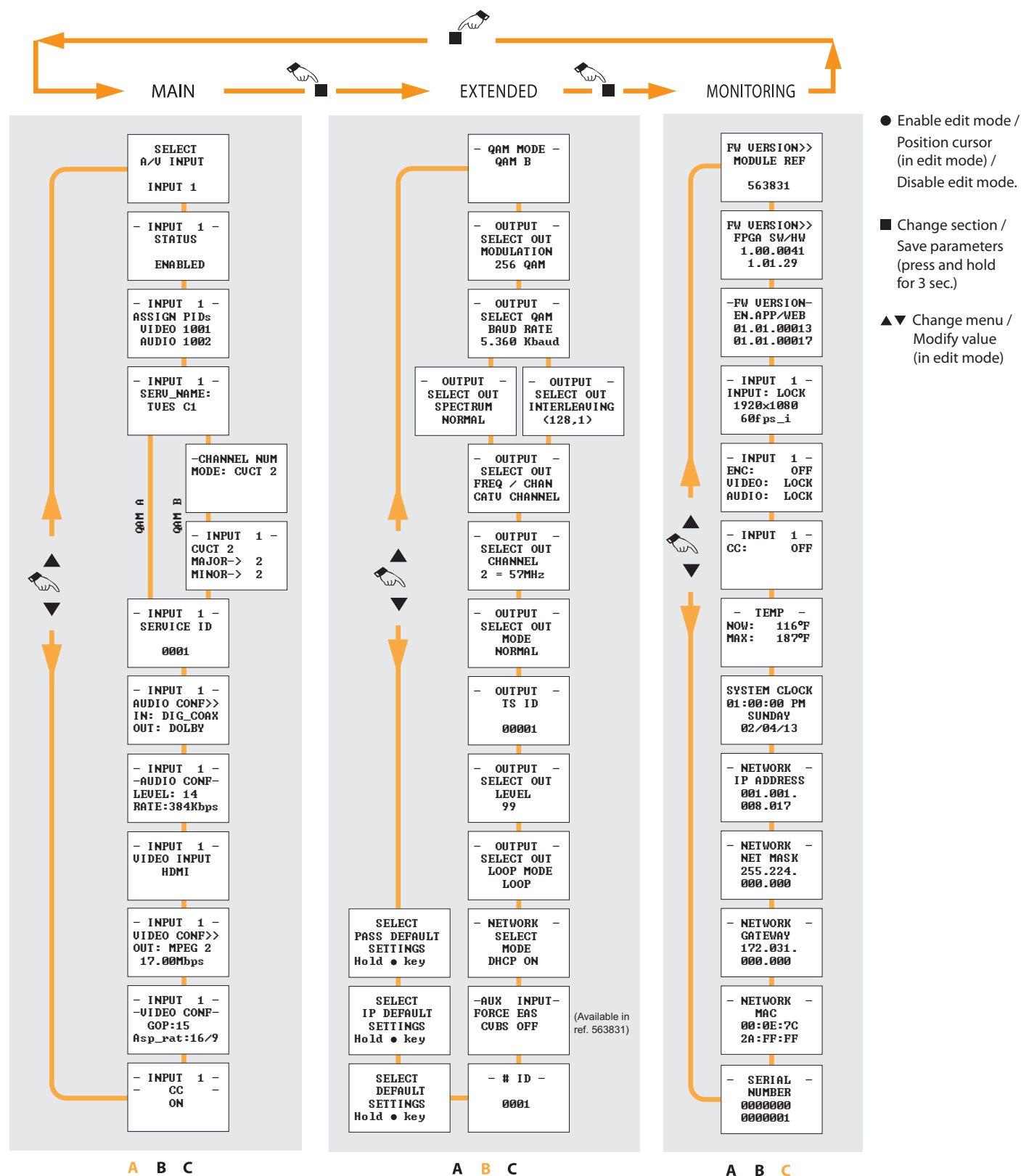
Output Configuration:

Table	Channel	Level	Mode	Interleaving	Baudrate (Mbaud)	Output	RF Loop
CATV	1	40	50	2568 - 1	1128.11 - 1	5.360	NORMAL - 1

Figure 13 - Configuration > Advanced configuration

Menu flow chart

For programming Unit operation



Technical specifications

References				563803, 563831*	
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)	
	EAS*	Connectors		3x RCA (CVBS, L, R)	
		Trigger	Vdc	5-12 (Dry Contact Closure)	
	ASI	Connectors		1x BNC	
Format		DVB-ASI			
Standard		ETSI EN 50083-9			
QAM	Connectors		“F” Female (loop-through combiner input)		
ENCODING PROFILE	VIDEO	Output Format		MPEG-2 / H.264 ⁽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		
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			
ALARMS / MONITORING / CONTROL		Local control		Full configuration with LCD handheld programmer	
		Local monitoring		EAS status LED	
				LOOP status LED	
				QAM status LED	
				TEMP status LED	
				CH1/CH2 status LEDs	
				Ethernet status LEDs	
		Remote monitoring		Centralized web based remote control, management, alarms, and software upgrades	
Control		Daisy-chain integrated ethernet switch			
GENERAL		Power supply	Vdc	24	
		Power disipation	W	<20.4	
		Operating Temperature	°F / °C	32 to 113 / 0 to 45	

(1) The references 563803 and 563831 are 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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