





Refs. 563802, 563821

HDTV ENCODER/MODULATOR - Quad Composite to QAM HDTV ENCODER/MODULATOR - Quad Composite to QAM (EAS) QUICK INSTALLATION GUIDE

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Safety instructions

Caution statements

Product inspection - Inspect the equipment for shipping damage. Should any damage be discovered, immediately file a claim with the carrier.

Important Safety Instructions - To ensure proper installation and operation, take a moment to read this guide before proceeding with the installation. If you have any questions or comments about the T.OX Series - Encoders, please contact your dealer.

WARNING:

TO PREVENT FIRE OR ELECTRICAL SHOCK DO NOT EXPOSE TO RAIN OR MOISTURE.



CAUTION:

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.



A product and cart combination should be moved with care. Quick stops, excessive force and uneven surfaces may cause the product and cart combination to overturn.

The lightning flash with arrow head symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to



to constitute a risk of electric shock to persons. The exclamation point within an equilateral triangle is intended to alert the user to the presence of

important operating and maintenance (servicing) instructions in the literature accompanying the product.

WARNING:

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. DO NOT OPEN THE CABINET, REFER SERVICING TO QUALIFIED PERSONAL ONLY.

CAUTION:

TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE. Important Safety Instructions

- 1. Read and Follow All Instructions All the safety and operating instructions should be read prior to and followed while operating this product.
- **2. Retain Instructions** The safety and operating instructions should be retained for future reference.
- Heed Warnings All warnings on the product and in the operating instructions should be adhered to.
- Cleaning Disconnect this product from any electrical source before cleaning. Use a damp cloth; do not use liquid or aerosol cleaners.
- Attachments Do not use attachments that are not recommended by the product manufacturer as they may cause hazards.
- 6. Water and Moisture Do not use this product near any source of water.
- 7. Mounting Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to persons or nearby objects, and serious damage to this product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.
- 8. Ventilation Slots and openings in the chassis or cabinet are provided for ventilation and to ensure reliable operation of the product. These openings should never be blocked or covered in any way. This product should not be placed in any case, cabinet, or rack unless proper ventilation is provided and the manufacturer's instructions have been adhered to.
- Power Sources This product should be operated only from the type of power source indicated on the label.
- **10. Grounding or Polarization** Do not bypass or defeat electrical plug polarization or grounding. Doing so will violate the warranty and may pose a risk of fire or electrocution.
- **11. Wire Protection** Ensure all connected wiring is routed correctly to avoid damage including pinching, excessive bends, or compression.
- 12. Electrical Supply, Grounding, and Surge Protection – Ensure that all local or national electrical codes are followed. Seek the advice of a licensed electrician, professional engineer, or other licensed expert.
- **13. Power Lines** Always use caution and avoid operating this or any connected equipment near uninsulated power line or any other hazards.
- **14. Object and Liquid Entry** Never allow objects or liquid of any kind into this product through openings. Doing so could result in fire or electric shock.

- **15. Servicing** There are no user serviceable parts. Do not attempt to service this product or remove covers. Doing so may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel. Examples of damage requiring service include but are not limited to:
 - Damage to power-supply wiring.
 - If liquid has been spilled, or objects have fallen into the product.
 - If the product has been exposed to rain or water.
 - If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
 - If the product has been dropped or physically damaged.
 - When the product exhibits a distinct change in performance.
- **16. Replacement Parts** Ensure that repairs are performed by qualified technicians and that only manufacturer supplied or authorized parts are used.
- 17. Safety Check Upon completion of any service or repairs to this product, ensure safety checks to determine that the product is functioning per manufacturer specifications are performed.
- **18. Heat** The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat. Ensure that ambient temperature is maintained in the manufacturer specified operating range.

Description of connectors

Front view



Rear view

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

4.- Analog (L/R) audio input. Channel 2 5.- EAS CVBS input (563821 only)

3.- CVBS input (Video/Closed Caption). Channel 2

- 6.- EAS L/R analog audio input (563821 only)
- 7.- EAS control (563821 only)
- 8.- CVBS input (Video/Closed Caption). Channel 3
- 9.- Analog (L/R) audio input. Channel 3
- 10.- CVBS input (Video/Closed Caption). Channel 4
- 11.- Analog (L/R) audio input. Channel 4

LED indicators

		Color	Internal temp	Comment
	TEMP	Solid green	Normal	Safe
	TEMP	Slow blink orange	High	Warning
		Fast blink red	Very High	Danger
		Color	EAS status	Comment
	EAS	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.
		Color	Channel status	Comment
_		Off	Disabled / EAS	Channels disabled or unit in EAS mode.
Front I FD alarms		Solid green	Lock	Inputs locked and unit encoding audio/video.
	CH1/CH2 - CH3/CH4	Solid red	Unlock	Inputs unlocked and unit not encoding audio/video.
		Blinking red	Boot	Unit starting up.
		Solid yellow	Partial lock	Only one of the two inputs is locked and encoding audio/video.
		Color	Output mode	Comment
	QAM	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.
		Color	Output loop status	Comment
	LOOP	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.

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 you computer as follows:
 - IP value = 172.20.0.2netmask = 255.0.0.0gateway = 0.0.0.0
- **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.

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CONFIGURATION	ADVANCED											
DETAILED												
r	Model V	Temp	EAS	CH1	CH2	CH3	CH4	OUT	RFLoop	Output Table	Output Channel	
563802	4xSD CVBS QAM(this)	NORMAL						NCOMAL		CATV	74	
563	802 4xSD CVBS QAM	NORMAL	0.00					NORMAL		CATV	76	
563	I802 4xSD CVBS QAM									CATV	78	
			0							CATV	80	
	CONFIGURATION DETAILED S63802 D 563 D 563 D 5	CONTRUMITOR ADVINCED DETRILED SEGRES 4-550 CVR5 QM(Mire) SS3822 4-550 CVR5 QM(SS3822 4-550 CVR5 QM(SS3822 4-550 CVR5 QM(CONFEGURITION ADVANCES	Congloaktice Advances	Conground to very constant of the second of	CONFIDURATION KONNECCO	CONFIDENTIAL ADVANCED	COMPERIATION KONNECCO	Complexitivity Adjusted to Addition Times 64.5 CH6 CH6	Scientification Advances Instant Stratub Model # Stratup Bestard Lefs Critics Quark Quark Science 2 - Quark Quark	Non-Pipelantition Non-Net Methal D0 Non-Net Non-Net	Complication Advances Attinue Model * Terms EAS CH CH

Figure 7 - Status > Summary tab.

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

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			Chappe Transpor	rt Configuration						
									Chang	e Password
rus c	ONFIGURATION ADVANCED									
πI	TRANSPORT OUTPUT NE	TWORK								
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<i>a</i> v	Model v	CH. Name	Table Type	Major CH. # *	Minor CH. #	TS ID	Video PID	Audio PID	Select	
_		C1 TVES 41	CVCT 2 =	18	1		1001	1002		
		C2 TVES 42	CVCT 2 :	18	2	18	1101	1102		
10	Sedeuz Asso CVBS QAM(this)	C3 TVES 43	CVCT 2 ÷	18	3	10	2001	2002		
		C4 TVES 44	CVCT 2 :	18	4		2101	2102		
		C1 TVES 45	CVCT 2 :	19	1		1001	1002		
10	SECOND 4-ED CURE CAM	C2 TVES 46	CVCT 2 0	19	2	19	1101	1102		
19	563802 4X50 CVB5 Q4H	C3 TVES 47	CVCT 2 :	19	3	19	2001	2002		
		C4 TVES 48	CVCT 2 ÷	19	4		2101	2102		
		C1 TVES 49	CVCT 2 0	20	1		1001	1002		
	F63803 4-50 CUBS 044	C2 TVES 50	CVCT 2 :	20	2	20	1101	1102		
20	303802 4430 6403 (244	C3 TVES 51	CVCT 2 0	20	3	20	2001	2002		
		C4 TVES 52	CVCT 2 ÷	20	4		2101	2102		
		C1 TVES 53	CVCT 2 :	21	1		1001	1002		
21	563903 4-50 CUBE CAM	C2 TVES 54	CVCT 2 0	21	2	21	1101	1102		
**	303002 4430 6403 (044	C3 TVES 55	CVCT 2 :	21	3	**	2001	2002		
		C4 TVES 56	CVCT 2 0	21	4		2101	2102		



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	4 T	Model v	ID v	Serial Number	Тетр	Resolution/Framerate	Version Info	
	18	563802 4xSD CVBS QAM(this)	2817996		58ºC 137ºF	C1 4801/60 C2 4801/60 C3 4801/60 C4 4801/60	Hardware - 1.01.00046 Software - 1.00.00076 Boot - 1.00.0002 O.S 1.00.00073 User Interface - 1.01.00013	
	19	563802 4xSD CVBS QAM	2817995		58°C 136°F	C1 4801/60 C2 4801/60 C3 4801/60 C4 4801/60	Hardware - 1.01.00046 Software - 1.00.00076 Boot - 1.00.0002 O.S 1.00.00073 User Interface - 1.01.00013	
	20	563802 4x5D CVBS QAM	2817994		58ºC 136ºF	C1 4801/60 C2 4801/60 C3 4801/60 C4 4801/60	Handware - 1.01.00046 Software - 1.00.00076 Boot - 1.00.00072 O.S 1.00.00073 User Interface - 1.01.00013	
	21	563802 4xSD CVBS QAM	2817993		52°C 126°F	C1 4801/60 C2 4801/60 C3 4801/60 C4 4801/60	Hardware - 1.01.00046 Software - 1.00.00076 Boot - 1.00.00002 O.S 1.00.00073 Use Learning - 1.01.00013	

a v	Model v	Table	Channel	Level	Mode	Interleaving	Baudrate (Mbaud)	Output		RF Loop	Select
18	563802 4xSD CVBS QAM(this)	CATV +	74	99	2568 (1128_1 →	5,360	NORMAL		۲	
19	563802 4x5D CVBS QAM	CATV :	76	99	2568 :	1128_11 :	5,360	NORMAL	:	۷	
20	563802 4xSD CVBS QAM	CATV :	75	99	2568 :	1128_11 :	5,360	NORMAL	:	۲	
21	563802 4xSD CVBS QAM	CATV 1	80	99	2568 :	1128_11 :	5,360	NORMAL	1	۲	
Set 0	Configuration for all Units:	Select +			Select 4	Select 1		Select	4	۷	
										Apply S	elected

Figure 11 - Configuration > Output tab.

Figure 8 - Status > Detailed 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.

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211795 51002 440 CHE QM 23 005/CLAMPICS 0 177,12354 21524 0 0.000 0 2012 21524		2817996	563802 4xSD CVBS QAM(this)	18	00:0E:7C:2A:FF:CC		172.19.255.49	255.224.0.0	0.0.0.0		
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									Appl	Selected	
Apply Selected											

Figure 12 - Configuration > Network 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.

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e v	Nodel v	Enabled	Video Codec	Video Bitrate (Mbps)	Aspect Ratio	GOP	Audio Input	Audio Codec	Audio Bitrate (Kbps)	Audio	Closed Caption	Select										
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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)

Technical specifications

References				563802, 563821*						
	VIDEO	Connectors		4 sets - 1x RCA for Video (CVBS)						
	AUDIO	Connectors		4 sets - 2x RCA for Analog Audio (L, R)						
	CLOSED CAPTIONING	Connectors		4 sets - 1x RCA for Video (CVBS in)						
		Connectors		3x RCA (CVBS, L, R)						
INPUTS	EAS*	Trigger	Vdc	5-12 (Dry Contact Closure)						
		Connectors		1x BNC						
	ASI	Format		DVB-ASI						
		Standard		ETSI EN 50083-9						
	QAM	Connectors		"F" Female (loop-through combiner input)						
		Output Format		MPEG-2 / H 264						
				480i & 576i						
		Resolution		Supports auto-scan for input resolution						
	VIDEO	Aspect Ratio		4:3, 16:9 and pass through						
		GOP		10, 12, 15, 16, 18, 20, 24 or 30						
ENCODING		Transport rate		Variable						
PROFILE		Video bit rate		Variable						
		Output format		Dolby [®] Digital AC-3 or MPEG1 Layer 2						
	AUDIO	Sampling rate	kHz	48						
		Output bitrate		Variable						
	CLOSED CAPTIONING	Format		EIA-608						
		Connectors		1x "F" Female						
				ITU-A: 16, 32, 64, 128, 256, 512, 1024 QAM						
		Modulation standards		ITU-B: 64, 256 QAM						
		Frecuency Range	MHz	5 - 1002 (supports return path applications)						
		Channel plans		CATV STD, T_CHANNELS, Broadcast, Frequency						
	QAM	Max output level	dBmV	+55 (+43 with loop-through)						
OUTPUT		MER	dB	>40 (typ)						
		Spurious	dBc	-60						
		Impedance	Ω	75						
		I/Q Phase Error	o	<1						
		I/Q Amplitude Imbalance	%	<1						
		Connectors		1x BNC						
	ASI	Format		DVB-ASI						
		Local control		Full configuration with LCD handheld programmer						
				EAS status LED						
				LOOP status LED						
				OAM status LED						
ALARMS / MO	NITORING / CONTROL	Local monitoring		TEMP status LED						
				CH1/CH2 - CH3/CH4 status LEDs						
				Ethernet status LEDs						
		Remote monitoring		Centralized web based remote control management, alarms, and software upgrades						
		Control		Daisy-chain integrated ethernet switch						
				,						
		Power supply	Vdc	24						
		Power dicipation	N/	24						
	JENERAL		VV	<10 						
		Operating temperature	۳/ °C	32 TO 122 / U TO 50						

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