

# KT-FX4 4-Input HD DVB-T Digital Modulator User Guide and Install Manual

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## Safety Precautions



*The presence of this symbol is to alert the installer and user to the presence of uninsulated dangerous voltages within the product's enclosure that may be of sufficient magnitude to produce a risk of electric shock.*

**TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS DEVICE TO RAIN OR MOISTURE. DO NOT OPEN THE UNIT. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.**

- ❖ DO NOT apply power to the unit until all connections have been made, all components have been installed and all wiring has been properly terminated.
- ❖ DO NOT terminate, change or uninstall any wiring without first disconnecting the unit's power adapter from the device.
- ❖ This device is supplied with the appropriately rated 12VDC power supply with the center pin positive. The use of any other power supply could cause damage and invalidate the manufacturer's warranty.
- ❖ DO NOT power on the unit until all cables and connections to the device have been properly connected.
- ❖ The device should be installed in an environment consistent with its operating temperature specifications. Placement next to heating devices and ducts is to be avoided as doing so may cause damage. The device should not be placed in areas of high humidity.
- ❖ DO NOT cover any of the device's ventilation openings.
- ❖ If the device has been in a cold environment allow it to warm to room temperature for at least 2 hours before connecting power.



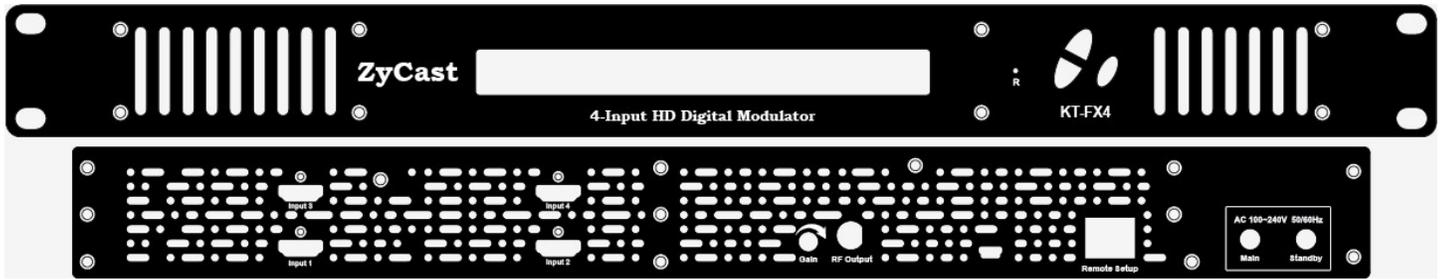
## Package Contents

This package contains:

- ❖ One KT-FX4 HD Digital Modulator
- ❖ Two Power Supplies with Power Cords (one Main and one Stand By)
- ❖ One Quick Install Manual

Inspect the package before starting installation to ensure there is no damage and all supplied contents are present. Contact your distributor or dealer should the device be damaged, or package contents are incomplete.

## Product Description



**ZyCast** “KT-FX4” Modulator converts Digital Video Broadcasting (DVB) high definition video and audio signals to COFDM.

KT-FX4 Digital Modulator is ideal for any Domestic or Commercial RF Network. The high-quality HD design allows for watching action packed programs and sports channels on any HDTV. The space saving design delivers up to 4 High Quality HD channels in a single 1RU space.

## Features

- ☀ H.264 (MPEG-4) AVC Encoding
- ☀ 4 x HDMI Input, 1 x RF Output
- ☀ Preprogrammed with Approved Foxtel Channel numbers (refer list at the end of this manual)
- ☀ Automatically changes “clashing” settings when Channel ID is adjusted
- ☀ Gain Control (20dB Manual Attenuation)
- ☀ RJ-45 port for Web Management
- ☀ Video resolution: Up to 1080p
- ☀ Perfect, clean, and clear picture on high motion video, sports, text crawls/rolls, etc.
- ☀ Front panel LCD Display for easy installation
- ☀ Independent RF Output Channel per Encoder
- ☀ Rack mountable 1RU height

## Specifications

KT-FX4	
<b>Video / Audio Input</b>	
Connectors	Quad, HDMI 1.4
Audio	Embedded PCM
<b>OUTPUT</b>	
Standard	DVB-T
Connector	1 x "F" Female
Frequency Range	177.5 MHz to 816.5 MHz (Ch 6 to 69)
Output Level	85 dB $\mu$ V Typical
Flatness Across Full Band	$\pm$ 2dB
MER	39 dB Typical
Carrier (OFDM Mode)	2K/8K
Guard Intervals	1/32
Code Rate (FEC)	7/8
Modulation	64QAM
Output Impedance	75 ohm
RF Output Return Loss	10dB
LCN	AU(APN)
<b>Video / Audio Encoding Profile</b>	
Video Resolution	1080p / 1080i / 720p / 576p / 576i / 480p / 480i
Video Codecs	H.264
Audio Codecs	MPEG1 Layer II / AAC
<b>GENERAL</b>	
Local Monitoring	LCD
Web GUI Supported	IE, Firefox, Chrome, Safari
Password Protected	GUI: Changeable
Power Supply	External 12 VDC 5 Amp. or Equivalent / Redundant Power Supply
Consumption	26W
Operating Temperature	0°C to +45°C
Storage Temperature	-10°C to +60°C
Languages	English
Dimensions	438mm x 206mm x 44mm
Weight	2.5kg

***\*Specifications subject to change without prior notice***

## Installation



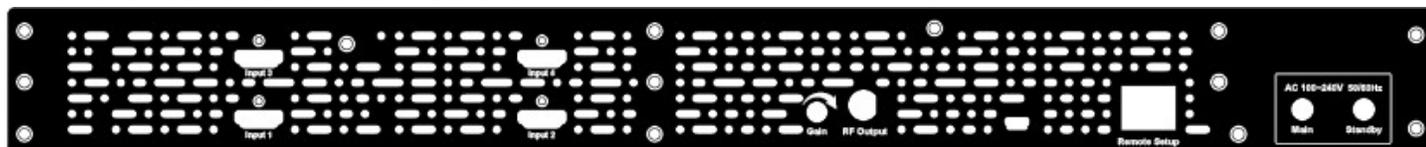
***System Installer must adhere to Article 820-40 of the NEC that provides guidelines for proper grounding and specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as possible.***

### Unpacking and Inspection

Each unit is shipped factory tested. Ensure all items are removed from the container prior to discarding any packing material.

Thoroughly inspect the unit for shipping damage with particular attention to connectors and controls. If there is any sign of damage to the unit or damaged or loose connectors contact your distributor immediately. Do not put the equipment into service if there is any indication of defect or damage.

### Hardware Installation and Connections



1. Use HDMI cables to connect the video sources (e.g., CATV, DVD, VCR, Camera) to the unit's HDMI Input port 1,2,3,4. It is highly recommended that quality HDMI cables be used for all video source connections.
2. Use a quality RJ45 cable to connect the Remote Setup port to a computer RJ45 port for setup/manage the unit.
3. Connect the included power cords to the unit's DC 12V POWER jacks (1 x Main & 1 x Stand By)
4. Connect the power supplies to an appropriately rated AC power outlet.

### Power Supply Loss

Whenever there is a power supply issue - the LED Screen will show the Power Supply Loss message on the screen and keep blinking to alert the user. If the modulator had enabled the SMTP function in the Web Management Setup, it will send out the Power Supply Loss alert message to the setting email addresses. (Please refer to Web Management Setup Page for the SMTP settings)

Power Supply Loss: Main!

Power Supply Loss: Standby!

Once the issue has been rectified the screen will return to normal status

# Modulation Setup and Configuration via Front LCD

## Device Programming and Setup

To setup from the LCD Front Panel

KT-FX4 is designed to have an easy and simple settings from the LCD Front Panel

### Modulator Configuration

Once the modulator is powered up it will go through an internal booting process. When booting process finished, the LCD Display shows the default Channel.



**Main Menu** – To access the Main Menu first enter the password by pressing the OK button. Use the Scroll Up/Down buttons to enter the password. Once the password is entered press the OK button again and the LCD Screen will display “Main Menu”.

**Password** – Use the Scroll Up/Down buttons to enter the password. Password is **0000**. Press the OK button for each number to enter the password. Press OK again after the display shows ..... HD Series.

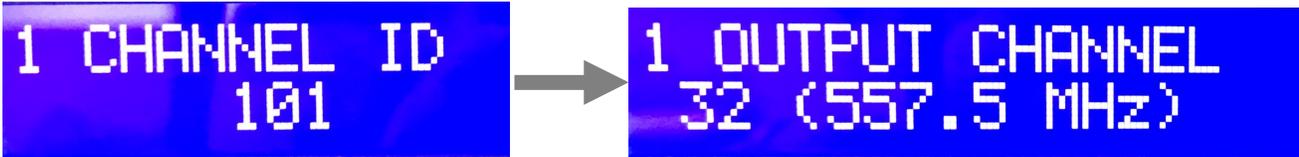


There are two parameters to setup, CHANNEL ID and OUTPUT CHANNEL. Press OK button it will show MAIN MENU.

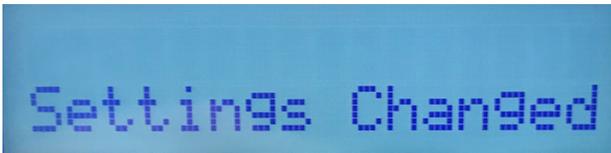


Press OK button to set the desired CHANNEL ID (see Foxtel Channel ID listing at the end of this manual), then press OK to set the desired OUTPUT CHANNEL.

It is a must to set the CHANNEL ID and OUTPUT CHANNEL and press OK to finish the setting process, otherwise the screen will keep on the CHANNEL ID/OUTPUT CHANNEL waiting for setting.



After OUTPUT CHANNEL setting finished, press OK button the screen will show Settings Changed, then go back to the MAIN MENU. (Note: In 60 seconds, the screen will go back to the Channel information)



Note: Once these changes are made per modulator, all settings associated will automatically change

## Reset to Default

If you are ever required to reset the modulator from the front LCD screen back to the default settings, please follow the below procedures.

1. Turn OFF the unit. While pressing UP and DOWN buttons at the same time, power ON the unit.



2. Release the UP and DOWN buttons when the LCD shows Reset to Default.



3. Press OK button to select Country: Australia or New Zealand



4. Press OK button again when the country selected, then press UP or DOWN button to show SAVE & EXIT.



5. Press OK button to Save and Exit. The unit will Booting on.



Caution: Once this process is complete the unit will automatically reset to the factory default settings. All settings or changes to the encoder/modulator will be lost.

Input	Channel Name	LCN	RF Output	
Input 1	Fox Sports News	101	32 (557.5MHz)	
Input 2	Fox Cricket	102	33 (564.5MHz)	
Input 3	Fox League	103	34 (571.5MHz)	
Input 4	Fox Sports 3	104	35 (578.5MHz)	
GUI IP Address		GUI IP Address – 192.168.1.101		

# Modulation Setup and Configuration via GUI

## Connecting to the GUI Interface

### Factory Default IP: 192.168.1.101

1. Connect an Ethernet cable directly (no Cross Over cable required) to the Web Management Port on the rear panel of the encoder or connect the Ethernet cable to an Ethernet switch. Connect an Ethernet Cable to your PC/Laptop.
2. If the above Default IP address is the same as your PC, please modify your PC/Laptop IP address to another address (for example 192.168.1.11)
3. Enter '192.168.1.101' into your web browser
4. The Welcome Page will be shown.

*Note: As you change the Channel ID on the modulator, the IP address of the modulator will also change automatically. For example, if you move the Channel ID from 101 to 105 the IP address will change from "192.168.1.101" to "192.168.1.105". Type this new address into your browser to access the modulator.*

*The IP address of the KT-FX4 will be the address of the first Channel ID (see above)*

*Once you have made a change to a setting, click on the bottom left hand tab labelled "Save and Confirm". This will download the information to the modulator and reboot.*

# Overview

Welcome page will be displayed as shown (as below)



ZyCast DVB FX Series Overview Encoder Setup RF Output Setup Network Setup System Setup Administration

Device Name	Model Number	Serial Number	MAC Address	Firmware Version	Net Version
ZYCAST-001	KT-FX4	1833 258141	F8:0D:EA:83:F0:5D	20180813_1850	0.7.4

Location

---

RF Output 1

500  
Unused

RF Output 2

501  
Unused

RF Output 3

502  
Unused

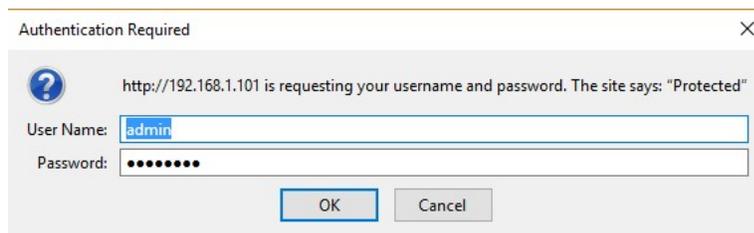
RF Output 4

503  
Unused

RF Output	Channel	Constellation	Output Bitrate	Channel Name	Video Source	Video Output	Audio Output	Video Bitrate	Status
1	33 (564.5 MHz)	64 QAM	27.710 Mbps	Fox Sports News	HDMI	H.264 CBR	MP2	24.000 Mbps	HD
2	34 (571.5 MHz)	64 QAM	27.710 Mbps	Fox Sports 1	HDMI	H.264 CBR	MP2	24.000 Mbps	HD
3	35 (578.5 MHz)	64 QAM	27.710 Mbps	Fox League	HDMI	H.264 CBR	MP2	24.000 Mbps	HD
4	36 (585.5 MHz)	64 QAM	27.710 Mbps	Fox Sports 3	HDMI	H.264 CBR	MP2	24.000 Mbps	HD

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Note – If source is active, status will show SD or HD. If “Freerun” shows the source is not active User will be presented with encoders **'Authentication Required'** screen.



Enter User Name and Password into this section to access the settings.

User Name: **admin**

Password: **Admin123**

# Encoder Setup



## Encoder Setup

This page allows the user to configure the device's encoder settings.

	Encoder 1	Encoder 2	Encoder 3	Encoder 4
Channel ID	101: Fox Sports News(500)	102: Fox Sports 1(501)	103: Fox League(502)	104: Fox Sports 3(503)
LCN (Channel Number)	500	501	502	503
Video Input	HDMI	HDMI	HDMI	HDMI
HD BitRate(Mbps)	24	24	24	24
SD BitRate(Mbps)	5	5	5	5
SID	101	102	103	104
Channel Name	Fox Sports News	Fox Sports 1	Fox League	Fox Sports 3
Provider Name	Fox Sports	Fox Sports	Fox Sports	Fox Sports
Video Output	H.264 CBR	H.264 CBR	H.264 CBR	H.264 CBR
HDCP (Test Mode)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Audio Output	MPEG1 Layer2 (MP2)	MPEG1 Layer2 (MP2)	MPEG1 Layer2 (MP2)	MPEG1 Layer2 (MP2)
PMT PID	1010	1020	1030	1040
Video PID	1011	1021	1031	1041
Audio PID	1012	1022	1032	1042
PCR PID	1011	1021	1031	1041

Save and Confirm Reset

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HD Bitrate setting range: 12~24 Mbps (**default is 24Mbps**)

SD Bitrate setting range: 1~9 Mbps (**default is 5 Mbps**)

**\* Whenever there is a PID conflict, it will pop up an Error icon to show the PID has been occupied!**

# Encoder Setup (cont)

Note: Select different Channel ID (Channel Number) per input, the related parameters will automatically change to the default Channel setting parameters, like Service ID, LCN, Channel Name, PMT PID, Video PID, Audio PIS, PCR PID, etc. This is stop channels “clashing”

\* Please refer to Foxtel Approval Channel list at the end of this manual.



ZyCast Overview Encoder Setup RF Output Setup Network Setup System Setup Administration

### Encoder Setup

This page allows the user to configure the device's encoder settings.

	Encoder 1	Encoder 2	Encoder 3	Encoder 4
Channel ID	101: Fox Sports News(500)	102: Fox Sports(501)	103: Fox League(502)	104: Fox Sports(503)
LCN (Channel Number)	500	501	502	503
Video Input	HDMI	HDMI	HDMI	HDMI
HD BitRate(Mbps)	24	24	24	24
SD BitRate(Mbps)	5	5	5	5
BID	101	102	103	104
Channel Name	Fox Sports News	Fox Sports 1	Fox League	Fox Sports 3
Provider Name	Fox Sports	Fox Sports	Fox Sports	Fox Sports
Video Output	H.264 CBR	H.264 CBR	H.264 CBR	H.264 CBR
HOOP (Best Mode)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Audio Output	MPEG1 Layer2 (MP2)	MPEG1 Layer2 (MP2)	MPEG1 Layer2 (MP2)	MPEG1 Layer2 (MP2)
PMT PID	1010	1020	1030	1040
Video PID	1011	1021	1031	1041
Audio PID	1012	1022	1032	1042
PCR PID	1011	1021	1031	1041

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# RF Output Setup

RF Output Setup page allows you to change settings to your installation requirements. These settings include RF Output Channel, Network Name, ONID, TSID, NID and enable/disable the source.

Note – TSID will change automatically when you select the Channel ID (along with other clashing settings)



ZyCast DVDR FX Series Overview Encoder Setup **RF Output Setup** Network Setup System Setup Administration

## RF Output Setup

This page allows the user to configure the RF settings. Enter/Select the required settings for each RF Channel. Use the **Save and Confirm** button to save any changes made.

Enable	ONID	NID	TSID	Network Name	RF	Channel (Frequency)	BW (MHz)	Attenuation (dB)	Constellation	FEC	Guard Interval	OFDM Mode	CELL ID	Bit Rate Mbps
<input checked="" type="checkbox"/>	8228	12801	101	ZyCas	Normal	32 (55)	7	0 dB	64 QAM	7/8	1/32	8k	0	13.600/27.710
<input checked="" type="checkbox"/>	8228	12801	102	ZyCas	Normal	33 (56)	7	0 dB	64 QAM	7/8	1/32	8k	0	13.600/27.710
<input checked="" type="checkbox"/>	8228	12801	103	ZyCas	Normal	34 (57)	7	0 dB	64 QAM	7/8	1/32	8k	0	13.600/27.710
<input checked="" type="checkbox"/>	8228	12801	104	ZyCas	Normal	35 (57)	7	0 dB	64 QAM	7/8	1/32	8k	0	13.600/27.710

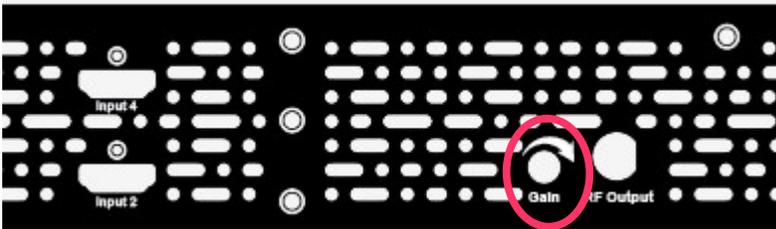
**Save and Confirm** Reset

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## Attenuation Control

Please adjust the attenuation by adjusting the Gain control from the unit to balance your system

*Note: Clockwise to increase, anti-clockwise to decrease.*



# Network Setup



## Network Setup

This page allows the user to configure the device's network settings.

Hostname	<input type="text" value="ZYCAST-001"/>
MAC Address	<input type="text" value="F8:0D:EA:83:F0:70"/>
DHCP	<input type="checkbox"/>
IP Address	<input type="text" value="192.168.1.101"/>
Subnet Mask	<input type="text" value="255.255.255.0"/>
Default Gateway	<input type="text" value="192.168.1.254"/>
<input type="button" value="Save and Confirm"/> <input type="button" value="Reset"/>	

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# System Setup



## System Setup

After changes are made, use the **Apply** button.

Description	<input type="text" value="SMTP"/>
-------------	-----------------------------------

### Device Description

Location	<input type="text"/>
<input type="button" value="Apply"/> <input type="button" value="Reset"/>	

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Note: Enable SMTP to send the alert message to related persons, please set the under parameters, then Local Save, Upload and Reboot to enable the function.

Mail feature/settings:

1. Add the new feature "SMTP" to send mail by SMTP client.

(1) At "Web Management" page, the following fields are added.

- (a) Enable SMTP checkbox: the default value is "disabled",
- (b) Modulator Location: 16 characters to note the modulator's location in mail,
- (c) SMTP Server IP: IP address of SMTP server,
- (d) Port Number: Port number of SMTP server,
- (e) Mail to: mail addresses of receivers (up to 3 mail addresses).

(2) mail format goes as follows.

- (a) From: KONNECT-001 (Host Name)
- (b) To: (the same as "Mail to")
- (c) Subject: different subjects according to different conditions go as follows.

B0001 - System is ready.

It would be sent only once after the system boots up.

E0002 Power Supply Loss: Main!

It would be sent once if the main power is off.

E0003 - Power Supply Loss: Standby!

It would be sent once if the standby power is off.

I0004 - Encoder Status Changed.

It would be sent if any encoder bitrate changed.

I0005 - System will be rebooted.

It would be sent before the system will be rebooted.

I0006 - Settings are modified by web pages.

It would be sent if the settings are modified by the web page.

I0007 - Settings are modified by LCD menu.

It would be sent if the settings are modified by LCD menu and when Info Pages are displayed.

Content: The content format is as following example for reference.

**KONNECT-001\_ (serial number of modulator)**

**Location: Test**

**IP Address: 192.168. 1.101**

**Host Name: KT-FX4**

**32 (557.5 MHz): Fox Sports News HD 24.000Mbps**

**33 (564.5 MHz): Fox Sports HD 24.000Mbps**

**34 (571.5 MHz): Fox Sports 2 HD 24.000Mbps**

**35 (578.5 MHz): Fox Sports 3 HD 24.000Mbps**

**Main Power: OK**

**Standby Power: OK**

## Administration

ZyCast

ZyCast DVB FX Series

Overview

Encoder Setup

RF Output Setup

Network Setup

System Setup

Administration

### Administration

REBOOT

RESET TO DEFAULT

Backup / Restore

Password



Download current configuration settings to a local file.

BACKUP



Upload a pre-saved configuration to the device.

BROWSE...

UPLOAD

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Administration is where you can change the password, back up or download configurations, default the modulator back to factory settings upload a config file (firmware).

**Preprogrammed Foxtel Approved Channels**

Channel ID #	Channel Name	LCN (Channel Number)	IP Address
101	Fox Sports News	500	192.168.1.101
102	Fox Sports 1	501	192.168.1.102
103	Fox League	502	192.168.1.103
104	Fox Sports 3	503	192.168.1.104
105	Fox Footy	504	192.168.1.105
106	Fox Sports 5	505	192.168.1.106
107	Fox Sports 6	506	192.168.1.107
108	Fox Sports More	507	192.168.1.108
109	ESPN	508	192.168.1.109
110	ESPN 2	509	192.168.1.110
111	Bein Sports 1	513	192.168.1.111
112	Bein Sports 2	514	192.168.1.112
113	Bein Sports 3	515	192.168.1.113
114	Eurosport	511	192.168.1.114
115	Chelsea TV	516	192.168.1.115
116	LFCTV	517	192.168.1.116
117	MUTV	518	192.168.1.117
118	Sky Racing 1	526	192.168.1.118
119	Sky Racing 2	527	192.168.1.119
120	SkyThoroughredCe	528	192.168.1.120
121	Racing.com	529	192.168.1.121
122	Sky News	601	192.168.1.122
123	Sky News Business	602	192.168.1.123
124	Sky News Weather	603	192.168.1.124
125	Fox News	604	192.168.1.125
126	CNN	605	192.168.1.126
127	CNBC	644	192.168.1.127
128	APAC	648	192.168.1.128
129	BBC World News	649	192.168.1.129
130	Bloomberg	650	192.168.1.130
131	Al Jazeera	651	192.168.1.131
132	V	801	192.168.1.132
133	MTV Music	803	192.168.1.133
134	MTV Dance	804	192.168.1.134
135	Max	805	192.168.1.135
136	CMC	815	192.168.1.136

**Spare Channels**

Channel ID #	Channel Name	LCN (Channel Number)	IP Address
137	Spare Channel 1	401	192.168.1.137
138	Spare Channel 2	402	192.168.1.138
139	Spare Channel 3	403	192.168.1.139
140	Spare Channel 4	404	192.168.1.140
141	Spare Channel 5	405	192.168.1.141
142	Spare Channel 6	406	192.168.1.142
143	Spare Channel 7	407	192.168.1.143
144	Spare Channel 8	408	192.168.1.144
145	Spare Channel 9	409	192.168.1.145
146	Spare Channel 10	410	192.168.1.146
147	Spare Channel 11	411	192.168.1.147
148	Spare Channel 12	412	192.168.1.148
149	Spare Channel 13	413	192.168.1.149
150	Spare Channel 14	414	192.168.1.150
151	Spare Channel 15	415	192.168.1.151
152	Spare Channel 16	416	192.168.1.152
153	Spare Channel 17	417	192.168.1.153
154	Spare Channel 18	418	192.168.1.154
155	Spare Channel 19	419	192.168.1.155
156	Spare Channel 20	420	192.168.1.156
157	Spare Channel 21	421	192.168.1.157
158	Spare Channel 22	422	192.168.1.158
159	Spare Channel 23	423	192.168.1.159
160	Spare Channel 24	424	192.168.1.160
161	Spare Channel 25	425	192.168.1.161
162	Spare Channel 26	426	192.168.1.162
163	Spare Channel 27	427	192.168.1.163
164	Spare Channel 28	428	192.168.1.164
165	Spare Channel 29	429	192.168.1.165
166	Spare Channel 30	430	192.168.1.166
167	Spare Channel 31	431	192.168.1.167
168	Spare Channel 32	432	192.168.1.168
169	Spare Channel 33	433	192.168.1.169
170	Spare Channel 34	434	192.168.1.170
171	Spare Channel 35	435	192.168.1.171
172	Spare Channel 36	436	192.168.1.172
173	Spare Channel 37	437	192.168.1.173
174	Spare Channel 38	438	192.168.1.174
175	Spare Channel 39	439	192.168.1.175
176	Spare Channel 40	440	192.168.1.176
177	Spare Channel 41	441	192.168.1.177
178	Spare Channel 42	442	192.168.1.178
179	Spare Channel 43	443	192.168.1.179
180	Spare Channel 44	444	192.168.1.180
181	Spare Channel 45	445	192.168.1.181
182	Spare Channel 46	446	192.168.1.182
183	Spare Channel 47	447	192.168.1.183
184	Spare Channel 48	448	192.168.1.184
185	Spare Channel 49	449	192.168.1.185
186	Spare Channel 50	450	192.168.1.186

## KT-FX4 HD Encoder/Modulator Notes

PRODUCT NOTES:

ITEM	VALUE
DEVICE NAME	
PURCHASE DATE	
INSTALLATION DATE	
SERIAL NUMBER	
FIRMWARE VERSION	
Video Input 1	
Video Input 2	
Video Input 3	
Video Input 4	