# Encoder Modulator IPTV Setup







# INTRO

Thor Broadcast ships from our facility in Los Angeles with a preloaded NMS GUI firmware Generally the IP address will be 192.168.0.136 ; this goes into any internet browser URL line Once you're at the login screen; default username and admin passwords are both: admin Here we changed the IP on the units front panel to 192.168.1.136 to match the PC's nic.

http://192.168.1.136/	D ≠ C 🦉 Encoder Modulator	×
eb Management		
lcome		
rameter		
stem		
Reboot		
Firmware Network		
Password		
Backup/Load		
	BROADCAST 5	
V	Version Information	
	Software Version: 5.20sAc Build 139 Feb 17 2016	
	Software Version: 5.20sAc Build 139 Feb 17 2016 Hardware Version: 9.1	
	Software Version: 5.20sAc Build 139 Feb 17 2016 Hardware Version: 9.1 Web Version: 1.20	
	Software Version: 5.20sAc Build 139 Feb 17 2016 Hardware Version: 9.1	
	Software Version: 5.20sAc Build 139 Feb 17 2016 Hardware Version: 9.1 Web Version: 1.20 Status Information	
	Software Version: 5.20sAc Build 139 Feb 17 2016 Hardware Version: 9.1 Web Version: 1.20 Status Information Input	
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	Software Version: 5.20sAc Build 139 Feb 17 2016 Hardware Version: 9.1 Web Version: 1.20 Status Information Imput I Input 2 ASI Interface: SDI SDI ASI Bitrate: 25.203 Mbps 25.204 Mbps 0.000 Mbps Output Output A Output B Output C Output D 38.809 38.809 38.809 38.809	
	Software Version:       5.20sAc Build 139 Feb 17 2016         Hardware Version:       9.1         Web Version:       1.20         Status Information       Input         Input       Input 2         Interface:       SDI         Bitrate:       25.203 Mbps         Output       Output B         Output A       Output C         Maxout Bitrate:       38.809       38.809         38.809       38.809       38.809	
	Software Version:         5.20sAc Build 139 Feb 17 2016           Hardware Version:         9.1           Web Version:         1.20           Status Information         Input           Input         Input 2 ASI           Interface:         SDI SDI ASI           Bitrate:         25.203 Mbps 25.204 Mbps 0.000 Mbps           Output         Output A Output B Output C Output D           Maxout Bitrate:         12.635           Mbps         Mbps           Mbps         Mbps           Dutput         12.634           Output B Output 12.634         12.635	
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Input 1 reflects the first TWO HDSDI inputs 1 & 2

Input 2 reflects the next TWO HDSDI inputs 3 & 4

The Welcome Screen above has general information of your operating encoder

On the left hand side you can quickly switch to Thor's Parameters and System Control

\*\*\*If you do not have a green light at the bottom of this screen as shown to the left here, that means the unit is not reading the input(red light) which means that your resolution is above or below the units threshold of 720 to 1080 (could be 480 if using composite inputs)

### • Welcome

- Parameter
- Input 1
- Input 2
  ASI Input
- NIT
- VC1
- IP Output
- Modulator
- Save/Restore
- System
  - Reboot
  - FirmwareNetwork
  - Password
  - Backup/Load



## In this example – we have inserted 4 HD-SDI inputs into our unit

2CH Mpeg2/H. 264 HD Encoder	Configuration (EN14)	
Video Format	Mpeg2 🗸	Mpeg2 🗸
Aspect Ratio	Auto 🗸	Auto 🗸
Low delay	Normal 🗸	Normal 🗸
Video Cache Bypass	Enable 🗸	Enable 🗸
CC Switch	EIA 708 🗸	EIA 708 🗸
Video BitRate(Mbps)	12.000	12.000
DTS Delay	200 (1-500)	200 (1-500)
GOP Bframe	2 (<=3)	2 (<=3)
Gop Pframe	4 (<=6)	4 (<=6)
H.264 Profile	Main Profile 🗸	Main Profile 🗸
H.264 Level	Level 3.1 🗸	Level 3.1 🗸
Auto Config	$\checkmark$	$\checkmark$
Resolution	1920*1080_50i 🗸	1920*1080_50i 🗸
Audio Format	Mpeg2 🗸	Mpeg2 🗸
Dialog Normalization	-31 (-311) dB	-31 (-311) dB
Audio BitRate	192 Kbps 🗸	192 Kbps 🗸
Audio Gain(0-400%)	100%	100%
Program Out Enable (ABCDE)		
Service Provider	TV-Provider	TV-Provider
Program Name	TV-101	TV-102
SUB-CHANNEL NUMBER	0x1	0x2
PMT PID	0x100	0x104
Video PID	0x101	0x105
Audio PID	0x102	0x106
PCR PID	0x103	0x107
Video:	•	•
Video Format:	1920x1080 59.94i	1920x1080 59.94i
Encoding:	•	•
Bitrate:	12.604 Mbps	12.658 Mbps
Rom Version:	5.8.1.100	5.8.1.100
Help		Default Apply

INPUTS 1 & 2 for HD-SDI (2 channels)

You can see that there are a variety of ways to alter the functions and options using simple drop down menus when perusing the various menu options.

However Thor's unique hardware systems are developed to automate most of these options for you. It's important for you to always save and hit APPLY at the bottom to save the work you've done.

You can set up virtual channels and program ID features as well.

At the bottom the green light indicates the unit is operational and digesting the video stream at about 12.5mb/s.

If you have RED lights, there is a 99% certainty that this problem is related to resolution.

The drop down menus offer an abundance of options, here we have standardized the unit to ingest HD-SDI video and to encode those streams in MPEG2 with EIA Closed Captions 708 embedded on the SDI.



Video Pormat	Mpeg2	~	Mpeg2	×	_	
spect Ratio	Auto	~	Auto	¥ .		
elay	Normal	~	Normal	<b>v</b> ,		
ideo Cache Bypass	Enable	~	Enable	~		
C Switch	EIA 708	~	BIA 708	$\neg$		
ideo BitRate(Mbps)	12.000		12.000	$\Box$		
TS Delay	200	(1-500)	200	(1-500)		
P Bframe	2	(<=3)	2	(<=3)	$\langle \rangle$	
op Pframe	4	(<=6)	4	(<=6)		•
264 Profile	Main Profile	V	Main Profil	• •		
264 Level	Level 3.1	~	Level 3.1	~		
uto Config	•					
esolution	1920+1080_50	i 🗸	1920+1080_5	v io		Ē
udio Pormat	Mpeg2	~	Mpeg2	// v		
Dialog Normalization	-31 (-31	1) dB	-31 (-31	1) dB		
udio BitRate	192 Kbps	~	192 Kbps	✓ \`		19
udio Gain(0~400%)	100%		100%			19
rogram Out Enable ABCDE)					$\langle \rangle$	144 144 120
ervice Provider	TV-Provider		TV-Provider			120
rogram Name	TV-101		TV-102			720*
SUB-CHANNEL NUMBER	0x1		0x2		$\langle \rangle$	720*5
PMT PID	0x100		0x104		$\langle \rangle$	
Video PID	0x101		0x105			
Audio PID	0x102		0x106		$\setminus$	1920*10
PCR PID	0x103		0x107		$\langle \rangle$	$\backslash$
						Mpeg2
Video:	•		•		$\setminus$	Mpeg2 AAC
ideo Format:	1920x1030 59.	941	1920x1080 59	.941	$\setminus$	Mpeg4 AAC
Incoding:	•				``	AC 3
	12.604 Mbps		12.658 Mbps			
ROM THYEIRA	5.8.1.100		5.8.1.100			

These are just a few of the drop down menu options you can manipulate in the NMS gui

While the unit will automate many options and tune to ideal settings when first powered on, there are still numerous options inherently available for your fine tuning including bit rate and latency.

Once you have selected your options we will turn our attention to the 5 boxes next to program streams.

These boxes 🔽 🗹 🔲 🔲 are defined as A B C D E
A B C D are your 4 HD-SDI input signals and E is for Multiplexing on ASI and IP output(MPTS)
You'll find these Vou'll find these vour streams will be output in the IP and Modulator sections, but in the Vou'll find these check marks indicate Nodulator sections, but in the Vou'll find these vour streams will be output in the IP and Modulator sections, but in the Vou'll find these vour streams will be output in the IP and Modulator sections, but in the Vou'll find these vour streams will be output in the IP and Modulator sections, but in the Vou'll find these vour streams will be output in the IP and Modulator sections, but in the Vou'll find these vour streams will be output in the IP and Modulator sections, but in the Vou'll find these vour streams will be output in the IP and Modulator sections, but in the Vou'll find these vour streams will be output in the IP and Modulator sections, but in the Vou'll find these vour streams will be output in the IP and Modulator sections, but in the Vou'll find these vour streams will be output in the IP and Modulator sections, but in the Vou'll find these vour streams will be output in the IP and Modulator sections, but in the Vou'll find the Vou'll find these vour streams will be output in the IP and Modulator sections, but in the Vou'll find these vour streams will be output in the IP and Modulator sections, but in the Vou'll find these vour streams will be output in the IP and Modulator sections, but in the Vou'll find these vour streams will be output in the IP and Modulator sections, but in the Vou'll find these vour streams will be output in the Vou'll find these vour streams will be output in the IP and Modulator sections, but in the Vou'll find these vour streams will be output in the Vou'll find these vour streams will be output in the Vou'll find these vour streams will be output in the Vou'll find these vour streams will be output in the Vou'll find these vour streams will be output in the Vou'll find these vour streams will be output in the Vou'll find these vour streams will be output in the Vou'll find these vou'll find these vou'll find these vou'll f



is where you activate those streams for encoding, if these boxes are left unchecked, this will disallow any programs from being output

Input 1:	Program Out Enable (ABCDE)		Here A & B are on
Input 2:	Program Out Enable (ABCDE)		Here C & D are on

Together all output streams are on and transmitting all inputs A B C D or 1, 2, 3, & 4.

Now when you click on the IP Out button on the main menu **IP Output** you'll see the boxes again

IP Output Con	figuration				
IP Outpu	t Enable(1/2/3/4	/M):			
Filter N	ull Pkt(1/2/3/4/	M):			
SPTS1	224. 2. 2. 2	Port: 2234	Protocol:	UDP 🗸	TTL: 128
SPTS2	224. 2. 2. 2	Port: 2236	Protocol:	UDP 🗸	TTL: 128
SPTS3	224. 2. 2. 2	Port: 2238	Protocol:	UDP 🗸	TTL: 128
SPTS4	224. 2. 2. 2	Port: 2240	Protocol:	UDP 🗸	TTL: 128
MPTS	224. 2. 2. 2	Port: 2242	Protocol:	UDP 🗸	TTL: 128
Service IP:	192. 168. 2. 137	]			
Subnet Mask:	255. 255. 255. 0	]			
Gateway:	192. 168. 2. 0	]			
		Default	Apply		

Above you can see all boxes are checked and outputting IP on Multicast for both SPTS and MPTS

If you were to uncheck boxes 1&2 IP Output Enable(1/2/3/4/M):	$\checkmark$	⊻ tł	nen in this
scenario you will only be outputting HDSDI inputs 3 and 4 in IP			

Having this kind of flexibility allows you to output channels in RF or IP in any format (Mpeg2, H.264)

For example you can input the same SDI video source in inputs 1&2 and encode them separately in two different formats so you can output the same video in Mpeg2 on RF and H.264 in IP simultaneously at the same latency so your viewers can see the video regardless if it's on TV or a PC.

Current Protocol options in the drop down are as shown:



Another important element here is to ensure the NMS gui is not on the same subnet as the DATA port. So if you can recall we used 192.168.1.136 for NMS, above you see we used 192.168.2.137 for IP out. If you do not put them on different subnets there will be IP collisions and neither will work correctly.

To check your work and make sure your SPTS or MPTS is streaming, a simple easy way to test your stream is to use some freeware found on the internet.

File	O Disc		Capture Device	
Network	Protocol			
INC LANOLY	FIOLOCOI			
	enter a netwo	rk URL:		

Here we are testing out SPTS #2, you can see below it matches port 2236

SPTS1	224. 2. 2. 2	Port: 2234	Protocol:	UDP 🗸	TTL: 128
SPTS2	224. 2. 2. 2	Port: 2236	Protocol:	UDP 🗸	TTL: 128
SPTS3	224. 2. 2. 2	Port: 2238	Protocol:	UDP 🗸	TTL: 128
SPTS4	224. 2. 2. 2	Port: 2240	Protocol:	UDP 🗸	TTL: 128
MPTS	224. 2. 2. 2	Port: 2242	Protocol:	UDP 🗸	TTL: 128

Right away the testing image has begun scrolling, in this case our test generator was color bars

# **For Further Tech Support**

# 1-800-521-Thor(8467)

# support@thorfiber.com



IPTV Setup