

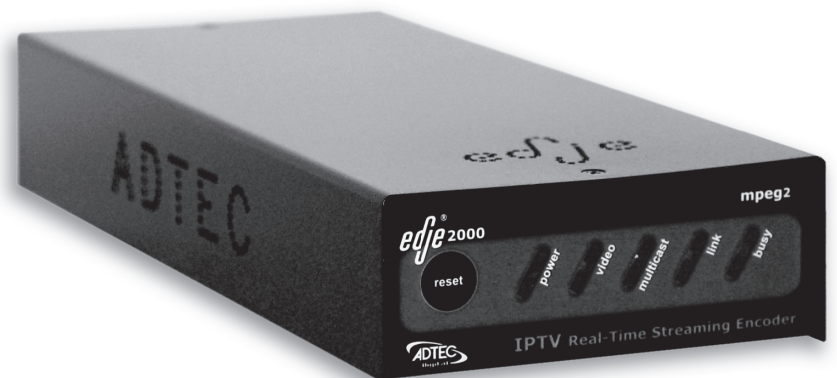
**Inside:**

- edge 2000 Hardware
- edge 2000 Application
- Connection Guide



# *edge*<sup>®</sup>2000

Real Time MPEG2 Streaming Encoder  
Operations Manual



**purely digital**  
create. move. play. save.

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### Contacting Adtec Digital

Contact	Number or Link
Tennessee Office	Sales, Support and Administration
Mailing	408 Russell Street, Nashville, TN 37206
Support Phone	1-615-256-6619
Support Fax	1-615-256-6593
Web	<a href="http://www.adtecinc.com/support.asp">http://www.adtecinc.com/support.asp</a>
Sales	1-615-256-6619
Web	<a href="http://www.adtecinc.com/">http://www.adtecinc.com/</a>
Florida Office	Manufacturing and Engineering
Shipping	2231 Corporate Sq. Blvd. Jacksonville, FL 32216-1921 USA
International Sales	1-904-720-2003 ext 227
International Fax	1-904-720-5274

### Repair or Return

Please retain the edje 2000 packaging in the event the unit must be returned to Adtec for an upgrade or repair. Prior to shipping the unit to Adtec, contact customer service for a Return Authorization Number (RA). This will provide a reference number for you and Adtec to track your unit and to provide better service.

All RA units must ship to Adtec's Florida office.

**Adtec Digital**  
**2231 Corporate Square Blvd.**  
**Jacksonville, FL. 32216-1921 USA**  
**ATTN: <Enter your RA Number here>**

### Firmware Upgrades

Adtec constantly strives to continually improve our technology. The edje 2000 is no exception, and as such, we provide free for life firmware upgrades. To obtain the firmware upgrades, please visit Adtec's public FTP site. Follow the firmware link on the FTP site to the edje 2000 folder.

[Http://www.adtecfp.com](http://www.adtecfp.com)

**Note: If the edje 200 is performing to your expectations, you may choose not to upgrade the firmware in your unit. Please read the firmware release notes posted on the FTP site prior to upgrading your unit.**

## Edje 2000 Hardware

### Introduction

Thank you for purchasing Adtec's Edje-2000. The Edje-2000 is a new revolutionary Real Time MPEG 2 Streaming Encoder designed for IP and optionally DVB-ASI distribution applications. It represents a revolutionary enhancement for real time encoding applications that require high reliability and broadcast quality without requiring a large budget. This amazingly small MPEG 2 encoding appliance provides real time encoding, multiplexing and distribution without the use of a PC. The IP output is intended to be Uni-cast or Multi-cast to Adtec Edje-1010 or Edje-1013 Network MPEG Decoding Appliances or desktop MPEG decoding applications. The DVB-ASI output option is targeted to digital television (DTV) applications including distribution via Satellite QPSK modulation, Cable QAM modulation and Terrestrial COFDM or 8VSB modulation (modulator not included).

### Edje 2000 Models

All model below include Composite and YC Video IN, Unbalanced Stereo Audio in, RS 232 Serial Port, Fast Ethernet, Parallel control and tally port.

Model	Brief Description
Edje 2000	Basic encoder for IP distribution
Edje 2000-2	Adds secondary audio programming
Edje 2000-ASI	Adds DVB-ASI output
Edje 2000-2-ASI	Adds SAP input and DVB-ASI output
Edje 2010	Adds SAP and SDI input
Edje 2010-ASI	Adds DVB-ASI output

### Edje 2000 Accessories

Adtec offers the following accessories to support your edje 2000.

#### Rack Shelf

The 200-024-1A shelf support four (4) units in a single rack space (1 RU).

#### Edje-Mux

Edje-20xx-ASI encoders output a DVB compliant stream using an ASI interface. The encoded stream is a Single Program Transport Stream (SPTS). These streams are not efficient in that they do not fill up the analog spectrum (6 MHz NTSC and 8 MHz PAL). The edje-Mux will combine (Multiplex or Mux) up to ten (10) DVB-ASI streams. The mux also will provide advanced management of the encoders and real time statistical multiplexing to provide a more efficient use of bandwidth. Available in January 2003.

Figure 1.0 Edje-2000 Front View

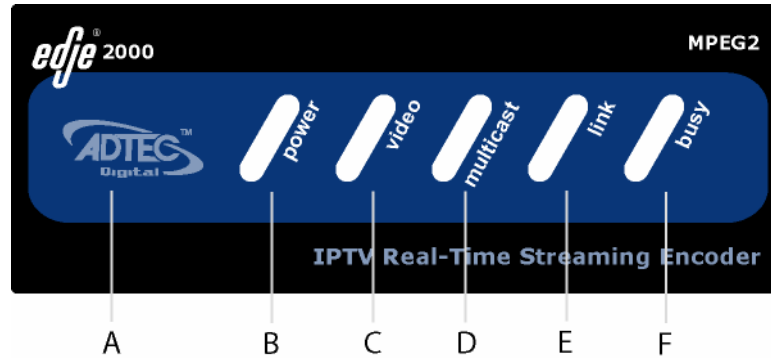


Table 1.0 Edje-2000 Front View

Identifier	Description
<b>A</b>	Reset switch. Must be held for one second to initiate reset.
<b>B</b>	Power LED, illuminates when +12 DC power is applied to unit.
<b>C</b>	Video LED illuminates during encoding. Video must be present to the selected input for encoding to start.
<b>D</b>	Drive LED, illuminates during IDE host controller activity. Optional hard drive required.
<b>E</b>	Link LED, illuminates when the electrical 10/100 Base T Ethernet connection is made correctly to a hub or server.
<b>F</b>	Busy LED illuminates when Ethernet activity occurs.

Figure 1.1 Edje-2000 Rear View

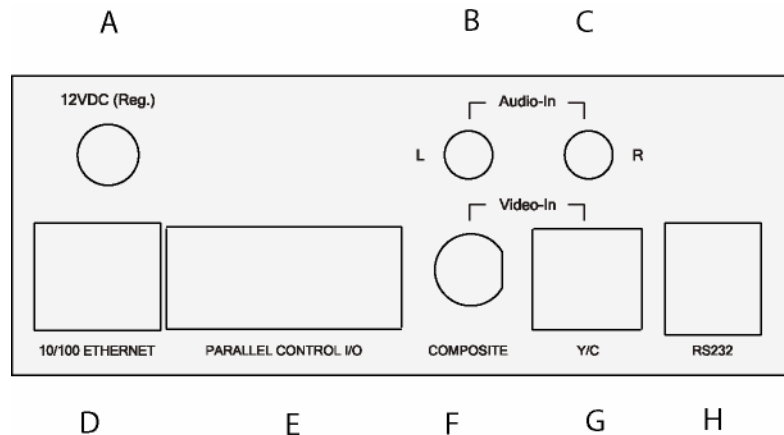


Table 1.1 Edje-2000 Rear View

Connector	Description	Connector
<b>A</b>	+ 12 Volt Direct Current (VDC) power input. <b>MUST be regulated.</b> Only used Adtec supplied power supply.	2.5 mm Locking
<b>B</b>	Audio 1 Input Left. (Primary)	RCA
<b>C</b>	Audio 1 Input Right.(Primary)	RCA
<b>D</b>	Fast Ethernet RJ-45 10/100 Base T.	RJ-45
<b>E</b>	Parallel control port. Control and Alarm.	DB9-Male
<b>F</b>	Composite Video Input	BNC
<b>G</b>	YC Video Input	4 Pin Din
<b>H</b>	RS-232 communications port IN. 38400, 8, 1, N	RJ-11

### Physical Concerns

#### Non Rack Mount Applications

There are no physical orientation concerns when placing the Edje-2000 on a desk or tabletop. The Edje-2000 is designed to run in 90-degree Fahrenheit (32 Celsius) Non-condensing 70% relative humidity ambient conditions.

#### Rack Mount Applications

The Edje-2000 can be rack mounted in the optional rack shelf (Item 200-024-1A-KIT). The optional rack kit holds up to four (4) Edje-2000's.

### Power Concerns

#### Power Supply

The Edje-2000 ships with a 24-watt external switching power supply and six (6) foot standard SJT power cord with a three (3) pin US type plug. Optionally, a European 3 PIN cord with plug is available. The power supply carries the CE, UL, CSA and TUV safety certifications. Valid AC input ranges from 70 to 240 volts AC (VAC), 50 Hz or 60 Hz. The plus 12 Volt Direct Current (DC) output voltage is regulated.

**Note: Never connect any DC voltage other than a regulated 12 VDC.**

### Audio and Video Concerns

#### Video Connections

The Edje-2000 uses a video industry standard BNC connector for composite and SDI video. The industry standard four (4)-pin mini din connector is used for YC video.

#### Audio Connections

The Edje-2000 audio input(s) uses standard RCA jacks. Providing unbalanced (Hi impedance -10 dB, 56 K Ohm) stereo audio inputs for left and right channels.

### Communications Concerns

#### Control Connectors

The Edje-2000 incorporates Parallel, Serial RS232 and Ethernet (Telnet) control. The Parallel port utilizes a DB9 male connector; the RS232 In utilizes a RJ-11 telephone connector.



### **RS232 and Ethernet**

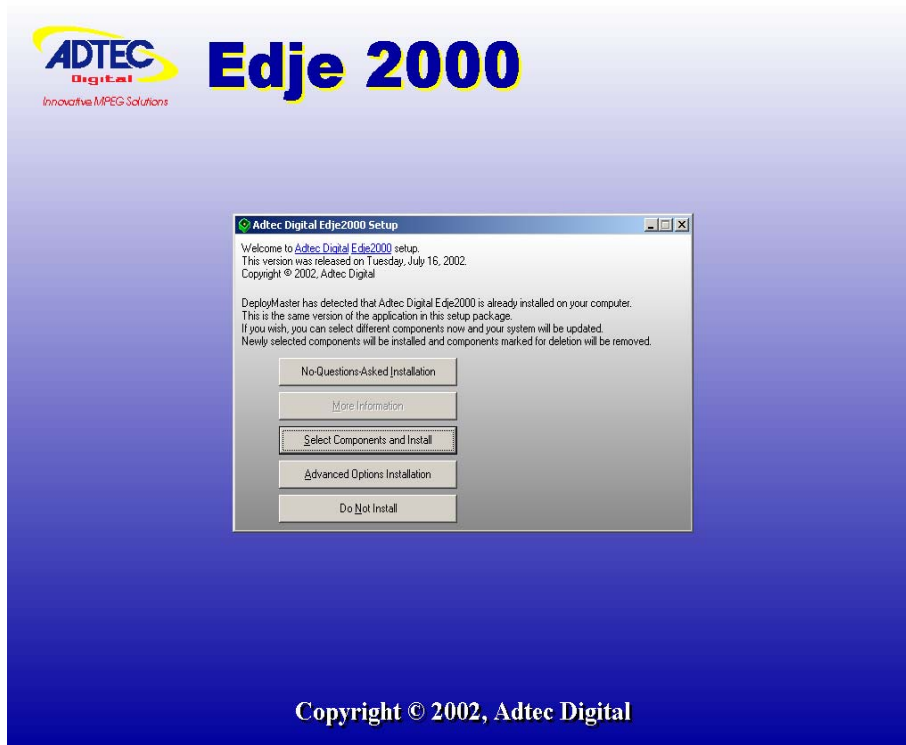
The Edje-2000 provides RS232 and Ethernet interfaces. A PC 9 Pin adaptor is provided to connect the Edje-2000 directly to a PC communications port. Use of the Ethernet port supports connecting multiple units to a single PC through the use of an Ethernet hub. The only limit is the number of ports on the hub and available IP addresses on the network. Point-to-Point Ethernet connection can be achieved with a cross over cable.

### **Introduction Summary**

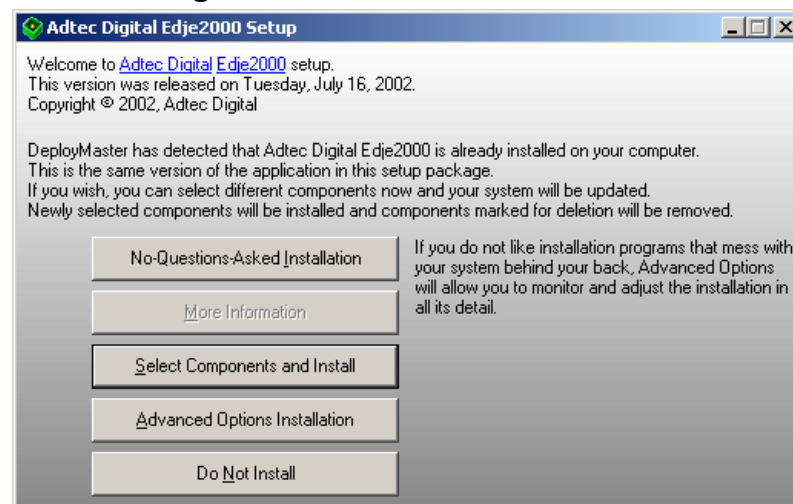
The Edje-2000 was designed to provide high quality MPEG 2 Program Streams via IP networks or MPEG 2 Transport Stream via IP or ASI networks. It will provide many years of maintenance free high quality reliable MPEG encoding. Should you require technical support or supplies contact Adtec at 615-256-6619 or [www.adtecinc.com](http://www.adtecinc.com). Thank you again for purchasing the Edje-2000.

## Installing the Edje-2000 Application

### Install Screens



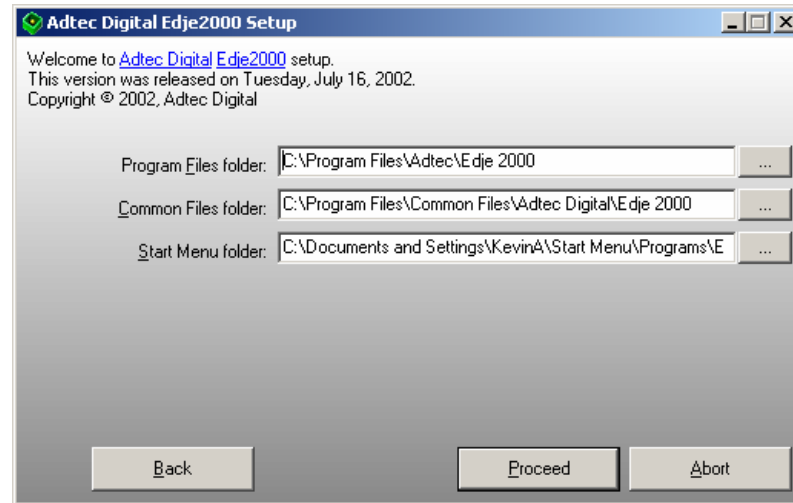
### Install Dialog



### Dialog Table Options

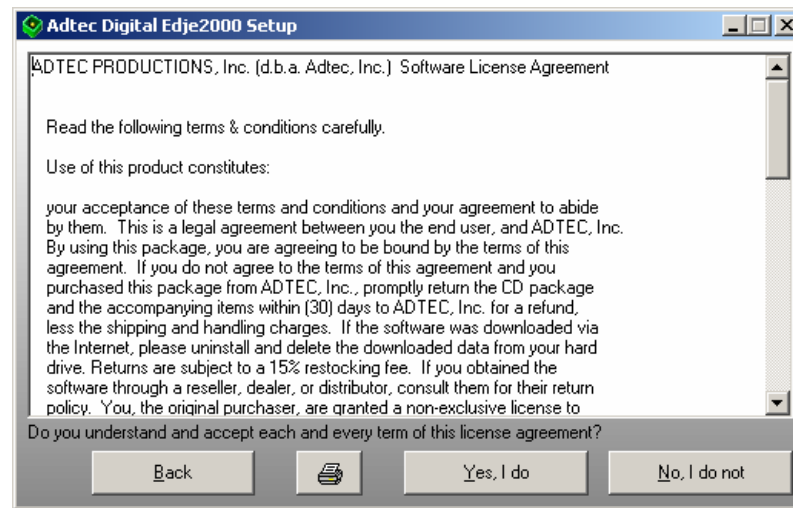
Option	Action
No Questions-Asked Install	Edje-2000 Application installed to default location.
Select Component	No Affect on install
Advanced Options Install	Select destination folders
Do Not Install	Cancel the installation process

### Advanced Options Install

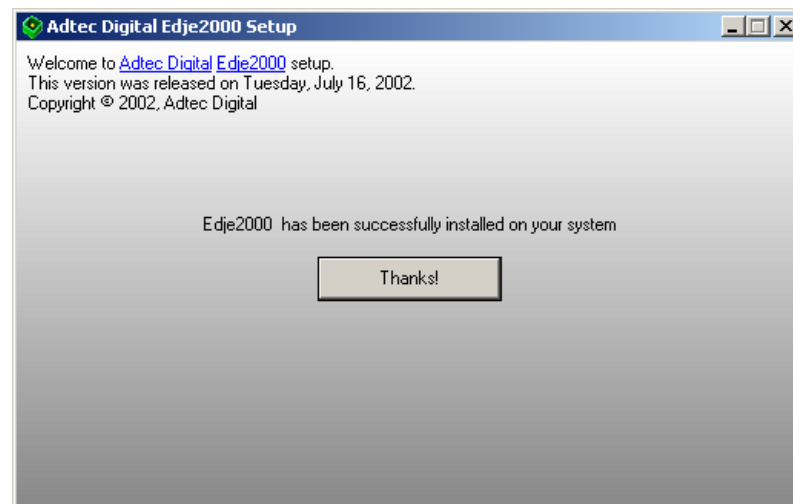


Option	Action
Program Files Folder	Location of application files (folder).
Common Files Folder	No effect on install (Reserved for data base applications)
Start Menu Folder	Location of shortcuts

### Application License



### Successful Install Dialog



Click the Thanks option to complete the installation and see the installed shortcuts. A shortcut to launch the application will be placed on the desktop.

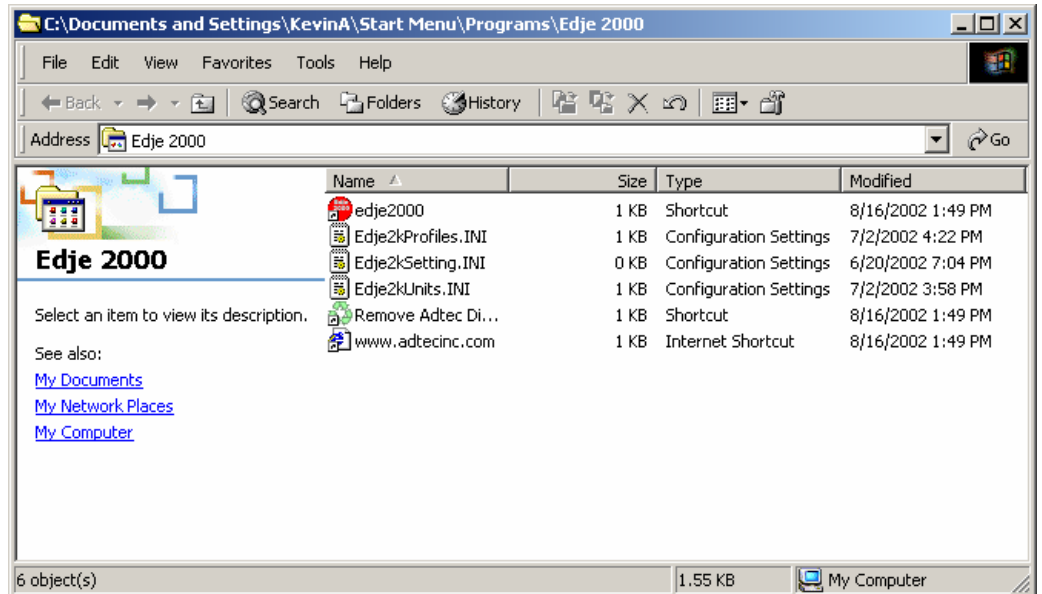
### Desktop Edje-2000 Icon



Edje2000.lnk

Double click the icon to launch the application.

### Start Menu Shortcuts



### Edje-2000 Main Screen



### Using the Edje-2000 Application

The Edje-2000 application provides a graphical user interface (GUI) for managing the Edje-2000 Real Time Encoder. It provides serial RS232 and Ethernet Telnet connectivity. A simple Units pull down menu option provides a means to create connection parameters and access them by name. Connecting to the Edje-2000 is essential to use the application.

### Adtec RS232 Serial Default Parameters

Variable	Setting
Baud Rate	38,400
Data Bits	8
Stop Bit	1
Parity	None
Flow Control	None. This is required if you are using Hyper Terminal or some other simple terminal application to communicate with the Edje-2000 via command line.
Note on connecting via RS 232	When a terminal application connects to the Edje-2000, the Edje gives no response. The user must initiate a response by issuing a command. Enter the wildcard name (*) or unit name (edje) and the Edje-2000 will respond with a zero for the asterisk or OK for the name. Please reference the API command interfaces for further information on connecting via Serial.

*If a serial connection cannot be made at 3,400 8 1 N, then try connecting with 115,200 8 1 N.*

### Ethernet Default Parameters

Variable	Setting
IP address	192.168.10.48
IP Mask Sub Net Mask	255.255.255.0
Gateway IP	0.0.0.0 Defaulted off.
User Name	ADTEC
Password	NONE

To make a Telnet connection from Windows go to the Start menu and click Run and type:

Telnet 193.168.10.48

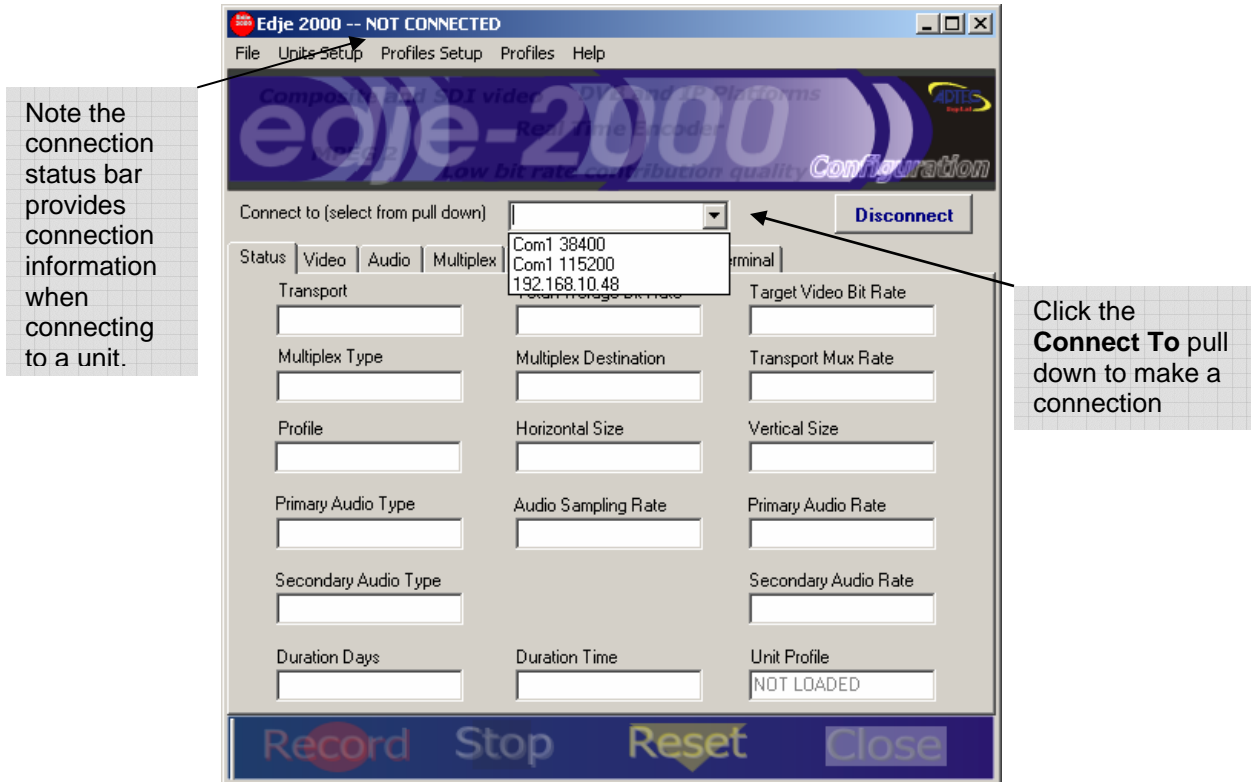
You will be prompted to enter the User Name and Password, Type ADTEC (Capitals) for the User Name and NONE (Capitals) for the Password.

Now the command interfaces can be used to modify and control the Edje-2000 via Telnet.

**Note: The Unit Name or Asterisk must precede the commands when connected via serial RS232; this is NOT required via Telnet.**

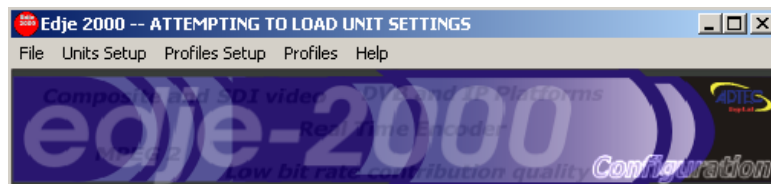
### Connecting to the Edje-2000

See the Installation Guide for Serial RS232 or Ethernet connectivity. Assumption here is the connection is Serial RS232 using the factory default Baud Rate of 38,400 Baud, 8 Data Bits, 1 Stop Bit, and No Parity.



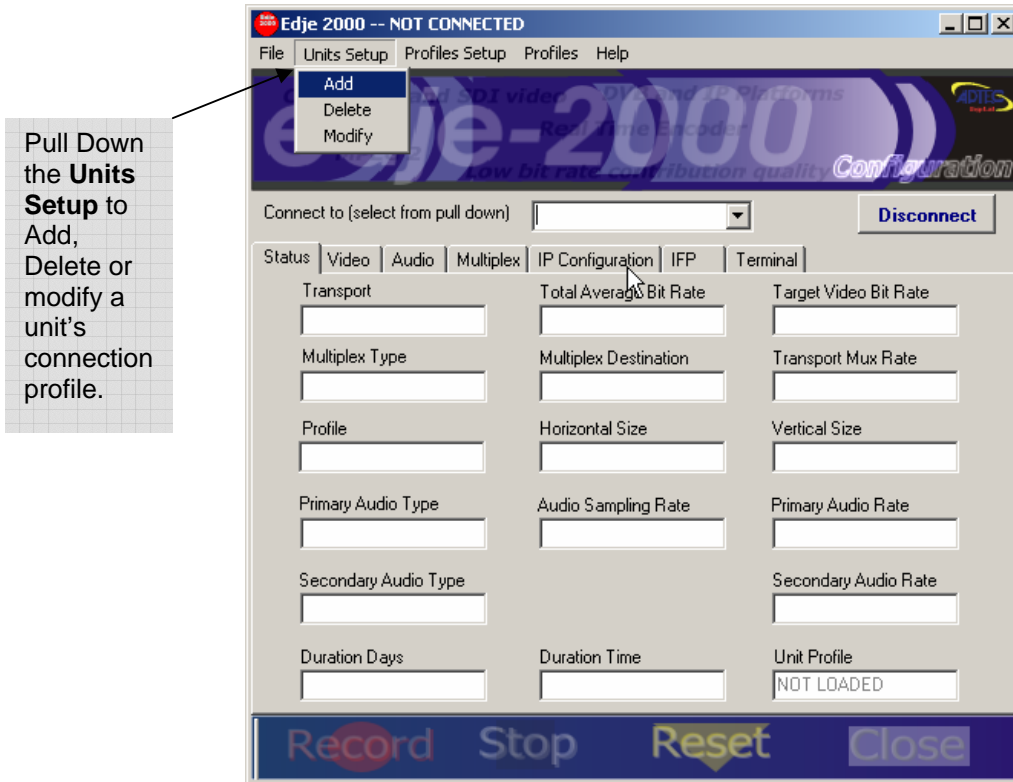
**Note: Make certain the 9 Pin communications port to RJ-11 adaptor is used to connect the PC to the Edje-2000.**

### Connection Status Bar

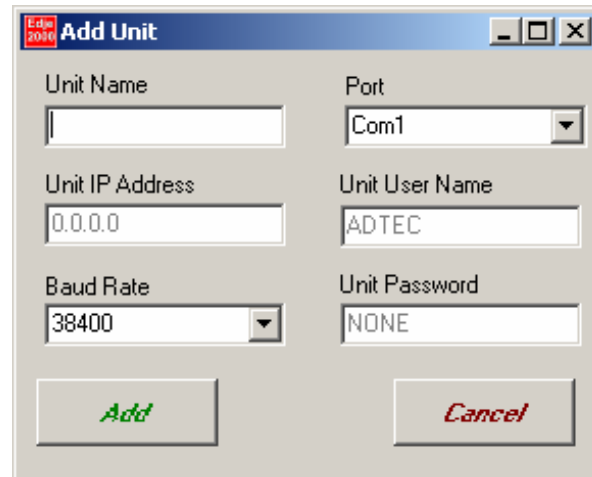


When a serial or Ethernet connection is established, the edje-2000 GUI must retrieve the current encoding status and parameters. During this process, "ATTEMPTING TO LOAD UNIT SETTINGS" will be displayed. Once the unit settings are loaded a brief "UNIT SETTINGS LOADED" dialog is displayed. The initial connection may take a few seconds. If the process fails, the "NOT CONNECTED" dialog is displayed.

### Adding a Unit

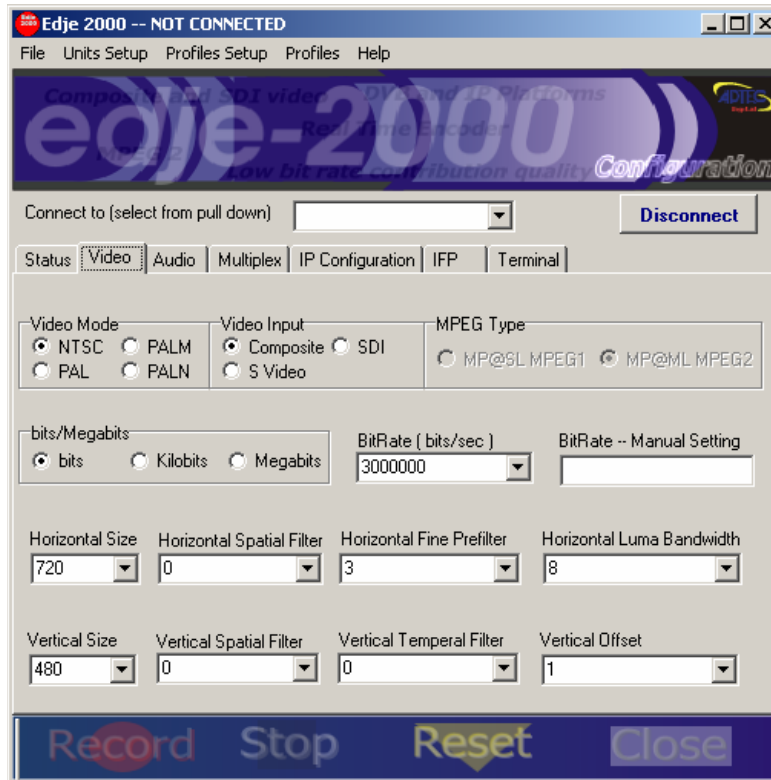


Enter a Unit Name; select the port, IP Address (Ethernet), Unit User Name (Ethernet), Baud Rate (Serial), and Unit Password (Ethernet). Once a Unit is added (created), the Unit will be available through the Connect To Pull down option.





### Video Settings



### Video Mode

<b>NTSC</b>	NTSC Television Standard. 525 Lines <i>Color Frequency: 3,579,545 Hz</i> Max MPEG 2 Resolution is 720 x 480
<b>PAL</b>	PAL Television Standard. 625 Lines <i>Color Frequency: 4,433,618.75 Hz</i> Max MPEG 2 Resolution is 720 x 576
<b>PALM</b>	PALM Television Standard. 525 Lines <i>Color Frequency: 3,575,611.49 Hz</i> Max MPEG 2 Resolution is 720 x 480
<b>PALN</b>	PALN Television Standard. 625 Lines. <i>Color Frequency: 3,582,056.25 Hz</i> Max MPEG 2 Resolution is 720 x 576

**Note:** The Video Mode cannot be changed while encoding.

### Video Input

<b>Composite</b>	The Composite video input requires a 75-Ohm source 1-volt P-P video input to the BNC connector. The input automatically terminates.
<b>YC</b>	The YC video input requires a 75-Ohm source with 0.7-volt P-P Y (Luminance) and C (Chrominance) video input to the 4-pin din.

<b>SDI (Option)</b>	The SDI (D1) input requires a 75-Ohm source with 1-volt P-P video input to the BNC connector. It supports uncompressed SMPTE 259 M digital video and embedded AES-EBU digital audio (4 channels)
---------------------	--

**Note:** Video Input can be adjusted while encoding.

### MPEG Type

<b>MPEG 2</b>	MPEG 2 ISO/IEC 13818 <a href="#">MP@ML</a> Max Horizontal Resolution 720 Lines Max Vertical Resolution 480 Lines NTSC Max Vertical Resolution 576 Lines in PAL
<b>MPEG 1</b>	MPEG 1 ISO/IEC 11172 <a href="#">MP@SL</a> (Currently disabled) Max Horizontal Resolution 352 Lines Max Vertical Resolution 240 Lines in NTSC Max Vertical Resolution 288 Lines in PAL

### Data Rate Format (bits/Kilobits/Megabits)

<b>bits</b>	Bits per second. i.e. 3,000,000
<b>Kilobits</b>	Thousands of bits per second. i.e. 3000 Kbits is equal to 3,000,000 bits per second
<b>Megabits</b>	Millions of bits per second. i.e. 3 Mbs is equal to 300 Kbits

**Note:** The Video Data Rate can be adjusted while encoding when using Program Streams over IP. Caution should be taken when making large bit rate changes when using Transport Streams in DVB-ASI platforms.

### Bit Rate

Pull down menu for selecting pre configured video elementary stream data rate (see Data Rate Format)

### Bit Rate (Free Format)

Free formatted data rate entry. Use to get very specific video elementary stream data rate (see Data Rate Format)

### Horizontal Resolution (HIS)

Horizontal pixel resolution of the image the edje-2000 encodes. Provides a pixel sampling circuit that provides macro-block (16 lines) scaling before feeding the uncompressed digital video to the encoder. Range is Full D1, 720 to 196 pixels in 16 pixel (line) increments.

**Note:** Video Mode (NTSC or PAL) has no effect on the Horizontal Resolution. Encoder must be stopped to change.

### Horizontal Spatial Filter (HSF)

The HSF is integrated in to the encoding engine. It was intended to re-size images as well as filter out noise spatially (with-in the image) in the horizontal plane. The filter uses an 8-Tap Polyphase filter for Luminance and a 4-Tap filter for Chrominance pixel values. Adtec currently uses the default coefficient values when setting HSF.

We plan to implement more documentation and user defined coefficients in future firmware releases.

Default Luminance Coefficient or noise reduction filter table

Option	Tap 0	Tap1	Tap 2	Tap 3	Tap 4	Tap 5	Tap 6	Tap 7
0	Off	Off	Off	Off	Off	Off	Off	Off
1	- 8	- 1	72	126	72	1	- 8	0
2	- 4	- 8	64	152	64	- 8	- 4	0
3	- 2	- 16	64	164	64	- 16	- 2	0
4	- 1	- 16	52	186	52	- 16	- 1	0
5	- 4	18	67	94	67	18	- 4	0
6	- 11	- 12	77	148	77	- 12	- 11	0

Default Chrominance Coefficient or noise reduction filter table

Option	Tap 0	Tap1	Tap 2	Tap 3
0	Off	Off	Off	Off
1	64	128	64	0
2	48	160	48	0
3	32	192	32	0
4	32	192	32	0
5	65	126	65	0
6	60	136	60	0

**Note: HSF cannot be adjusted while encoding.**

### Horizontal Fine Pre-filter (HPF)

Horizontal Fine Pre-Filter works in association with horizontal scaling.

The numbers are empirically based.

**0** = Should be used with bit rates under 1 Mbs as the affect will soften the picture thus reducing macro blocks.

**1** = Should be used between 1 and 2 Mbs. This will reduce macro blocking in this bit range and provide a slightly softened image.

**2** = Should be used between 2 and 3 Mbs. This will reduce macro blocking in this bit range and provide a very slightly softened image.

**3** = This will produce the sharpest image and should be used at bit rates of 3 Mbs and higher.

**Note: HPF can be adjusted while encoding.**

### Horizontal Luma Bandwidth (HSB)

The horizontal luminance filter provides a luma peaking/low pass filter.

Empirical testing indicates the HLB setting is directly related to the bit rate.

HLB Configuration Table

Option	Recommended Data Rates	-3 dB Point MHz	Gain at 4 MHz DB	
0	300 K to 1 Mbs	1.75	+ 2.5 dB Notches at 2.5 MHz and 5.6 MHz elliptical response	
1	1 - 1.5 Mbs	1.9	- 5.0 dB Notches at 2.8 MHz and 5.25 MHz elliptical response	
2	1.5 - 2 Mbs	2.1	-15 dB Notches at 3.4 MHz and 4.8 MHz elliptical response	
1-8 Low Pass	3	2 - 2.5 Mbs	- 13 dB	
	4	2.5 - 3 Mbs	- 8 dB	
	5	3 - 3.5 Mbs	-5 dB	
	6	3.5 - 4 Mbs	3.75	- 3 dB
	7	3.5 - 4 Mbs		- 2 dB
	8	4 - 4.5 Mbs		0 dB
	9	4.5 - 5 Mbs		+ 1.5 dB
	10			+ 2.2 dB
9-15 Peaking	11		+ 2.9 dB	
	12		+ 4.0 dB	
	13		+ 5.0 dB	
	14		+ 6.8 dB	
	15		+ 8.0 dB	

**Note:** *HSB can be adjusted while encoding.*

### Vertical Resolution (VSI)

The edge-2000 provides a pixel sampling circuit that provides macro-block (16 lines) scaling before feeding the uncompressed digital video to the encoder ASIC. Range is Full D1 NTSC, 480; PAL 576 to 196 pixels in 16 pixel increments.

**Note:** *Video Mode affects the Vertical Resolution. Encoder must be stopped to change.*

### Vertical Spatial Filter (VSF)

The video encoder provides a vertical filter for reducing spatial noise in the vertical direction. The vertical filter is also used for chrominance sub sampling (4:2:2 to 4:2:0 input chroma format conversion). Adtec currently uses the default coefficient values when setting VSF.

This filter uses a 4-tap filter for luminance pixel values and a 5-tap polyphase filter for chrominance pixel values.

VSF Luminance Table

Option	Tap 0	Tap1	Tap 2	Tap 3
0	Off	Off	Off	Off
1	66	124	66	0
2	18	156	87	- 5
3	18	156	87	- 5
4	46	110	84	16

VSF Chrominance to be documented later

**Note: VSF cannot be adjusted while encoding.**

### Vertical Temporal Filter (VTF)

The video encoder can temporally [over time] filter input pixel data using its 2-tap temporal filter. The 2-tap filter allows pixel values of the current incoming picture to be weighted against the corresponding pixel values of the previous input picture. Adtec currently uses the default coefficient values when setting VTF.

VTF Configuration Table

Option	1	2	3	4
0	164	7	7	7
1	164	7	6	5
2	164	7	5	4
3	164	7	4	3
4	164	6	3	2

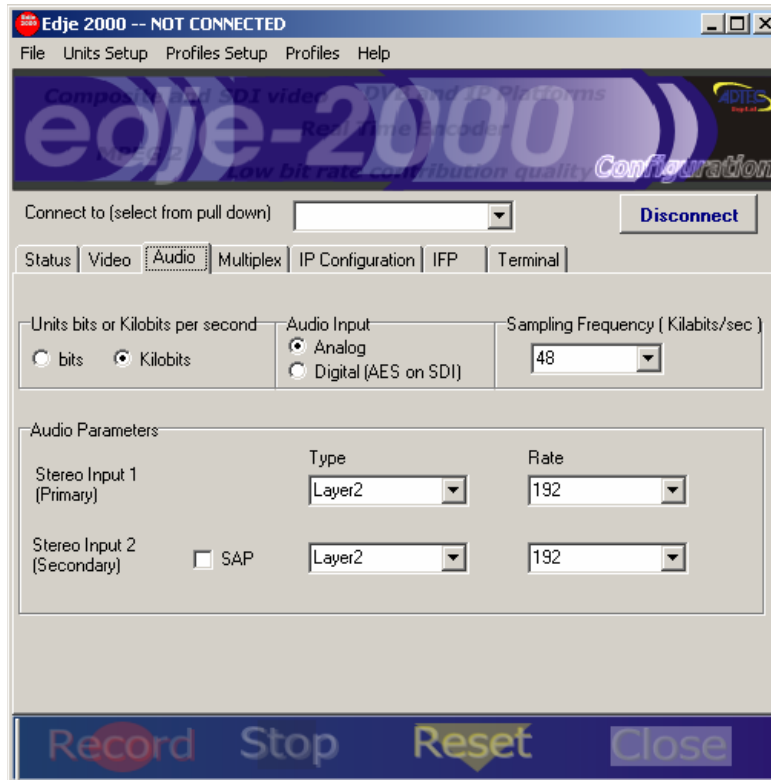
**Note: VTF can be adjusted while encoding.**

### Vertical Offset

Set the vertical offset to capture Vertical Blanking Lines.

Currently only used to support Adtec Closed Captioning by setting Vertical Offset to 1

### Audio Settings



### Unit Bits (Audio Data Rate in bits or Kilobits)

<b>bits</b>	Bits per second. i.e. 192,000
<b>Kilobits</b>	Thousands of bits per second. i.e. 192 Kbits is equal to 192,000 bits per second

**Note:** The edje-2000 can optionally add a stereo input so that it can support two (2) stereo audio encodes or four (4) monaural audio channels. Each stereo input can individually be set to a different Data Rate. The second audio input is referenced as SAP. SAP is standard on all encoders with the SDI option (2010 models)

### Audio Input

<b>Analog</b>	Analog unbalanced input.
<b>Digital</b>	Digital AES-EBU embedded on SDI input. Option

### Sampling Frequency

The sampling frequency must be the same on the primary and SAP audio if SAP is enabled.

Adtec hardware decoders do not support 16, 22.05, and 24. All Adtec decoders support 44.1 and 48. The edje supports 32 as well as 44.1 and 48.

<b>16</b>	16,000 or 16 KHz. Very low sampling frequency and not recommended for broadcast applications.
<b>22.05</b>	22,050 or 22.05 KHz. Very low sampling frequency and not recommended for broadcast applications.
<b>24</b>	24,000 or 24 KHz. Very low sampling frequency and not recommended for broadcast applications.
<b>32</b>	32,000 or 32 KHz. Low sampling frequency and not recommended for broadcast applications.
<b>44.1</b>	44,100 or 44.1 KHz. CD quality sampling frequency that is recommended for broadcast applications. <b>44.1 may be required for certain decoders or Set Top Boxes.</b>
<b>48</b>	22,050 or 22.05 KHz. Very high sampling frequency that is highly recommended for broadcast applications. <b>48 KHz is the preferred sampling frequency for Layer 2.</b>

**Note: The Sampling Frequency is global, once set, it applies to the primary and secondary audio inputs.**

### Stereo Input 1 Type (Primary Audio)

<b>AC-3</b>	Dolby AC-3 Stereo Encoding profile. This option is exclusive to the edje-2100. Availability is in Q4 2002.
<b>Layer 1</b>	MPEG 1 Layer 1 Audio Encoding profile. Layer 1 requires a higher bit rate than Layer 2 for similar fidelity. Layer 1 is intended use is with MPEG 1 video. Layer 1 supports data rates from 32 Kbits/s to 448 Kbits/s in 32 K steps.
<b>Layer 2</b>	MPEG 2 Layer 2 Audio Encoding profile. Layer 2 is more efficient than Layer 1 therefore provides higher fidelity at lower bit rates. Layer 2 supports 32, 48, 56, 64, 96, 112, 128, 160, 192, 224, 256, 320, 384 Kbits/s. <b>Layer 2 is the preferred audio encoding profile for MPEG 2.</b>
<b>Layer 3</b>	Available in Q4 2002
<b>AAC</b>	MPEG 4 Advanced Audio Coding. Availability TBD.

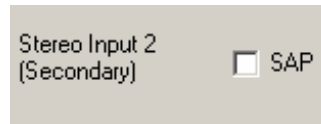
### Stereo Input 1 Data Rate (Primary Audio)

Based on Audio Type	Set the Audio Type the select the Data Rate by the pull down menu. <b>Layer 2, 48 KHz, 224 K is the preferred broadcast setting.</b>
---------------------	--

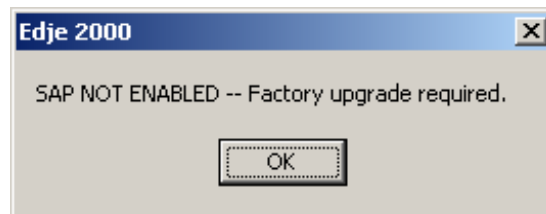
### Secondary Audio (SAP)

The SAP option adds a second audio DSP (factory install only). This provides a second stereo audio encoding feature to be and multiplexed in either a program or transport stream.

To enable SAP, click in the SAP check box.



If the SAP DSP is not installed, the following modal window will be displayed.



### Stereo Input 2 Type (Secondary Audio)

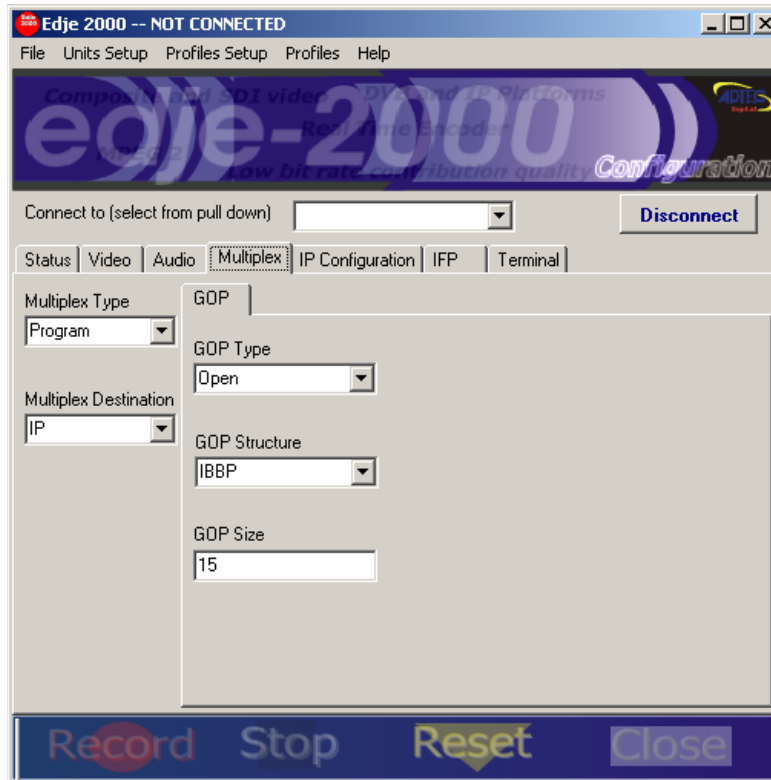
<b>AC-3</b>	Dolby AC-3 Stereo Encoding profile. This option is exclusive to the edje-2100. Availability is in Q4 2002.
<b>Layer 1</b>	MPEG 1 Layer 1 Audio Encoding profile. Layer 1 requires a higher bit rate than Layer 2 for similar fidelity. Layer 1 is intended use is with MPEG 1 video. Layer 1 supports data rates from 32 Kbits/s to 448 Kbits/s in 32 K steps.
<b>Layer 2</b>	MPEG 2 Layer 2 Audio Encoding profile. Layer 2 is more efficient than Layer 1 therefore provides higher fidelity at lower bit rates. Layer 2 supports 32, 48, 56, 64, 96, 112, 128, 160, 192, 224, 256, 320, 384 Kbits/s. <b>Layer 2 is the preferred audio encoding profile for MPEG 2.</b>
<b>Layer 3</b>	Available in Q3 2002
<b>AAC</b>	MPEG 4 Advanced Audio Coding. Availability TBD.

### Stereo Input 2 Data Rate (Secondary)

Based on Audio Type	Set the Audio Type the select the Data Rate by the pull down menu. <b>Layer 2, 48 KHz, 224 K is the preferred broadcast setting.</b>
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### Multiplex Settings



### Program or Transport Multiplexing

The edje 2000 can encode and multiple to either a Program or Transport stream. The table below provides the mux type and destination options. Typically Program multiplexes are for hard drive storage or IP streaming. Transport multiplexes were originally designed for digital distribution systems, including Satellite direct to home (DVB), digital cable TV (DVB) and digital terrestrial TV (DVB or ATSC). Recently, more servers are using Transport streams for storage applications. The Video On Demand (VOD) market is driving this change in storage multiplexing format.

### Multiplex Type and Destination Table

Destination	Program Stream	Transport Stream
IP	<b>Yes (Default)</b>	Yes (requires special IP compatible STB)
ASI	No	<b>Yes (Default)</b>
Hard Drive	Yes	Yes

***Adtec edje decoders, Soloist 2, Mirage and Duet decoders currently do not support Transport streams.***

### Multiplex Type

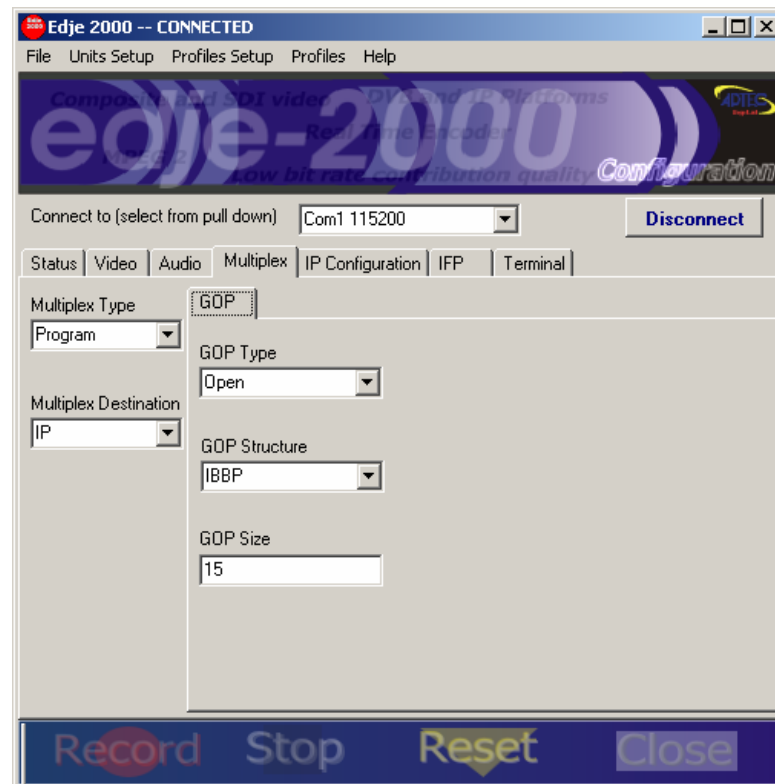
<b>Program</b>	Program streams interleaves video and audio into a multiplex that is ideally suited to storage and IP streaming applications.
<b>Transport</b>	Transport streams interleave video and audio into either 188 or 204 Byte Packets that carry PCR to synchronize remote decoders, typically a set top box.

### Multiplex Destination

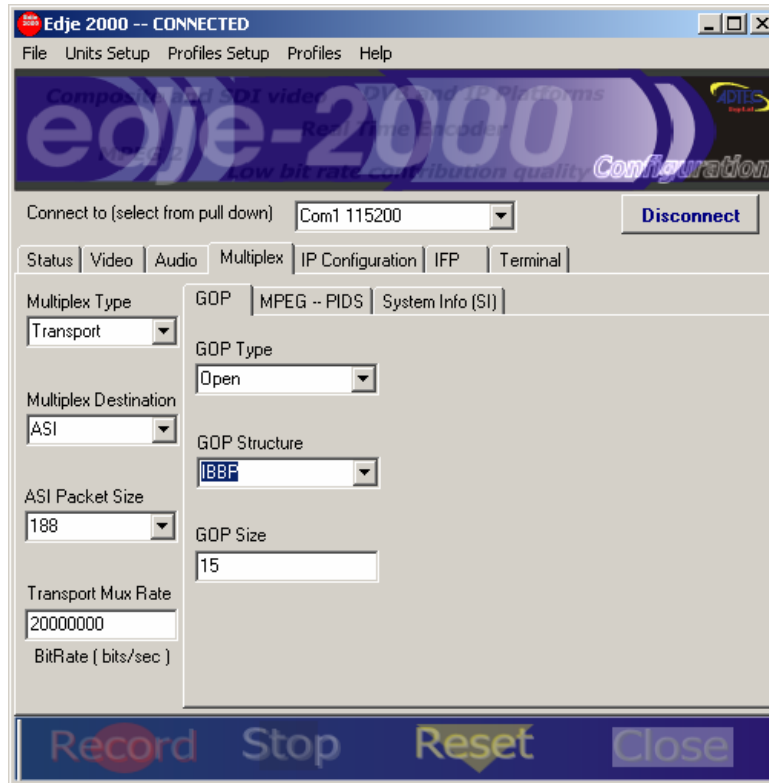
<b>IP</b>	Program streams are output via Ethernet or IP.
<b>ASI</b>	Transport streams output via the ASI output.
<b>Drive</b>	Program or Transport stream is encoded to the hard drive. The file name is defaulted to encode.mpg. When the Stop button is hit, a rename modal pops up, enter the designated eight-character file name at that time.

### Group Of Pictures (GOP)

A GOP defines the image frame structure. GOP options for Program Stream multiplex.



A GOP defines the image frame structure. GOP options with Program ID (PID) settings for Transport Stream multiplex.



### GOP Type

<b>Open</b>	Allows B and P frames to reference across I frame boundaries
<b>Closed</b>	Limits the reference to within I frame boundaries.

### GOP Structure

<b>IBBP</b>	Typical long GOP structure providing the highest efficiency encoding.
<b>IBP</b>	Lower latency version of long GOP that provides similar efficiency to IBBP
<b>IP</b>	Low latency GOP with poor efficiency
<b>I</b>	I frame only GOP, very poor efficiency requiring very high data rates for quality images

### GOP Size

<b>1-64</b>	Only relevant to long GOP structures. This is the distance between I frames in a group of pictures.
<b>15 (Example)</b>	<b>IBBPBBPBBPBBPBBPI</b>

### Transport Stream Multiplexing

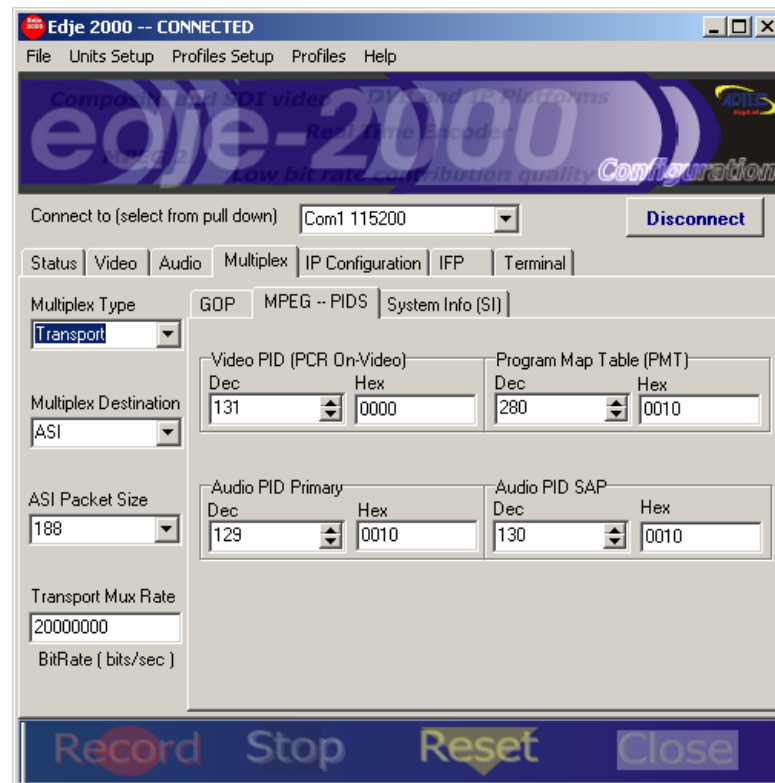
#### ASI Packet Size

The ASI packet size establishes the number of bytes per packet. Options include 188 (default) or 204.

#### Transport Mux Rate

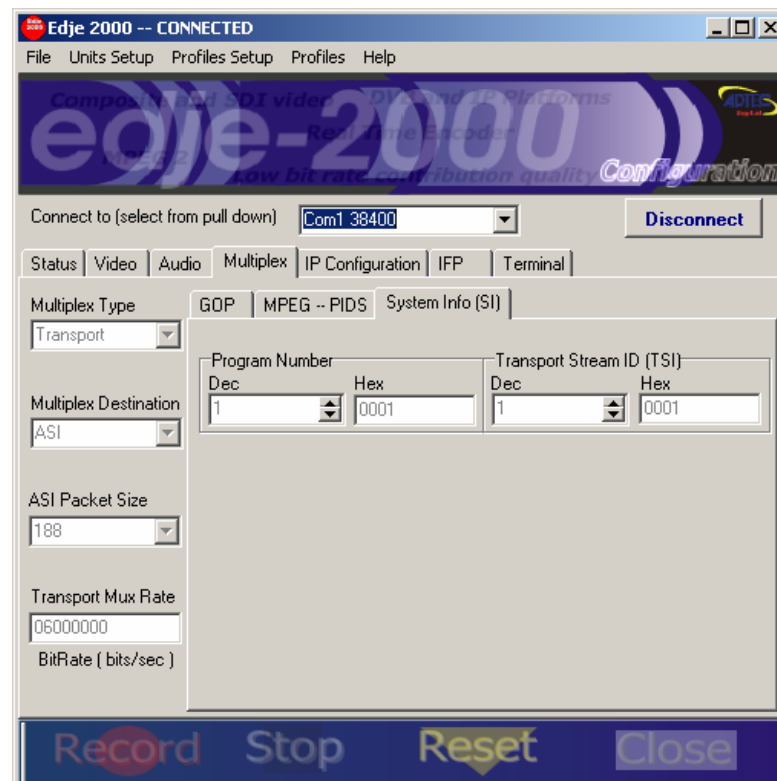
Transport Stream Multiplex data rate fill (null packets). To achieve a specific data output, set TMR to the desired rate. This is ideal for Single Carrier Per Channel (SCPC) service. The TMR rate will provide the modulator the required data rate to establish the desired Symbol Rate.

The following settings are Transport Stream use only.



### MPEG PIDs

<b>Video PID (PCR on Video)</b>	Program ID for video component
<b>Program Map Table ID (PMT)</b>	Program ID for PMT table. The PMT table provides a list of all component elements in a transport stream.
<b>Audio PID Primary</b>	Program ID for audio component 0 (Primary)
<b>Audio PID Secondary</b>	Program ID for audio component 1 (Secondary)

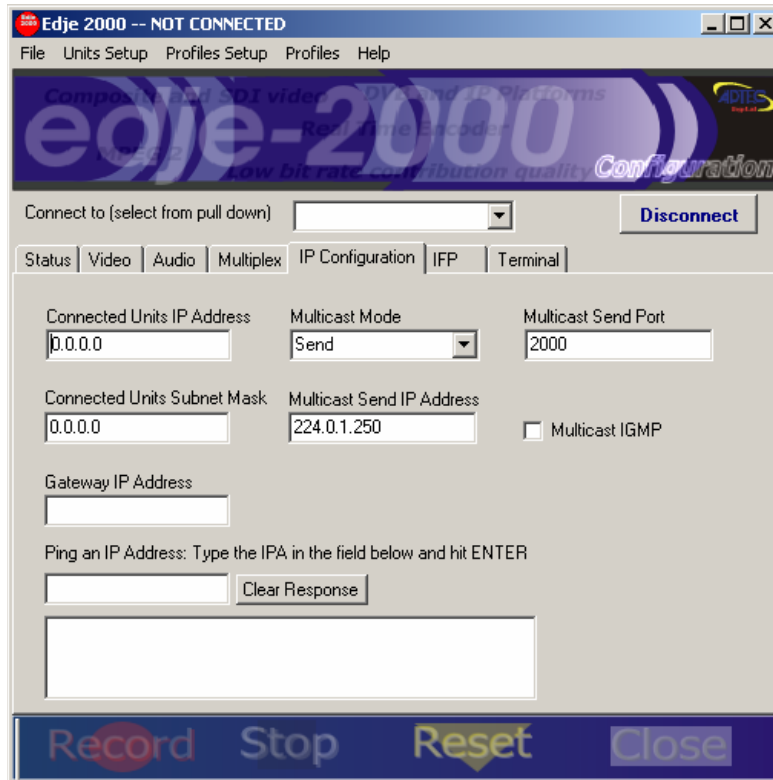


### System Information PIDs (SI)

<b>Transport Stream ID</b>	ID of the Transport Stream
<b>Program Number</b>	An arbitrary number used in the transport stream, typically 1 no need to be changed.

### IP Configuration

**Note:** IP settings are only used with Program Streams and when the Multiplex is set to IP.



### Connected Units IP Address

xxx.xxx.xxx.xxx	IP Address for the encoder.
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### Connected Units Subnet Mask

xxx.xxx.xxx.xxx	IP mask used to define the number of IP Address on the local network. Typical class C address of 255.255.255.0 is very common.
-----------------	--

### Gateway IP Address

xxx.xxx.xxx.xxx	IP Address for the router that connects the local network to a remote network. This address must reside on the local network within the subnet range.
-----------------	---

### Multicast Mode

Off	Not MPEG 2 distribution via Ethernet.
Send	Send MPEG 2 via Ethernet UDP Unicast or Multicast.

### Multicast Send IP Address

xxx.xxx.xxx.xxx	IP Address for the Unicast or Multicast. If Unicast is used, ping the IP Address of the destination. Multicast settings range 224.xxx.xxx.xxx through 239.xxx.xxx.xxx.
-----------------	--

### Multicast Send Port

xxxxx	Ethernet Port used to carry Ethernet data. Range is 21 to 65535 (decimal).
-------	--

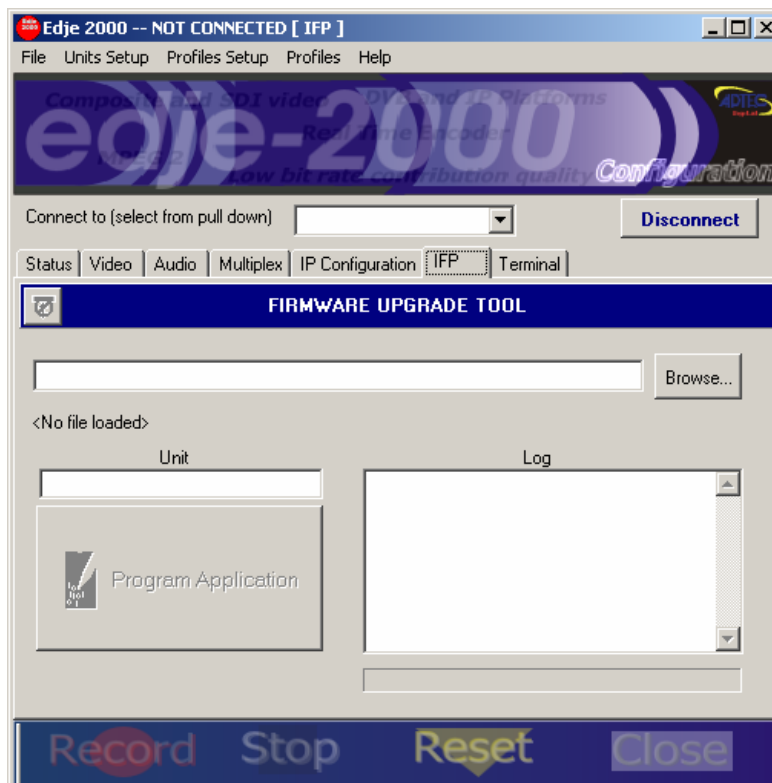
### Multicast IGMP

Check if a router is used and requires IGMP version 2.0. IGMP supports automatic passing or blocking of data when using a Multicast.

### Ping IP address

Type in an IP address and hit enter, the response will be shown in the dialog box.

## In Field Programming (IFP Firmware Upgrade))

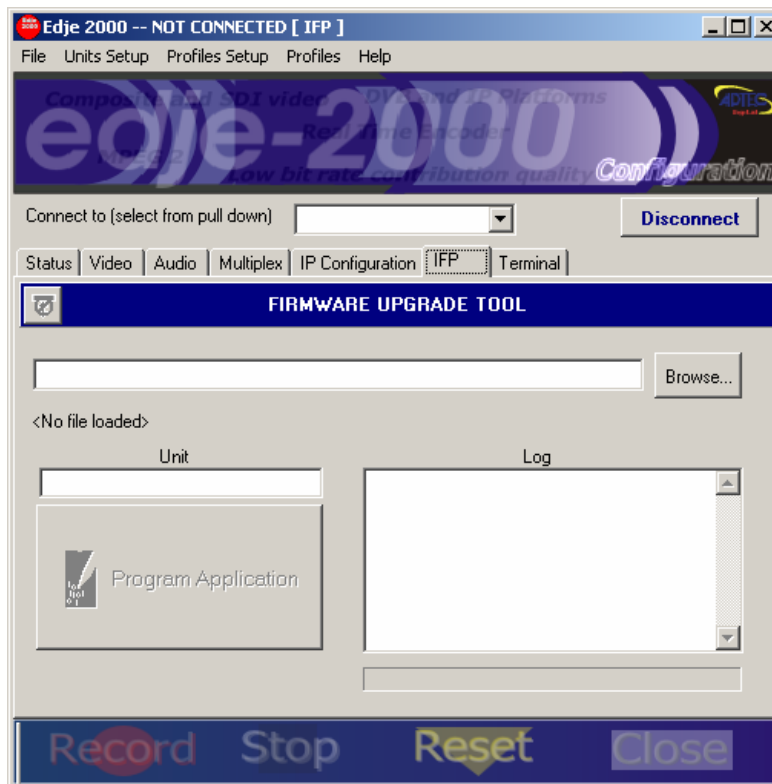
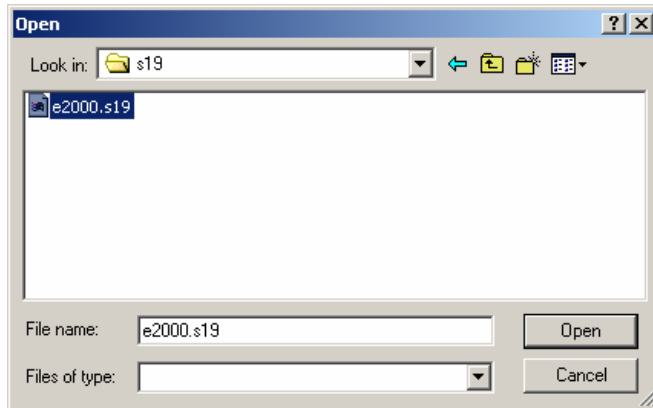


# Edje-2000

## Real Time MPEG 2 Streaming Encoder

Version 1.3

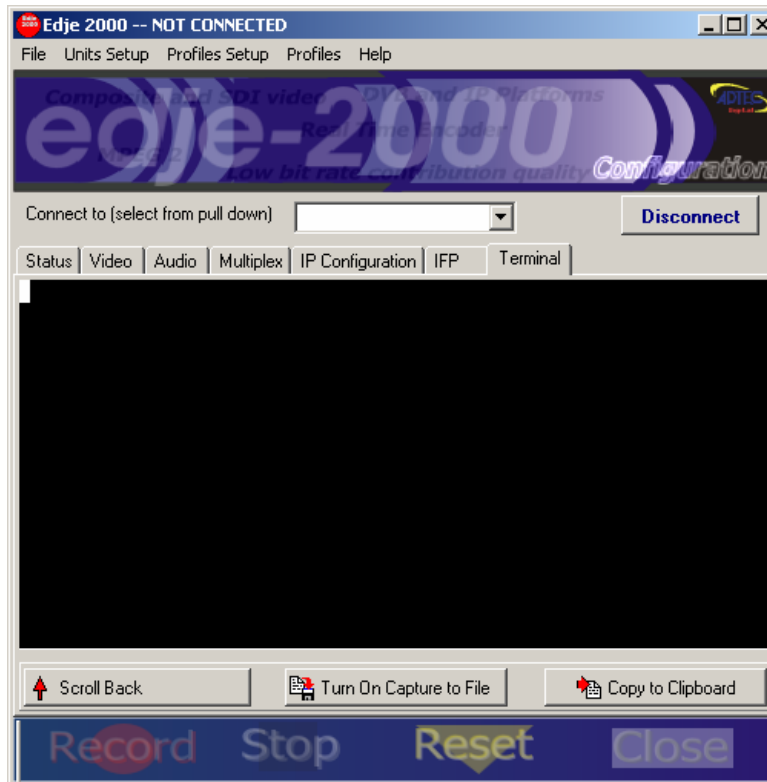
IFP provides a way to update the Edje-2000's firmware. Simply browse for the xxxxxxxx.S19 record, select a Unit and click Program Application.



**Note: The Connect to pull down option has selected the Default COM 1 38400 connection, which used a PC's Com Port 1 with a speed of 38, 400 Baud. At this speed, it will take nearly 5 minutes to upgrade the firmware.**



### Terminal



Terminal provides a very basic interface to send Terminal Commands to the edge-2000 RTE. See Appendix C for a list of API commands.

### Serial Communications

#### RS232 Port

RJ-11	Function	Notes
1	NC	No Connect
2	TRX	Transmit
3	GND	Ground
4	GND	Ground
5	RCV	Receive
6	NC	No Connect

#### Communications Port Interface Adapter

Computer connector **DB9F to RJ-11**

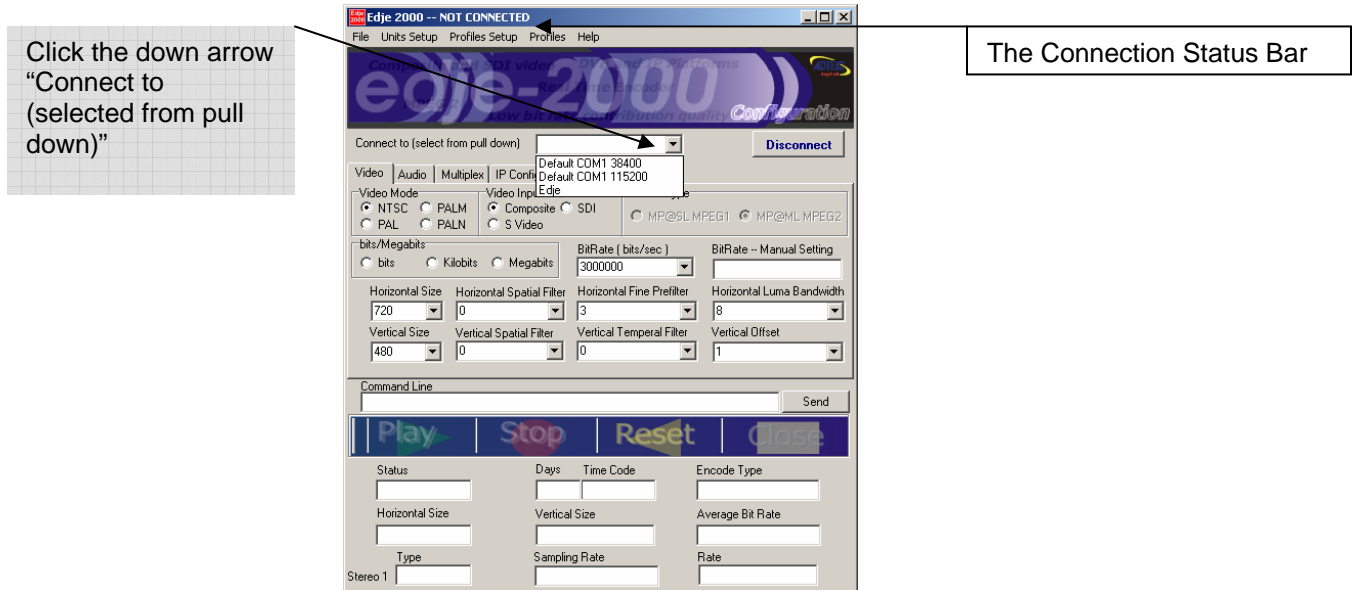
DB9 Female	DB25 Function	RJ-11	RJ-11 Function	Notes
1	DCD	NC	NC	Short to 7 inside 9 pin housing
2	TRX	2	TRX	Transmit
3	RCV	5	RCV	Receive
4	DTR	NC	NC	No Connect
5	GND	3	GND	Ground
6	DSR	NC	NC	No Connect
7	RTS	NC	NC	Short to 1 inside 9 pin housing
8	CTS	NC	NC	No Connect

### Connecting to the Edje-2000 Via RS232

#### Edje-2000 RS232 Serial Default Parameters

Variable	Setting
Baud Rate	38,400
Data Bits	8
Stop Bit	1
Parity	None
Flow Control	None. This is required if you are using Hyper Terminal or some other simple terminal application to communicate with the Edje-2000 via command line.
Note on connecting via RS 232	When a terminal application connects to the Edje-2000, the Edje gives no response. The user must initiate a response by issuing a command. Enter the wildcard name (*) or unit name (edje) and the Edje-2000 will respond with a zero for the asterisk or OK for the name. Please reference the API command interfaces for further information on connecting via Serial.

### Connecting using the edje 2000 GUI



To connect to an Edje-2000 via Serial RS232 communications follow steps 1-3.

1. Connect the 9 Pin to RJ-11 adaptor to the PC Communication Port. 1 (Com 1).
2. Connect the Adtec provided serial cable (RJ11 to RJ-11) to the adaptor and RS232 In on the Edje-2000. This is an industry standard modem cable that Adtec uses for serial RS232 communications.
3. Click the connect to pull down and select Default Com1 38400

The Connections Status Bar will change as show below.

1. Default state, not connected. The same prompt is displayed when a connection error occurs.



2. While attempting to connect.



3. Once connected.



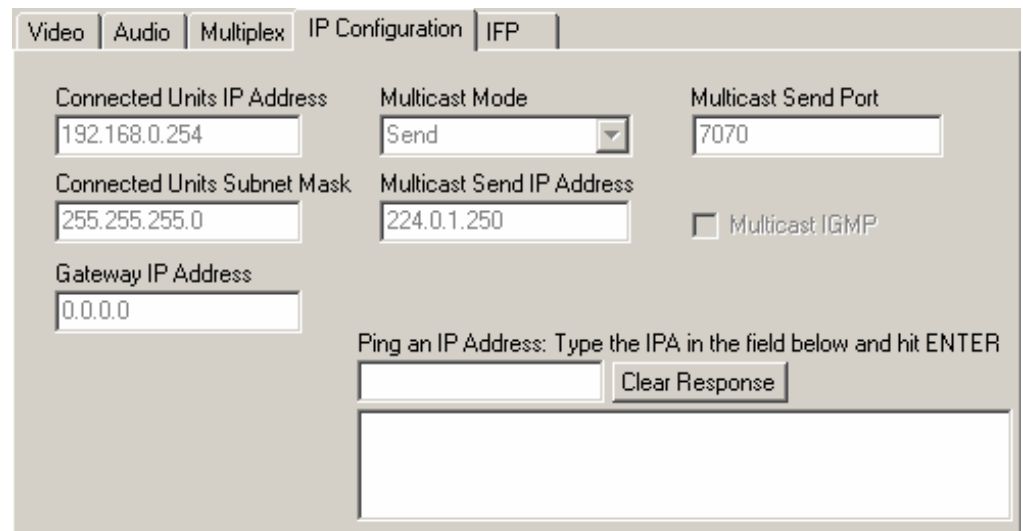
### Connecting to the Edje-2000 Via Ethernet

The Edje-2000 ships with the following factory Ethernet configuration.

Variable	Setting
IP address	192.168.10.48
IP Mask Sub Net Mask	255.255.255.0
Gateway IP	0.0.0.0 Defaulted off.
User Name	ADTEC
Password	NONE

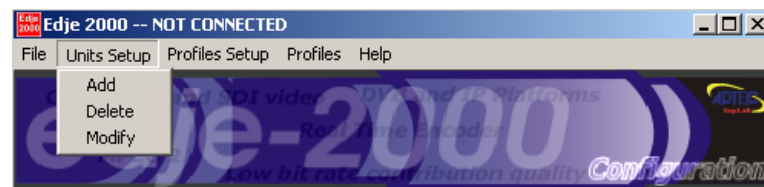
It is unlikely that the local network will be in the 192.168.10.xxx address range. Therefore a serial connection will be required to configure the Edje-2000 for the local network. A serial connection must be made then the Ethernet Variables can be modified in the edje GUI.

### IP Configuration Tab



### Unit Setup

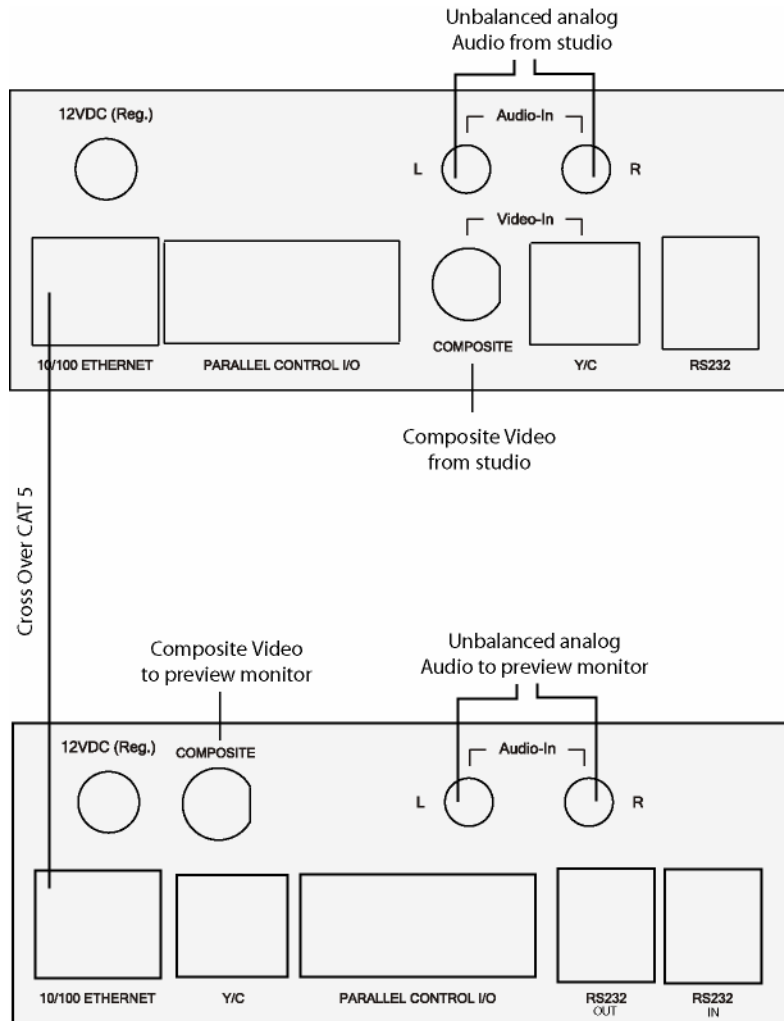
Once the IP Configuration has been changed. A Unit Setup must be configured to make a connection.



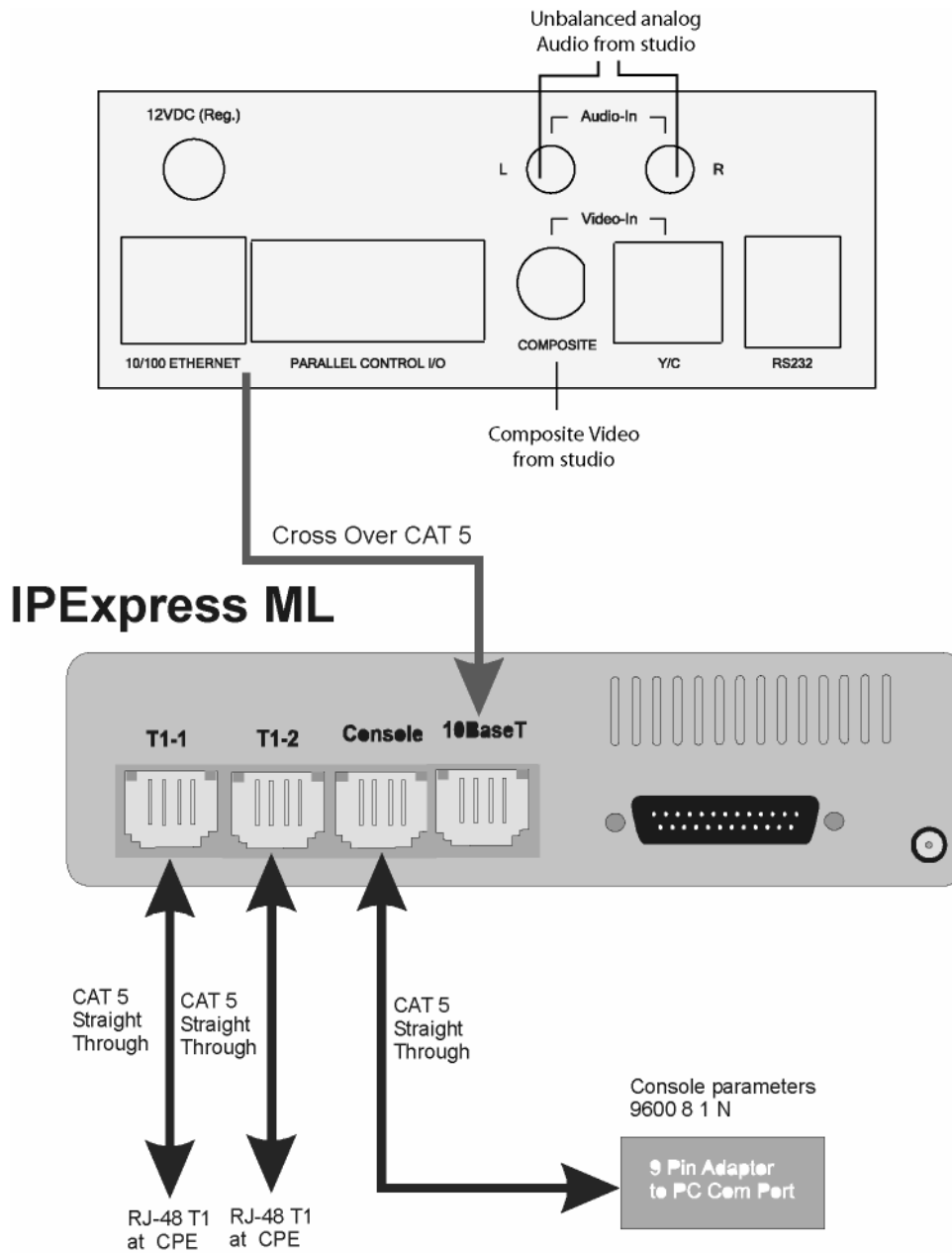
<b>Unit Name</b>	Connection Name-User defined name for the connection. <b>My Network</b> for this example
<b>Port</b>	Click pull down and select <b>Network</b>
<b>Unit IP Address</b>	IP Address of the Edje 2000. The edje 2000 requires a static IP Address. Please see your network administrator to obtain IP Address. <b>10.10.101.125</b> for this example
<b>User Name</b>	Telnet User Name. Default is <b>ADTEC</b> This case sensitive
<b>Password</b>	Telnet User Name. Default is <b>NONE</b> This is case sensitive

Note: Since the Port is Network the Baud Rate is disabled.

## Connecting the Edje 2000 encoder to Edje 1013 Decoder



### Connecting the Edje 2000 to the IP Express Router



## Appendix A

### Terminal Commands

Command	Verbose	Terse	Compact
AUDIO ENCODE RATE 0	AENCODE0	AE0	A0
AUDIO ENCODE RATE 1	AENCODE1	AE1	A1
AUDIO SAMPLING FREQUENCY	ASAMPLEFREQ	ASF	AF
AUDIO PID0	AUDIOPID 0	API 0	AP 0
AUDIO PID1	AUDIOPID 1	API 1	AP 1
GATEWAY IPA	GATEIPADDRESS	GIP	GI
HORIZONTAL SIZE	HSIZE	HSI	HS
HORIZONTAL SCALER PREFILTER	HSCALEPREFILTER	HPF	HP
HORIZONTAL LUMA BAND WIDTH	HSCALEBANDWIDTH	HSB	HB
HORIZONTAL SPATIAL FILTER	HFILTERSPATIAL	HFS	HF
IP ADDRESS	IPADDRESS	IPA	IA
MPEG TYPE	VENCODE	VEN	VE
MULTICAST SEND PORT	MULTICASTSP	MSP	MQ
MULTICAST IGMP	MULTICASTIGMP	MIG	MG
MULTICAST MODE	MULTICASTMODE	MMO	MM
MULTICAST SEND IPA	MULTICASTSIPA	MSI	MJ
MULTIPLEX TYPE	MUXTYPE	MTY	MT
MULTIPLEX DESTINATION	MUXDEST	MDE	MD
PROGRAMNUMBER	PROGRAMNUMBER	PNU	PN
PROGRAM PID	PROGRAMMAPPID	PPI	PP
RECORD	RECORD	REC	RE
RESET UNIT	RESET	RES	RS
SECONDARY AUDIO	SECONDARYAUDIO	SAP	SP
STOP	STOP	STP	ST
SETS VIDEO BIT RATE	VBITRATE	VRT	VR
TRANSPORT MUX RATE	TRANSMUXRATE	TMR	TM
TRANSPORT QUERY	TRANSPORT	TRA	TR
TRANSPORTSTREAMID	TRANSTREAMID	TSI	TS
VERTICAL SPATIAL FILTER	VFILTERSPATIAL	VFS	VF
VERTICAL TEMPORAL FILTER	VFILTERTEMPORAL	VFT	VT
VERTICAL OFFSET	VOFFSET	VOF	VO
VERTICAL SIZE	VSIZE	VSI	VS
VIDEO PID	VIDEOPID	VPI	VP
VIDEO MODE	VIDEO	VID	VI



## Appendix B

### Glossary

AC-3 -	Audio compression standard adopted by ATSC and owned by Dolby Laboratories.
ADC -	Analog to Digital Converter.
ASCII -	American Standard Code for information Interchange.
ASI -	Asynchronous Serial Interface. A standard DVB interface for a transport stream.
ATM -	Asynchronous Transfer Mode.
ATSC -	Advanced Television Systems Committee. Digital broadcasting standard developed in North America.
ATV -	Advanced television. North American standard for digital Broadcasting.
BAT -	Bouquet Association Table. This DVB table describes a set of services grouped together by a broadcaster and sold as a single entity. It is always found on PID 0x0011.
BER -	Bit Error Rate.
B-frames -	Bi-directional predicted pictures, o pictures created from referenced to past and future pictures.
Bitrate -	The rate at which a bit stream arrives at the input of a decoder.
Block -	A set of 8x8 pixels used during Discrete Cosine Transformation (DCT).
Bouquet -	A set of services sold as a single entity.
Broadcaster -	Someone who provides a sequence of scheduled events or programs to the viewer.
CA -	Conditional Access. This system allows service providers to control subscriber access to programs and services via encryption.
CAT -	Conditional Access Table. This table identifies EMM streams with a unique PID value. The CAT is always found on PID 0x0001.
CATV -	Community Access Television, otherwise known as Cable TV.
Channel -	A digital medium that stores or transports an MPEG-2 transport stream.
COFDM -	Coded Orthogonal Frequency-Division Modulation.
Compression -	Reduction of the number of bits needed to represent an item of data.
Conditional Access -	A system used to control viewer access to programming based on subscription.
CRC -	Cyclic Redundancy Check. This 32-bit field is used to verify the correctness of able data before decoding.
CVCT -	Cable Virtual Channel Table. This ATSC table describes a set of one or more channels using a number or name within a cable network. Information in the table includes major and minor numbers, carrier frequency, short channel name, and information for navigation and tuning. This table is located on PID=0x01FFB.
D/A -	Digital to Analog Converter.

DAVIC -	Digital Audio Visual Council.
DBS -	Direct Broadcasting Satellite or system.
DCT -	Discrete Cosine Transform. Temporal-to-frequency transform used during spatial encoding of MPEG video.
Decoding Time Stamp -	Decoding Time Stamp. This stamp is found in the PES packet header. It indicates the time at which a piece of audio or video will be decoded.
DigiTAG -	Digital Television Action Group
Downlink -	Communication link from satellite to earth.
DTV -	Digital Television. A general term used to describe television that has been digitalized. It can refer to Standard-definition TV or High-definition TV.
DTS -	See decoding Time Stamp.
DVB -	Digital Video Broadcasting. The DVB Project is a European consortium that has standardized digital TV broadcasting in Europe and in other countries.
DVB ASI -	Asynchronous Serial Interface. This is a standard DVB interface for a transport stream.
DVB-C -	Digital Video Broadcasting-Cable. The DVB standard for broadcasting digital TV signals by cable. The RF spectrum in digital cable TV networks has a frequency range of (approx) 46MHz to 850MHz.
DVB-S -	Digital Video Broadcasting-Satellite. The DVB standard for broadcasting digital TV signals via satellite.
DVB SPI -	Synchronous Parallel Interface. This is a standard DVB interface for a transport stream.
DVB-T -	Digital Video Broadcasting-Terrestrial. The DVB standard for broadcasting digital terrestrial TV signals.
ECM -	Entitlement Control Message. ECMs carry private conditional access information that allows receivers to decode encrypted information.
EIT (ATSC) -	Event Information Table. This table is part of the ATSC PSIP. It carries the TV guide information including titles and start times for events on all the virtual channels within the transport stream. ATSC requires that each system contain at least 4 EIT table, each representing a different 3-hour time block. The PIDs for these tables are identified in the MGT.
EIT Actual (DVB) -	Event Information Table. This table is part of the DVB SI. It supplies the list of events corresponding to each service and identifies the characteristics of each of these events. Four types of EITs are defined by DVB : 1) The EIT Actual Present/Following supplies information for the present event and the next or following event of the transport stream currently being accessed. This table is mandatory and can be found on PID=0x0012. 2) The EIT Other Present/Following defines the present event and the next or following events of other transport streams in the system that are not currently being accessed by the viewer. This table is optional. 3) The EIT Actual Event Schedule supplies the detailed list of events in the form of a schedule that goes beyond what is currently or next available. This table supplies a schedule of events for the transport stream currently being accessed by the viewer. 4) The EIT Other Event Schedule supplies the detailed schedule of events that goes beyond what is currently or next available. This table supplies a schedule of events for other transport streams in the system that is not currently being accessed by the viewer. The EIT Schedule tables are optional.
EMM -	Entitlement Management Message.EMMs specify authorization levels or services of specific decoders. They are used to update the subscription options or pay-per-view rights for an individual subscriber or for a group of subscribers.
EPG -	Electronic Program Guide. This guide represents a broadcasting data structure that describes all programs and events available to the viewer. It functions like an interactive TV guide that allows users to view a schedule of available programming and select what they want to watch.

ES -	Elementary Stream. A bit stream that includes video, audio or data. It represents the preliminary stage of the Packetized Elementary Stream (PES).
ETR -	ETSI Technical Report.
ETR 290 -	ETSI recommendation regarding measurement of MPEG-2/DVB transport streams.
ETSI -	European Telecommunication Standard Institute.
ETT -	Extended Text Table. This table is part of the ATSC PSIP. It carries relatively long text messages for additional descriptions of events and channels. There are two types of ETTs, the Channel ETT, which describes a channel, and the Event ETT, which describes individual events in a channel. The PID for this table is identified in the MGT.
Event -	A collection of elementary stream\ms with a common time base and an associated start time and end time. An event is equivalent to the common industry usage of "television program".
FEC -	Forward Error Correction. This method adds error control bits before RF modulation. With these bits, errors in the transport stream may be detected and corrected prior to decoding.
Frame -	Lines of spatial information for a video signal.
GOP -	See Group Of Pictures.
Group of Pictures -	A set of pictures usually 12-15 frames long used for temporal encoding of MPEG-2 video.
HDTV -	High Definition Television. HDTV's resolution is approximately twice as high as that of Standard Definition Television (SDTV) for both horizontal and vertical dimensions. HDTV has an aspect ratio of 16x9 as compared to the 4x3 aspect ratio of SDTV.
IEC -	International Electrotechnical Commission.
IEEE -	Institute of Electrical and Electronics Engineers.
I/F -	Interface.
I-frame -	Intra-coded frame, or a picture encoded without reference to any other picture. I-frames provide a reference for Predicted and Bidirectionally predicted frames in a compressed video stream.
IRD -	Integrated Receiver Decoder. This is a receiver with an MPEG-2 decoder, also known as a set-top box.
ISO -	International Standardization Organization.
ITU -	International Telecommunications Union (UTI).
LVDS -	Low Voltage Differential Signal. An electrical specification used by some manufactures, usually on a parallel interface. It is a balanced interface with a low signal voltage swing (about 300mV).
Macroblock -	A group of 16x16 pixels used for motion estimation in temporal encoding of MPEG-2 video.
MFN -	Multiple Frequency Network (DVB-T).
MGT -	Master Guide Table. This table is part of the ATSC PSIP. It defines sizes, types, PIDs, and version numbers for all of the relevant tables within the transport stream. The PID value for this table is 0x1FFB.
MHEG -	Multimedia and Hypermedia Expert Group.
MIP -	Megaframe Initialization Packet. This packet is used by DVB-T to synchronize the transmitters in a multi-frequency network.

<a href="#">MP@HL</a> -	Main Profile at High Level. MPEG-2 specifies different degrees of compression vs. quality. Of these, Main Profile at High Level is the most commonly used for HDTV.
<a href="#">MP@ML</a> -	Main Profile at Main Level. MPEG-2 specifies different degrees of compression vs. quality. Of these, Main Profile at Main Level is the most commonly used.
MPEG -	Moving Picture Experts Group, also called Motion Picture Experts Group.
MPEG-2 -	ISO/IEC 13818 standard defining motion video and audio compression. It applies to all layers of transmission (video, audio and system).
MPTS -	Multiple Program Transport Stream. An MPEG-2 transport stream containing several programs that have been multiplexed.
Multiplex (n) -	A digital stream including one or more services in a single physical channel. (v)-To sequentially incorporate several data streams into a single data stream in such a manner that each may later be recovered intact.
Network -	The set of MPEG-2 transport streams transmitted via the same delivery system.
NIT -	Network Information Table (NIT). The DVB table that contains information about a network's orbit, transponder, etc. It is always located on PID 0x0010. DVB specifies two types of NITs, the NIT Actual and the NIT Other. The NIT Actual is a mandatory table containing information about the physical parameters of the network actually being accessed. The NIT Other contains information about the physical parameters of other networks. The NIT Other is optional.
NTSC -	Nation TV Standard Committee Color TV System (USA and 60 Hz countries).
NvoD -	Near Video on Demand. This service allows for a single TV program to be broadcast simultaneously with a few minutes of difference in starting time. For example, a movie could be transmitted at 9:00, 9:15 and 9:30.
Packet -	See Transport Packet.
PAL -	Phase Alternating Line.
PAT -	Program Association Table. This MPEG-2 table lists all the programs contained in the transport stream and shows the PID value for the PMT associated with each program. The PAT is always found on PID 0x0000.
Payload -	All the bytes in a packet that follow the packet leader.
PCR -	Program Clock Reference. A time stamp in the transport stream that sets the timing in the decoder. The PCR is transmitted at least every 0.1 seconds.
PES -	Packetized Elementary Stream. This type of stream contains packets of unidentified length. These packets may be comprised of video or audio data packets and ancillary data.
PES Packet -	The structure used to carry elementary stream data (audio and video). It consists of a header and payload.
PES Packet Header -	The leading bytes of a PES packet, which contain ancillary data for the elementary stream.
PID -	Packet Identifier. This unique integer value identifies elements in the transport stream such as tables, data, or the audio for a specific program.
PLL -	Phase Lock Loop. This locks the decoder clock to the original system clock through the PCR.
PMT -	Program Map Table. This MPEG-2 table specifies PID values for components of programs. It also references the packets that contain PCR.
P-frame -	Predicted frame, or a picture coded using references to the nearest previous I- or P-picture.
Program -	See Service.

PSI -	Program Specific Information. PSI refers to MPEG-2 table data necessary for the demultiplexing of a transport stream and the regeneration of programs within the stream, PSI tables include PAT, CAT, PMT and NIT.
PSIP -	Program and System Information Protocol. The ATSC protocol for transmission of data tables in the transport stream. Mandatory PSIP tables include MGT, STT, RRT, VCT and EIT.
PTS -	Presentation Time Stamp. This stamp indicates the time at which an element in the transport stream must be presented to the viewer. PTSs for audio and video are transmitted at least every 0.7 seconds. The Pts is found in the PES header.
QAM -	Quadrature Amplitude Modulation. This type of modulation for digital signals used in CATV transmission (DVB-C). Amplitude and phase of a carrier are modulated in order to carry information.
QPSK -	Quadrature Phase Shift Keying. A type of modulation for digital signals used in satellite transmission (DVB-S).
RRT -	Rating Region Table. An ATSC PSIP table that defines ratings systems for different regions or countries. The table includes parental guidelines based on Content Advisory descriptors within the transport stream.
RS -	Reed-Solomon Protection Code. This refers to the 16 bytes of error control that can be added to every transport packet during modulation.
RST -	Running Status Table. A DVB-SI table that indicates a change of scheduling information for one or more events. It saves broadcasters from having to retransmit the corresponding EIT. This table is particularly useful if events are running late. It is located on PID 0x0013.
SDT -	Service Description Table. This DVB SI table describes the characteristics of available services. It is located on PID 0x0011. Two types of SDTs are specified by DVB, the SDT Actual and the SDT Other. The SDT Actual is a mandatory table that describes the services within the transport stream currently being accessed. The SDT other describes the services contained in other transport streams in they system.
SDTV -	Standard Definition Television. SDTV refers to television that has a quality equivalent to NTSC or PAL.
Section -	A syntactic structure used for mapping PSI/SI/PSIP tables into transport packets of 188 bytes.
Service -	A collection of one or more events under the control of a single broadcaster. Also known as a Program.
SFN -	Single Frequency Network (DVB-T).
SI -	Service Information. This DVB protocol specifies all the data required by the receiver to demultiplex and decode the programs and services in the transport stream. Mandatory DVB SI tables include TDT, NIT, SDT and EIT.
SMPTE -	Society of Motion Picture and Television Engineers.
SNG -	Satellite News Gathering. This refers to the retransmission of events using mobile equipment and satellite transmission.
SNMP -	Simple Network Management Protocol. This is the standard protocol for system and network administration.
SPI -	Synchronous Parallel Interface. This is a standard DVB interface for a transport stream.
SPTS -	Single Program Transports Stream. An MPEG-2 transport stream that contains one unique program.
ST -	Stuffing Table. An optional DVB-SI table that authorizes the replacement of complete tables due to invalidation at a delivery system boundary such as a cable headend. This table is located on PID 0x0014.

STB -	Set-top box. A digital TV receiver (IRD).
STD -	See System Target Decoder.
STT -	System Time Table. An ATSC PSIP table that carries time information needed for any application requiring schedule synchronization. It provides the current date and time of day and is located on PID 0x1FFB.
System Target Decoder - (STD)	A hypothetical reference model of the decoding process defined by MPEG-2.
Table -	Service Information is transmitted in the form of tables, which are further divided into subtables, then into sections, before being transmitted. Several types of tables are specified by MPEG, DVB and ATSC. Refer to the Pocket Guide for more information on the different types of Service Information tables and their functions.
TD -	Time and Date Table. This mandatory DVB SI table supplies the time reference expressed in terms of UTC time/date. This enables joint management of the events corresponding to the services accessible from a single reception point. The PID for this table is 0x0014.
Time-stamp -	An indication of the time at which a specific action must occur in order to ensure proper decoding and presentation.
TOT -	Time Offset Table. This optional DVB SI table supplies the UTC time and date and shows the difference between UTC time and the local time for various geographical regions. The PID for this table is 0x0014.
Transponder -	Trans(mitter) and (res)ponder. This refers to the equipment inside a satellite that receives and re-sends information.
Transport Packet -	188-byte packet of information in a transport stream. Each packet contains a header and a payload.
Transport Stream -	A stream of 188-byte transport packets that contains audio, video and data belonging to one or several programs.
T-STD -	See System Target Decoder.
TV -	Television.
TVCT -	Terrestrial Virtual Channel Table. This ATSC table describes a set of one or more channels or services using a number or name within a terrestrial broadcast. Information in the table includes major and minor numbers, short channel name, and information for navigation and tuning. This table is located on PID=0x1FFB.
Uplink -	Communication link from earth to a satellite.
UTC -	Universal Time, Co-ordinated.
VTC -	Virtual Channel Table. This ATSC table describes a set of one or more channels or services. Information in the table includes major and minor numbers, short channel name, and information for navigation and tuning. There are two types of VTCs, the TVCT for terrestrial systems and the CVCT for cable systems.
VLC -	Variable Length Coding. This refers to a data compression method (Huffman).
VoD -	Video on Demand.
VS -	Vestigial Sideband Modulation. This is the terrestrial modulation method used in the ATSC. It can have either 8 (8VSB) or 16 (16 VSB) discrete amplitude levels.



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