

AD1834 MPEG-2 ENHANCED ENCODER USER MANUAL



CONTENS

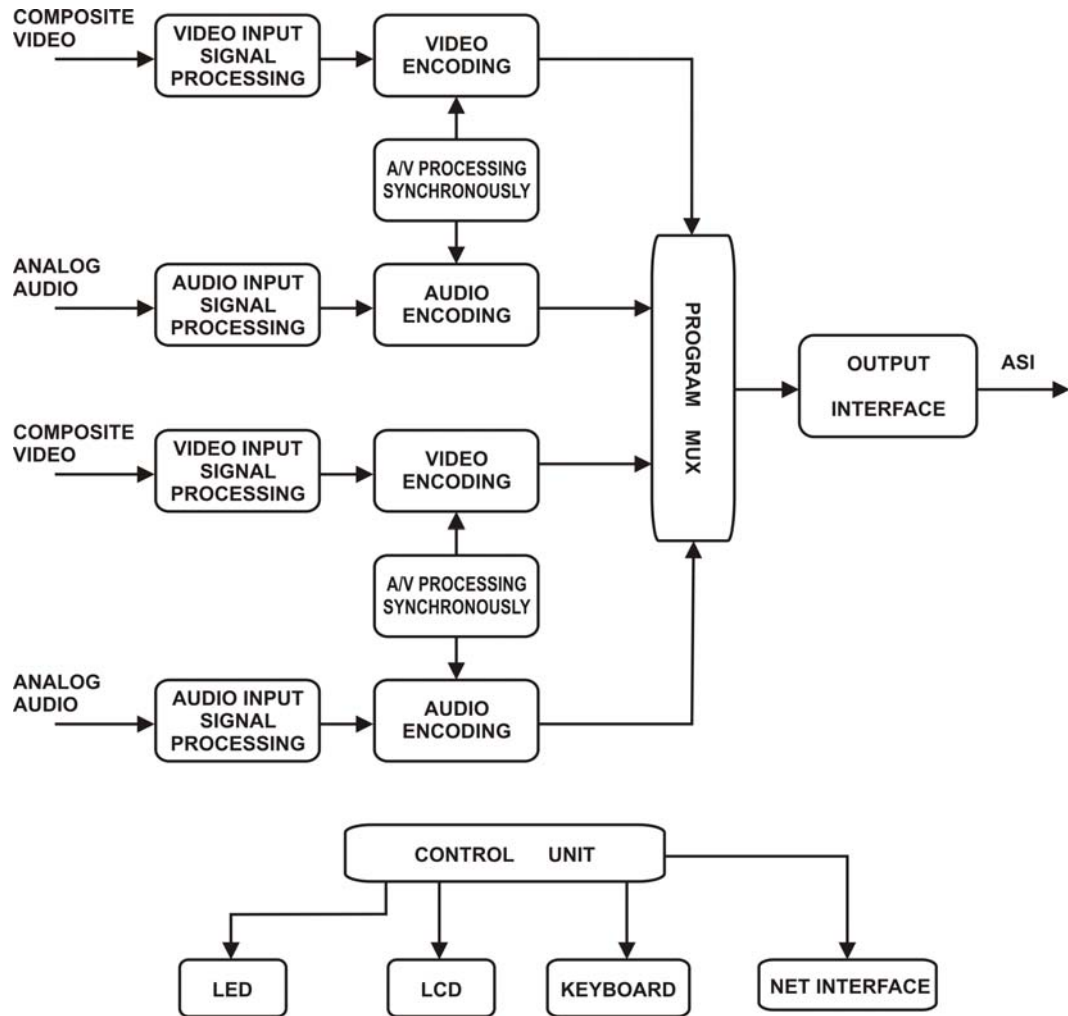
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1 Safety Instruction

- 1.1 Before starting using this unit, please be sure to refer to this manual.
- 1.2 Do not to open the cabinet, otherwise the guarantee to repair are not available.
Meanwhile touching the inside makes you in great danger of electric shock.
- 1.3 Please make sure to cut off the power supply if you will not use this unit in long term,
and do not use any broken jack, which could result in fire or electric shock.
- 1.4 Wet hands are forbidden to touch the power jack, to avoid risk of electric shock.
- 1.5 Please pull the plug itself instead of the wire when you pull out power plug,.
- 1.6 Any thing flammable and metal or liquid, which will destroy the unit, must be kept out
the box.
- 1.7 Do not place this unit in a location near a heat source such as radiator or air ducts,
or in a place exposed to direct sunlight, excessive dust, moisture, rain,
mechanical vibration.
- 1.8 Keep the device working in a good ventilative environment, if not the destruction will
occur.
- 1.9 Please keep the packaging for the safety of transit.

2. System Composition & Operating Principle

2.1 System Composition



Picture 2-1 MPEG-2 Multi-channel Video Encoder Composition Diagram

2.2 Operating Principle

MPEG-2 compact encoder is mainly composed of the following modules: A/V interface processing, A/V encoding, Programme multiplexing, data output, and control processor.

2.2.1 Interface Processing

The unit converts input analog A/V signals into digital signals and transit signals to the encoding module. Video interfaces support common broadcasting signals such as composite video signal, S-video, digital V/A signal, esv. of PAL&NTSC system; Audio interface may support one stereo or two mono.

2.2.2 MPEG-2 compact encoding

Video encoding: This unit uses MPEG-2 real-time compact encoding chipset to encode digital video data from video output interface by MPEG-2 compact algorithm. After encoding, the Elementary Stream was sent to video packetizer, the PES(Packetized Elementary Stream) was sent to the program multiplexer(MUX). The compacting encoding process is MP@ML, maximum bit rate 7Mbps.

Audio encoding: The special audio encoding software encodes the input analog audio into audio Elementary Stream, then send to the audio packetizer, the PES was sent to the Multiplexer.

2.2.3 Program Multiplex

The MPEG-2 multiplex has two levels, program multiplex and system multiplex. Program multiplex is to multiplex ESs into single program TS; System multiplexer is to multiplex TSs. Both multiplex generates standard Transport Stream. The multiplex inside the encoder is program multiplex, it multiplexes the bit stream after video/audio encoding into SPTS(Single Program Transport Stream).

2.2.4 Encoding Pattern

CBR: Constant Bit Rate. The bit rate remains constant when compacting.

VBR: Variable Bit Rate. The bit rate varies with the picture change during compacting.

2.2.5 Channel 3 and Channel 4 Encoding control

Channel3 and Channel4 can work in the following two patterns:

Dynamic Encoding: When the total output bit rate is constant, the video encoding in channel3 and channel4 will be adjusted in accord with the internal buffer size, so as to guarantee the output bit rate has no errors.

Constant Encoding: When the total output bit rate is constant, the video encoding in channel3 and channel4 will not be adjusted in accord with the internal buffer size; In order to avoid any output error, the only way is to increase the system's total output bit rate.

2.2.6 Data output Interfaces

After data processing, the multiplexed TS will be output through DVB ASI interface.

2.3 Main features:

- ◆ MPEG-2 Standard
- ◆ Support Video VBR and CBR encoding
- ◆ Support extremely low MPEG-2 Video compact encoding and MPEG-4 encoding
- ◆ Video encoding bit rate: 1-7Mbps
- ◆ Support dynamic bit rate control of moving picture(Channel3 and channel4)
- ◆ Support MPEG-2 stream multiplexing
- ◆ Create PSI/SI information
- ◆ Has 4 independent A/V input connectors
- ◆ Has 4 independent A/V encoding
- ◆ Individual output of 1-4 channel stereo multiplexing TS stream.
- ◆ Multi A/V stream combining method
- ◆ Multi-programme multiplexing output TS stream
- ◆ LCD display, easy operation
- ◆ Support remote network control

3 Technical Specifications

3.1 Video interface Characteristic

Composite video signal

Video System: NTSC(525/60) or PAL(625/50) optional

Connector: BNC

Impedance: 75Ω, unbalance

Frequency: 25Hz ~ 5.75MHz

Level: 1.0Vp-p,

Sample frequency: 27MHz

3.2 Audio interface Characteristic

Analog audio signal

Connector: BNC(unbalanced)

Impedance: 600Ω,

Input: one stereo or two mono.

Output bit rate: 32kbps~384kbps

A to D accuracy : 16bits

Sample frequency: 32/44.1/48KHz

3.3 MPEG-2 Video Encoding Compact

3.3.1 Video

- ◆ Meet International standard ISO 11172(MPEG-1)and ISO 13818(MPEG-2)
- ◆ MPEG-2 encoding impliments 4:2:0 MP@ML
- ◆ Support MPEG-4 Level 5 ASP
- ◆ Output bit rate 1-7Mbps continuous adjustment
- ◆ Support VBR and CBR encoding
- ◆ Support open, close and various flexible GOP structure, I, IP, IPB.
- ◆ MPEG-2 self-adapting field frame(AFF)
- ◆ MPEG-2 field base(FB)
- ◆ Pattern: DVB standard transporting stream(TS)

3.3.2 Audio

- 🕒 Impliments MPEG-1 II level, CD quality
- 🕒 Audio sampling frequency:32KHz,44.1KHz,48KHz
- 🕒 Audio bit rate:64Kbps, 128Kbps, 192Kbps, 256Kbps, 384Kbps
- 🕒 Support 4channel stereo or double channels

3.4 Format

DVB standard TS

3.5 Resolution

Standard CCIR601; Compatible to 1/2D1, 2/3D1, 3/4D1, Full D1eGN.
PAL: 720*576,544*576,480*576,352*576
NTSC: 720*480,544*480,480*480,352*480

3.6 Data Interface

DVB Standard

Connector : BNC

Impedance : 75Ω

Packet format : 188 byte

Data rate : 1.5 ~ 9Mbps

3.7 Network Management Interface

IEEE802.3 ETHERNET,RJ45 interface

Software protocol: SNMP protocol

3.8 Keep Status Of Power Off

The encoder will keep status with the power being cut off, in order to auto-reset when electrified again.

Power Supply: 90V~250V A.C, 50Hz \pm 2%, 20W

3.9 Working Environment

5—45°C for operation

-25—55°C for storage

10~75% for relative humidity

3.10 Radiation and Safety

GB13837-92 AND GB8898-88

3.11 Mechanic characteristics

Dimension:44.5mm(1U)*483mm*(19.0")*300mm

Weight: 5kg

NOTE: The information contained herein is subject to change without notice.

4 Equipment Connection

4.1 Panel Display and Keyboard

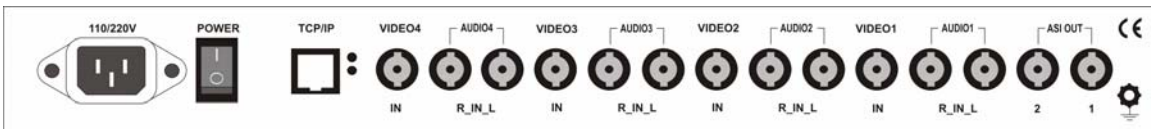
POWER
STATUS
ALARM

4.2 Front Panel Sketch



4-1: Front panel

4.3 Rear Panel Sketch



4-2: Rear panel

5 Operation

5.1 Keyboard Functions

Move Right/Left key: Recycle the sub-menu/move cursor

Move Up/Down key: Locate cursor/change parameters

ENTER: Store the result /select to execute

MENU: Recycle main menu and cancel operations

Note: 1. Be sure to press ENTER after renewing the parameters, all new parameters will be available only without *, otherwise the old parameters still in keep.

2. The keyboard will be locked if no operation in 1 minute, press Up key, then Down key to unlock.

5.2 Mode select (keyboard unlocked)

Press MENU to display main menu circularly

ONCE	1.0 VIEW ALARMS ALARMS LIST EMPTY
TWICE	2.0 CH1 VIDEO RATE 04.200Mbps
THRICE	3.0 CH2 VIDEO RATE 04.200Mbps
FOUR TIMES	4.0 CH3 VIDEO RATE 04.200Mbps
FIVE TIMES	5.0 CH4 VIDEO RATE 04.200Mbps
SIX TIMES	6.0 PROG1 STATUS EFFECT PROGRAM
SEVEN TIMES	7.0 PROG2 STATUS EFFECT PROGRAM
EIGHT TIMES	8.0 PROG3 STATUS EFFECT PROGRAM
NINE TIMES	9.0 PROG4 STATUS EFFECT PROGRAM
TEN TIMES	10.0 MULTIPLEXER PAR WORKING AS SETTING

5.3 Change Parameters

5.3.1 Set system parameters

A: Press MENU ONCE: display as follows

1.0 VIEW ALARMS

ALARMS LIST EMPTY or INPUT SIGNAL LOSS or SYSTEM ERROR00

B: Press UP/DOWN to view/change parameters or select function

▼ 1.0 VIEW ALARMS

CLEAR ALL ALARMS

C: Press ENTER to store /execute : display as follows

1.0 VIEW ALARMS

ALL ALARMS BE CLEARED

D. Move Left/right to recycle sub-menu

1 1.1 SET IP ADDRESS

120.120.120.160

2 1.2 SET NET MASK

255.255.255.000

3 1.3 SET NET GATE

120.120.120.001

4 1.4 NET STATUS

NOT CONNECTED or CONNECTED

5 1.5 SERIAL No.:

XXXXXXXXXXXXXXXXXXXX(18-digit)

6 1.6 VERSION

H:XX.XX S:XX.XX

7 1.7 GET PRESET PARAMETER

*FACTORY PRESET

Press ENTER to store.

8 1.8 MENU MODE (Select MENU mode)

SIMPLE MODE

▼ *ADVANCED MODE (You could set VIDEO BRIGHTNESS, CONTRAST CONTROL, COLOR SATURATION, Video PID, Audio PID, PCR PID, PMT PID etc under this mode in menu 2.0~5.0)

5.3.2 Setup Channel 1 Parameters

- A、 Press MENU twice: display as follows:
2.0 CH1 VIDEO (Video 1 encoding rate)
04.200Mbps

When to set new encoding bit rate, you should press UP/DOWN to make cursor display, then press LEFT/DOWN to move cursor to the needed position, and UP/DOWN to setup parameters, at last press ENTER make all parameters available and stored.

- B、 Press ENTER to store/execute.
- C、 Press LEFT/RIGHT: recycle sub-menu

- ▶ 1 2.1 CH1 Video Rate Form.
VBR
Press UP, Down key: View/Set parameter or function selecting
 - ▼ 1 *CBR
- ▶ 2 2.2 CH1 Video encode standard
MPEG-2
Press UP, Down key: View/Set parameter or function selecting
 - ▼ 1 *MPEG-4
- ▶ 3 2.3 CH1 Video input format
PAL (D/K/B/G/H/I/N) (PAL format)
Press UP, Down key: View/Set parameter or function selecting
 - ▼ 1 * NTSC (M/J)
 - ▼ 2 *automatic indentifying(automatically indentify channel1 video input format)
 - ▼ 3 * PAL 60
 - ▼ 4 * SECAM
 - ▼ 5 * NTSC 4.43
 - ▼ 6 * PAL (COMBINATION-N)
 - ▼ 7 * PAL (M)
- ▶ 4 2.4 CH1 Video resolution
720*576 or 720*480
 - ▼ 1 *352*288 or 352*240
 - ▼ 2 *352*576 or 352*480
 - ▼ 3 *480*576 or 480*480
 - ▼ 4 *544*576 or 544*480Press UP, Down key: View/Set parameter or function selecting
- ▶ 5 2.5 CH1 audio output bit rate
192Kbps

Press UP, Down key: View/Set parameter or function selecting

- ▼ 1 *256Kbps
- ▼ 2 *384Kbps
- ▼ 3 *64Kbps
- ▼ 4 *128Kbps

The following items should be selected in menu 1.8 Display Menu

Pattern->Advanced Pattern:

- ▶ 6 2.6 Video Brightness
 050

When new brightness is required, press UP/DOWN. The cursor will be at START/END, press LEFT/RIGHT, move the cursor to the place you want. Then Press UP/DOWN to set the parameter. Press Enter to confirm and save.

- ▶ 7 2.7 Contrast Control
 050

Please do the setting referring to ▶ 6 2.6. Brightness

- ▶ 8 2.8 Color Saturation
 050

Please do the setting referring to ▶ 6 2.6. Brightness

- ▶ 9 2.9 Hue Control
 050

Please do the setting referring to ▶ 6 2.6. Brightness

- ▶ 10 2.A Picture H. Loca.
 020

When new displacement value is required, press UP/DOWN, The cursor will be at START/END, press LEFT/RIGHT, move the cursor to the place you want. Then press UP/DOWN to set the parameter. Press Enter to confirm and save.

- ▶ 11 2.B CH1 Video PID
 0080(HEX) 0128(DEC)

Please do the setting referring to ▶ 6 2.6. Brightness

- ▶ 12 2.C CH1 Audio PID
 0090(HEX) 0144(DEC)

Please do the setting referring to ▶ 6 2.6. Brightness

- ▶ 13 2.D CH1 PCR PID.
 00A0(HEX) 0160(DEC)

Please do the setting referring to ▶ 6 2.6. Brightness

- ▶ 14 2.E CH1 PMT PID.
 00B0(HEX) 0176(DEC)

Please do the setting referring to ▶ 6 2.6. Brightness

5.3.3 Setup Channel2 Parameters

Press MENU twice : Display as follows:

3.0 CH2 VIDEO (Video 2 encoding rate)
04.200Mbps

When to set new encoding bit rate, you should press UP/DOWN to make cursor display, then press LEFT/DOWN to move cursor to the needed position, and UP/DOWN to setup parameters, at last press ENTER make all parameters available and stored.

A.Press ENTER to store/execute.

B.Press LEFT/RIGHT: recycle sub-menu

Please refer to **5.3.2** Setup video 1 parameters ▶ 1 ~ ▶ 12 for relevant parameters setup.

5.3.4 Setup Channel3 Parameters

Press MENU twice : Display as follows:

4.0 CH3 VIDEO (Video 3 encoding rate)
04.200Mbps

When to set new encoding bit rate, you should press UP/DOWN to make cursor display, then press LEFT/DOWN to move cursor to the needed position, and UP/DOWN to setup parameters, at last press ENTER make all parameters available and stored.

A.Press ENTER to store/execute.

B.Press LEFT/RIGHT: recycle sub-menu

Please refer to **5.3.2** Setup video 1 parameters ▶ 1 ~ ▶ 12 for relevant parameters setup.

5.3.5 Setup Channel4 Parameters

Press MENU twice : Display as follows:

5.0 CH4 VIDEO (Video 4 encoding rate)
04.200Mbps

When to set new encoding bit rate, you should press UP/DOWN to make cursor display, then press LEFT/DOWN to move cursor to the needed position, and UP/DOWN to setup parameters, at last press ENTER make all parameters available and stored.

A.Press ENTER to store/execute.

B.Press LEFT/RIGHT: recycle sub-menu

Please refer to **5.3.2** Setup video 1 parameters ▶ 1 ~ ▶ 12 for relevant parameters setup.

5.3.6 Multiplexed Output Program 1 Setup

- A、 Press MENU five times : Display as follows
6.0 PROG1 STATUS (The status of program 1)
EFFECT PROGRAM
- B、 Press LEFT/RIGHT: recycle sub-menu
 - ▶ 1 6.1 PROG1 NAME
PROGRAM1

When to change program name, you should press UP/DOWN to make cursor display, then press LEFT/RIGHT to move cursor to the needed position, and UP/DOWN to setup parameters, at last press ENTER make all parameters available and stored.

- ▶ 2 6.2 PROG1 NUMBER (program No.)
00001
Please refer to 6.1 PROG1 NAME for setup
- ▶ 3 6.3 PROG1 VIDEO PID (Video source for program 1)
FROM CH1 P : 0128 (D)

(The video of Program 1 is from the video of Channel 1 , PID :0128 decimalist)

- ▼ 1 *NONE (No PID , No video input of program 1)
- ▼ 2 * FROM CH4 P : 0131 (D)
- ▼ 3 * FROM CH3 P : 0130 (D)
- ▼ 4 * FROM CH2 P : 0129 (D)

Press UP/DOWN to view/change parameter or select function

- ▶ 4 6.4 FIRST AUDIO PID (First Audio source for program 1)
FROM CH1 P : 0144 (D)

(The first audio of Program 1 is from the audio input of Channel 1 , , PID: 0144 decimalist)

- ▼ 1 * NONE (No PID , No First audio input of program 1)
- ▼ 2 * FROM CH4 P : 0147 (D)
- ▼ 3 * FROM CH3 P : 0146 (D)
- ▼ 4 * FROM CH2 P : 0145 (D)

Press UP/DOWN to view/change parameter or select function

Note: Each channel video could be output with different channel audio(through changing PID of Audio1, Audio 2, Audio 3, Audio 4 to carry out). The back option of Audio source won't be showed and changed if first Audio PID is NONE. The selected Audio PID also won't be showed and changed in back option of Audio source.

- ▶ 5 6.5 SECOND AUDIO PID (Second audio source for program 1)
 FROM CH2 P : 0145 (D)

(The Second Audio of Program 1 is from the Audio input of Channel 2 , PID :0145 decimalist)

- ▼ 1 * FROM CH3 P : 0146 (D)
- ▼ 2 * FROM CH4 P : 0147 (D)
- ▼ 3 * NONE (No PID , No Second audio input of program 1)

Press UP/DOWN to view/change parameter or select function

5.3.7 Multiplexed Output Program 2 Setup

A.Press MENU seven times : Display as follows

7.0 PROG2 STATUS (The status of program 2)
EFEFECT PROGRAM

B. Press LEFT/RIGHT: recycle sub-menu

Please refer to 5.3.6 **Multiplexed output program 1 setup** ▶ 1 ~ ▶ 7 for relevant parameters setup

5.3.8 Multiplexed Output Program 3 Setup

A. Press MENU eight times : Display as follows

8.0 PROG3 STATUS (The status of program 3)

B. Press LEFT/RIGHT: recycle sub-menu

Please refer to 5.3.6 **Multiplexed output program 1 setup** ▶ 1 ~ ▶ 7 for relevant parameters setup

5.3.9 Multiplexed Output Program 4 Setup

A.Press MENU eight times : Display as follows

9.0 PROG4 STATUS (The status of program 4)

B.Press LEFT/RIGHT: recycle sub-menu

Please refer to 5.3.6 **Multiplexed output program 1 setup** ▶ 1 ~ ▶ 7 for relevant parameters setup

5.3.10 Programme Multiplexing Status

A. Press MENU 10 times: Display content

10.0 Multiplexer as setting

Working parameter correct

When the programme changees, new programme parameters should be created.

- ▼ 1 * Rebuilding Parameter

B. Press Enter: Save changed parameter/excecute function selecting;

C. Left, Right key to cycle sub-menu.

- ▶ 1 10.1 Output TS rate
011.500Mbps

When new output bit rate is required, press UP/DOWN, The cursor will be at START/END, press LEFT/RIGHT, move the cursor to the place you want. Then press UP/DOWN to set the parameter. Press Enter to confirm and save.

Output bit rate setting method:

System output bit rate = each channel video encoding stream + each channel audio encoding stream + 2Mbps empty package + 0.5Mbps service information.

- ▶ 2 10.2 CH3&4 Rate Adj.
Dynamic encode
- ▼ 1 *constant encode
When it is dynamic encoding, channel3 and channel4 dynamic adjustmentrange

is:

First gear: change channel4 encoding stream to 70% of the valude set;

Second gear: change channel4 encoding stream to 60% of the value set,channel 3 changed to 70%;

This change is executed automatically by the system in accord with output bit rate;

Press UP, DOWN: View/Change parameter setting or function selecting

- ▶ 3 10.3 output TS_ID
00001

When new TS_ID is required, press UP/DOWN, The cursor will be at START/END, press LEFT/RIGHT, move the cursor to the place you want. Then press UP/DOWN to set the parameter. Press Enter to confirm and save.

- ▶ 4 10.4 output ON_ID
00001

When new ON_ID is required, press UP/DOWN, The cursor will be at START/END, press LEFT/RIGHT, move the cursor to the place you want. Then press UP/DOWN to set the parameter. Press Enter to confirm and save.

- ▶ 5 10.5 Audio Sample Frequency
48KHz

- ▼ 1 *44.1
- ▼ 2 *32

Press UP, DOWN: View/Change parameter setting or function selecting.

- ▶ 6 10.6 Sys. Work State

6 System Error and Trouble Shooting

6.1 Indicator Lights

There are three LED indicator lights on the panel:

- 1)"POWER" is the power supply indicator, illuminates (in red) to show power supply is working orderly.
- 2)"STATUS" illuminates (in green) to show all parts are working orderly.
- 3)"ALARM" illuminates (in green) to show all parts are working orderly

6.2 Trouble Shooting

6.2.1 The "POWER" indicator light does not illuminate.

Please check the wire to make sure the wire is connected to the socket properly and the power switch is on.

6.2.2"STATUS" illuminates (in red)

This means the parameters are been setting.

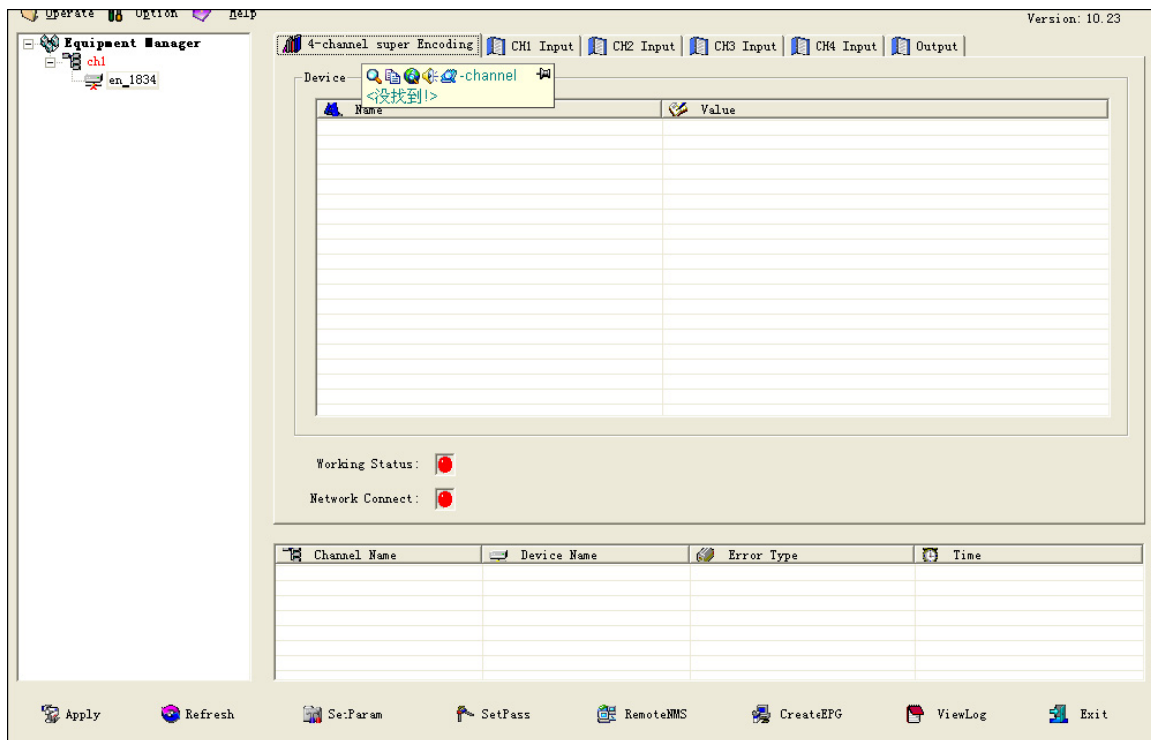
6.2.3"AIARM"flashes

This means the unit is out of order for some faults such as the abnormal voltage from the main power. Please check and change the broken parts.

7 Network Manager Operation Principle

The network manager can configure the parameters remotely after necessary entitlement. Please kindly find the operation details in “The Instruction of DTV Network Manager”.

7.1 The Homepage



When the indicator light of working status is red, it's on non-working status; when green, it's on working status. When the indicator light of connecting status is red, it's on non-connecting status; when green, it's on connecting status.

Parameters display: name, serial NO.,IP, warning information, working status information and connecting status information.

7.2 The parameters of channel output

The screenshot shows a software interface for configuring channel output parameters. The interface has a tabbed menu at the top with the following tabs: "4-channel super Encoding", "CH1 Input", "CH2 Input", "CH3 Input", "CH4 Input", and "Output". The "Output" tab is currently selected. The main area contains various configuration options:

- Video Format:
- Video Encode Rate: Kbps
- Video Resolution:
- Audio Encode Rate:
- Video PID (0):
- Audio PID (0):
- PCR PID (0):
- PMT PID (0):
- Brightness:
- Contrast:
- Saturation:
- Tinge:
- Mode of video output:
- Mode of video encode:

The parameters can be configured: the bit rate of video encoding, the video formats, the video resolution, the bit rate of audio encoding, the video PID, the audio PID, the PCR PID, the video TS output modes, the video encoding modes, the brightness of the pictures, the contrast, the saturation and the tone.

7.3 The Output Parameters

The screenshot displays the 'Output' tab of a software interface for 4-channel super encoding. The interface is organized into several sections:

- Output Total Parameter:** Contains fields for 'Output Code Rate' (with a unit of 'Mbps'), 'Audio Sample Rate' (set to '44.1KHz'), 'ON_ID' (set to '0'), 'TS_ID' (set to '0'), and a dropdown for 'Code control of Channel3,4'.
- Channel 1 Output Parameter:** Includes 'Program Number' (set to '0'), 'Program Name' (empty text box), 'Video PID' (dropdown), and 'Audio PID' (four dropdowns labeled '1st', '2nd', '3rd', and '4th').
- Channel 2 Output Parameter:** Includes 'Program Number' (set to '0'), 'Program Name' (empty text box), 'Video PID' (dropdown), and 'Audio PID' (four dropdowns labeled '1st', '2nd', '3rd', and '4th').
- Channel 3 Output Parameter:** Includes 'Program Number' (set to '0'), 'Program Name' (empty text box), 'Video PID' (dropdown), and 'Audio PID' (four dropdowns labeled '1st', '2nd', '3rd', and '4th').
- Channel 4 Output Parameter:** Includes 'Program Number' (set to '0'), 'Program Name' (empty text box), 'Video PID' (dropdown), and 'Audio PID' (four dropdowns labeled '1st', '2nd', '3rd', and '4th').

The parameters can be configured: the system output TS, the audio sampling frequency, TS_ID, ON_ID, the TS controlling of channel 3 and channel 4, the program number of each channel, the program names, video PID, the first audio PID, the second audio PID, the third audio PID and the fourth audio PID.