

MPE-4000 MPEG-2/H.264 SD/HD Encoder





Datasheet and User Manual

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Introduction

Product Overview

MPE-4000 MPEG-2/H.264 SD/HD Encoder is a broadcasting audio & video encoding device with powerful functionality. It is equipped with multiple and therefore flexible Video input interfaces (SDI, CVBS, YPbPr and HDMI) and Audio input interfaces (AES, RCA and XLR) to be compatible with different signal sources.

Multiple audio and video encoding formats are available to meet your flexible and various requirements. 4 stereo (8 mono) or one DD 5.1 (AC3) audio signals can be embedded to the stream output. The encoded program will finally output in a DVB conform TS through ASI and IP port.

The MPE-4000 has an overlay insertion feature: QR code, LOGO and OSD-TEXT. It can generate 3 parallel overlay operations at the same time. You can insert an advertisement picture, own LOGO, special QR code and/or OSD content on top of the encoding process.

Key Features

- MPEG-2 HD/SD and MPEG-4 AVC/H.264 HD/SD video encoding
- 1080I,720P, 480I, 576I video resolution and downscale transform
- Low latency
- MPEG1 Layer II, HE-AAC (v1 & v2), LC-AAC and DD AC3 audio encoding and adjustment
- Dolby Digital AC3 audio pass through (for SDI in)
- Additional 4 stereo or 8 mono audio encoding
- Video buffer, selectable Video sources (all video interfaces available in parallel Inputs)
- Support TT/CC (closed caption-US norm), EIA 608 and EIA 708 (for CVBS and SDI in)
- Dual parallel ASI output and IP over UDP and RTP
- LCD / Keypad control and Web based management by RJ45 Ethernet port
- AD-Insertion: QR code, LOGO, OSD-text





Specifications

	Interface	1×SDI, 1×CVBS, 1×YPbPr and 1×HDMI					
		Input	Output	Interfaces			
		1920×1080i@60	1920×1080,				
		1920×1080i @59.94	1440×1080,	HDMI, SDI, YPbPr			
		1920×1080i @50	1280×1080i, 960×1080i				
		1280×720p@60	1200				
		1280×720p@59.94	1280×720, 960×720p,	HDMI, SDI, YPbPr			
	Decolution	1280×720p@50	640×720p				
	Resolution		720×576, 704×576,				
		720-2526-050	640×576, 544×576,				
		720×5761@50	528×576, 480×576,	SDI, CVBS			
Video			352×576				
			720×480, 704×480,				
		720×480i@59.94	640×480, 544×480,	SDI, CVBS			
			528×480, 352×480				
	Encoding	MPEG-2 HD/SD; MPEG	-4 AVC/H.264 HD/SD				
	Bitrate Range	0.52 – 60.00 Mbps					
	Rate Control	CBR (Encoding)					
	GOP Structure	Auto, IP, IPB, IPBB, IPBBB					
	Aspect Ratio	4:3, 14:9 (for SD video), 16:9 (for HD video)					
	Chroma	4:2:0, 4:2:2					
	Advanced						
Pretreatment De-interlacing, noise reduction, sharpening							
	Interface	4×XLR, 4×RCA, 1×AES, 1×HDMI, 1×SDI (maximum 4 stereos synchronous					
		processing or one DD 5.1 CH processing)					
	Encoding	MPEG-1 Layer II, HE-AAC (v1&v2), LC-AAC, DD AC3 (2.0, 5.1 availab					
Audio		DD AC3 pass-through (for SDI in)					
	Sampling rate	48KHz					
	Resolution	24-bit					
	Bit-rate	32Kbps384Kbps					
Low Laten	icy options	150ms, 200ms, 350ms	, 650ms depending on Res	olution and S-Rates			
		2×ASI output ports, BNC interface					
Stream ou	ıtput	IP over UDP and RTP, 100 Base-T Ethernet interface (UDP					
		multicast/unicast)					
		LCD/Keypad and web management					
System function		Language: English					
		Ethernet based software updates					
	Dimensions	482mm × 405mm × 44	.5mm (W × D × H)				
	Weight	Approx. 4.0 Kg					
General	Temperature	045°C(Operation), -208°C(Storage)					
	Power	AC110V ±10%, 50/60Hz; AC 220V ±10% , 50/60Hz					
	Consumption	21W					





Block Diagram

Remark: DVB TELETEXT or american CC will be passed as well

Appearance and Description

Front Panel Illustration



All technical data are subject to change w/o further notice



Rear Panel Illustration



- 1) XLR input connectors (for stereo audio 1-2 input)*
- 2 XLR input connectors (for stereo audio 3-4 input)* (For 5.1 surround input)
- ③ RCA input connectors* (for stereo audio 1-4 input or 5.1 surround input)
- (4) AES input connector *(for only one channel digital stereo)
- **(5)** YPbPr & CVBS video input connectors
- **(6)** HDMI input connector (Audio input embedded)
- (7) SDI input connector (Audio input embedded)
- (8) NMS connector for connecting Web management on PC
- **9** DATA Port for IP stream output
- **10** ASI output connectors
- 1 Power supply/Fuse

Audio Adapter Cable Illustration



- L/R: For Mono or Stereo input (Analog)*
- L/R/LS/RS/C/Sub: For 5.1 surround input (Analog)*
- AES: For single digital stereo audio input*
- *) (Adapter not included)



Installation Guide

We assume, that the installation will be done by a skilled and well educated electrical technician taking care of environmental circumstances like Air-condition and grounding requirements. The device should always be mounted into a 19" Rack by the front screws and even better with some metal angles avoiding bending of the units housing.

Power

- When you connect the power source, make sure the source voltage fits to the PSU data.
- Make sure the connected cables are in good condition. Avoid shortage of signal cables.
- Make sure the power switch is OFF before you start to install the device

Item	Requirement		
Server operating room and floor	Electric Isolation, Dust Free Volume resistivity of ground anti-static material: $1 \times 10^7 \dots 1 \times 10^{10} \Omega$, Grounding current limiting resistance: $1 M \Omega$ (Floor bearing should be greater than 450Kg/m^2)		
Environmental	540°C (sustainable), 045°C (short time), installing air-conditioning is		
Temperature	recommended		
Relative Humidity	20%80% sustainable 10%90% short time		
Pressure	86105kpa		
Door & Window	Installing rubber strip for sealing door-gaps and dual level glasses for window		
Wall	It can be covered with wallpaper, or brightness less paint.		
Fire Protection	Fire alarm system and extinguisher		
	Requiring device power, air-conditioning power and lighting power are		
Dowor	independent from each other. Device power requires AC 110V±10%,		
Power	50/60Hz or AC 220V±10%, 50/60Hz. Please carefully check before		
	connecting.		

Environmental Requirement

Grounding Requirement

The grounding requirements can vary from region to region but usually has to be considered according to national norms and regulations. Opening the top case is strictly forbidden as long as the AC power source is connected or the device is in fully operation. A grounding cable is in the accessory.



Front Panel Operation

MPE-4000's front panel is you operation interface where you configure the device manually. The LCD is a 2-line x 40-character back-lit dot-matrix you interface with pushbuttons for **UP, DOWN, LEFT, RIGHT, ENTER, MENU,** and **LOCK button** for front panel control. You can decide whether to directly use the factory setting, or customize the input/output parameters and so on.

Keypad Function Description



LEFT/RIGHT: To choose and set the parameters

- **UP/DOWN** : Modify activated parameters or page up/down when parameter is inactivated.
- **MENU** : To cancel presently entered value, resume previous setting;
- **ENTER** : Activate the parameters which need modification, and confirm the changes after modification
- LOCK : Lock/unlock the LCD screen. After pressing the lock key, the system will question you to save or not. If not, the LCD will display the current configuration state and you can toggle between the menu's and adjust the unit.

LCD Menu settings





Overview of the LCD menu tree:





4 Video Setting	4.1 Video Port
	4.2 Video Bit rate
	4.3 Encode Type
	4.4 Closed Caption
	-4.5 PID
	-4.6 Stream IP
	4.7 Chroma Sample
	4.8 Aspect Ratio
	4.9 Rescaled
	-4.10 GOP Structure
	-4.11 GOP Size
	-4.12 Rate Ctrl Mode
	-4.13 IDR Frequency
	-4.14 Sync loss Image
	-4.15 Coding Mode
	4.16 Profile
	-4.17 Level
	-4.18 PMT PID
	-4.19 PCR PID -4.20 TS Bitrate
	4.21 Latency
5 Save Config	No / Yes
6 Save Config	6.1 Load Saved CFG
o save comig	6.2 Load Default CFG
7 Version	Version Info

Initial Status

Switch on the device and after a few seconds' initialization, it presents a booting pictures as below:

Encode Starting	·>>>	56%	
HD Encoder FMT: 720x576 50i	12.34/2 VP: SDI	20.00 Mbps AP: SDI	Read Only
HD Encoder VEN-FMT: H.264	12.34/ ACH-CN	20.00 Mbps NT: Frame-4	
HD Encoder AEN-1: AC3	12.34/ AEN-2	20.00 Mbps 2: None	



- **HD Encoder:** to indicate the device name.
- XX.XX/XX.XX Mbps: to indicate the current encoding Bit Rate and total Output Bit Rate
- FMT: to indicate source signal resolution format
- **VP/AP:** to indicate the Video and Audio Signal source port.
- **VEN-FMT:** to indicate the video encode format.
- **ACH-CMT:** to indicate the audio Capture Mode.
- **AEN-1 to AEN-4:** to indicate the 4 channel audio encode format.

General Settings for the Main Menu



Press "*LOCK*" key on the front panel to enable the main menu. The LCD will show the following pages where you can configure the parameters for the device:

 1 Alarm Status 3 Audio Setting 	2 System Setting 4 Video Setting
5 Save Config	6 Load Config
7 Language	8 Versions

You can press UP/DOWN/LEFT/RIGHT buttons to specify menu item, and then press ENTER to enter the submenus as below:

ALARM STATUS

The alarm indicator will turn on if signal source loses or encoding errors occur. You can then enter this menu to check the error type.

SYSTEM SETTING





Network setting

Enter "*Network*" to set the network. Submenus go as below:



Reset web

With this interface, by pressing ENTER again, you can select to reset the web-if. The operation interface will turn up as following page:



NOTE: Below explanations are applied in this entire manual.

- 1) When you enter this submenu, the LCD shows only one option which is the device's current option which is marked with square bracket when you presses ENTER **again** to enter the operation interface.
- 2) "01/02" in the up-right corner indicates there are all together 2 options and the LCD is showing the 1st option currently.

Output setting

Enter "Output Set" to set the output parameters. Sub-menus works as below:





2.4.5 Source IP 2.4.7 Dest MAC	2.4.6 Source Port 2.4.8 Source MAC	
2.4.9 Gateway 2.4.11 Flt Null Packet	2.4.10 Submask	

IP Out Mode

MPE-4000 HD encoder supports program stream to output over UDP through the DATA port.

IP Out Mode UDP [02/02] Disabled [UDP]

Disable: Program stream will not output from IP port, just output to the ASI Port(s).

• Output Bit rate

You can set the total output Bit rate (include video and audio Bit rate, PID Bit rate, etc.) under this menu.

Output Bit rate <u>5</u>0.00 Mbps

• You can enter the other IP settings accordingly to check or modify output IP

parameters.

_	
	Dest IP
	<u>2</u> 24.002.002.002
\geq	
	Dest Port
	<u>1</u> 234
\geq	
	Source IP
	<u>1</u> 92.168.002.137
\sim	
	Source Port
	<u>2</u> 007
)
	Dest MAC
	01:00:5E:02:02:02



Source MAC 11:22:33:44:55:22	Source MAC is read only on the front panel. It can only be modified by the Web management interface.
Gateway <u>1</u> 92.168.002.001	
Subnet Mask <u>2</u> 55.255.255.000	

> Flt Null Packet

You can decide whether to filter IP null packet (PID 8191dec) at this menu.

Filter IP Null Pa	acket?	NO	[01/02]	
[No]	Yes			

Insert SDT

At this interface, by pressing ENTER again, you can choose to insert SDT (Service Description Table) or not.

Insert SDT?	Yes	[01/02]
[Yes]	No	

▶2.5	Insert	TDT	2.6	Insert	TOT	
2.7	Insert	VCT				

Insert TDT (Time Date Table)

At this interface, by pressing ENTER again, you can choose to insert TDT or not.

Insert TDT? Yes [01/02] [Yes] No

Insert TOT (Time Offset Table)

At this interface, by pressing ENTER again, you can choose to insert TOT or not.

Insert TOT? Yes [01/02] [Yes] No

Insert VCT (American ATSC standard table part can be compared with DVB- SDT)



AUDIO SETTING

Enter "Audio setting" to configure the Audio parameters for the input program (HDMI/SDI/YPbPr/CVBS input program). Submenus go as below:

3.1 Audio Port3.3 Audio Pair	3.2 Sample Rate 3.4 Pair 1
▶ 3.5 Pair 2 3.7 Pair 4	3.6 Pair 3

Audio Port

Press ENTER to enter menu *Audio Port*. It displays the current mode of audio Port. Press ENTER again to enter the setting interface, move the square bracket with LEFT/RIGHT keys to select the target mode and press ENTER to confirm. At last, press MENU to step back to the upper menus.

Audio Po	ort Select	SDI		[01/05]
[SDI]	HDMI	AES	RCA	XLR

REMARKS:

If the audio source is from **HDMI** or **SDI**, the system will automatically identify and match the interface. It is not necessary to set this menu. If the audio source is from **XLR**, **RCA** or **AES**, it needs to match the interface manually.

Sample Rate

The audio sample rate is 48 KHz without other options.



Audio Pair

MPE-4000 supports 4 stereo (8 mono) or one DD 5.1 (AC3) audios embedded to mix with the video stream output.

Audio J	oair	Pair2		[02/06]	
Pair1	[Pair	1,2]	Pair1	,2,3	Pair1,2,3,4
, an I	[, un	-,-,	- un I	,2,3	1 ull ±,2,3,4
		_	_		
Audio	pair	Pair2	_	[02/06]	
Audio Mute	pair Sur	Pair2	1	[02/06]	

Drop: Audio data has been captured.



Pair-1: A single (channel 1) audio stream is captured.

Pair-2: 2 audio (channel 1&2) streams are captured.

Pair-3: 3 audio (channel 1 to 3) streams are captured.

Pair-4: 4 audio (channel 1 to 4) streams are captured.

5.1CH: Surround (5.1) for Dobby/AC3 5.1 channel.

Pair1-4

As the MPE-4000 is with 4 audio encode channel, "3.4"-"3.7". You can enter

"3.4"/"3.5"/"3.5"/"3.7" to set the corresponding audio parameters. Submenus (taking "3.4" as an example) are as below:



• PID

You can set the PID for first channel under this menu.



```
    Stream ID
```

You can set the audio stream ID under this menu.

Stream ID <u>1</u>92

• Encode Type

Select audio encode format among items listed in the interface.

```
Encode Type MPEG-L2 [02/04]
None [MPEG-L2] AC3 AAC
```

REMARKS:

If "*None*" is chosen the audio format, the system will not choose any audio to process and there will be no audio in the output data stream.

• Pass Through

MPE-4000 supports AC3 audio to pass-through from SDI input.



You can decide to switch "on" AC3 Pass through function or "off" under this menu.

```
Pass Through Yes [01/02]
[Yes] No
```

• Volume

You can set the Audio Volume Level under this menu.

Audio Volume Level Level 1 [01/04]

• Audio Bit rate

Select audio bit rate among 32Kbps – 384Kbps.

Audio Bit rate192 Kbps[01/17][32 Kbps]48 Kbps64 Kbps80 Kbps

MPE-4000 support MPEG1-L2, AC3, AAC (LC/HE-AAC) audio encoding. Different audio encode types have different Audio Bit rates usually to consider.

64Kbps, 96-384Kbps for MPEG1-L2

32-384Kbps for AAC

128Kbps, 192Kbps, 156Kbps, 384Kbps for AC3

• ES Mode

Select Stereo mode among stereo, Dual Mono, L-Mono, and R-Mono.

Stereo Mode Stereo [01/04] [Stereo] Dual Mono L-Mono R-Mono

• Audio Delay

You can set the audio delay under this menu.

Audio delay 0 -

• AAC Container

You can choose the AAC container mode under this menu.

AAC Container ADTS [01/02] [ADTS] LATM



• AAC Profile

Select AAC profile among LC, HE and HEV2.

AAC Profile	LC	[01/03]	
[LC]	HE	HEV2	

• AAC Version

You can set the AAC encoder version in this menu.

AAC Version	MPEG-2	[01/02]	
[MPEG-2]	MPEG-4		

• AC3 Destype

You can set the AC3 Descriptor type in this menu.

AC3 Destype	DVB	[01/02]	
[DVB]	ATSC		

VIDEO SETTING

▶4.1	Video Port	4.2	Video BitRate
4.3	Encode Type	4.4	Closed Caption
4.5	PID	▶4.6	Stream ID
4.7	Chroma Samplin	g4.8	Aspect Ratio
4.9	Rescaled	4.10	GOP Structure
▶4.11	GOP Size	4.12	Rate Ctrl Mode
▶4.13	IDR Frequency	4.14	SyncLoss Image
4.15	Coding Mode	4.16	Profile
▶4.17	Level	4.18	PMT PID
4.19	PCR PID	4.20	TS Bitrate
▶4.21	Latency	4.22	PCR Interval
4.23	Video Buffer		Source Error
▶4.25	Adj WinFmt	4.26	Adj LineNum



• Video Port

Press ENTER to enter menu *Video Port*. It shows the current mode of the video input. Press ENTER again to enter the setting interface, move the square bracket with LEFT/RIGHT keys to select the target mode and press ENTER to confirm. At last, press MENU to step back to the target measure



There are 4 types of interface for video input. Select one type and the system will detect the single and process. Make sure the single cables are properly connected.

• Video Bit Rate

MPE-4000 can encode video at range of 0.52 Mbps to 60.00 Mbps.

Video Bit rate <u>1</u>2.00 Mbps

• Encode Type

MPE-4000 supports two Encode Types: **H.264** (MPEG4 AVC/H.264) and **MPEG2**. You can choose to one mode as the video compression type at this menu.

Encode Type	MPEG 2	[01/02]
H.264	[MPEG 2]	

• Closed Caption (CC) American Teletext

(Note: MPE-4000 supports CC from CVBS and SDI input only) None: not to insert the CC into the output stream

All: The device will automatically identify the Closed Caption Standard among 608B 608FLD1 608FLD2 and

Closed Caption None [01/05] [None] All 608B 608FLD1 608FLD2 708B

• PID

Enter this menu to edit Video PID.

Video PID <u>0</u>258

Stream ID

Enter this menu to set Video Stream ID.

Video PID 0224



• Chroma Sample

Select one Chroma Sample mode from the 2 options listed. They are applicable for both MPEG2and H.264 encoding mode.

Chroma San [4:2:0]	nple 4:2:2	[01/02]		
Chroma	Samplin 4:2:0	ng		

• Aspect Ratio

Select aspect ratio mode from option listed. SD Video can choose from 4x3 and 14:9. HD Video only can choose 16:0

Aspect Ratio	16x9	[01/01]	
[16x9]			

Rescaled

Enter this menu to set the output Resolution.

MPE-4000 support 1080I, 720P, 480I, 576I video input resolution and downscale transform.

Disable: To out the same resolution as source resolution.



• GOP Structure

Select GOP structure mode from the options listed.



• GOP Size

You can set the GOP Size by this menu item.

GOP Size <u>3</u>0



• Rate Control Mode

MPE-4000 supports CBR (Constant Bit Rate) encoding control mode.



• IDR Frequency

Specify the IDR frequency relative to I-Frames.

IDR Frequenc	y N	O IDRS	[01/04]
[NO IDRs]	Every 🛛	Second 🛛	Third 🛛

• Sync Loss Image

You can choose the image type to encode during loss of video source sync.

Sync Loss Image	Color	
[01/02]		

• Coding Mode

Choose the coding mode from the options listed.



• Profile

Select the encoding Profile from the options listed.

Profile	Baseline	[01/03]	
[B/S]	Up to high	Up to main	



Level

You can choose the level which is used for encoding.

Level [Auo] Auto Level 1.0 Level 1.1 Level1.2

• PCR/PMT PID

Enter each single menu to edit the PIDs. **REMARKS:** These values are based on decimal system (not HEX).

PCR PID	
<u>0</u> 256	
PMT PID	

• TS Bitrate

You can check and modify the TS bitrate which is used for encoding.

TS bitrate 3<u>5</u>

• Video Buffer

You can select to turn on/off the video buffer.

Video buffer On [01/02] On [Off]

Source error

You can check the source error which is used for encoding.

Source e	error		
Detect	Ignore	Resyne	

• Adj Winformat and Linenumber

You can check the Window format which is used for encoding.



Because of new SW-Versions enabling additional functions the menu structure can vary.





▶6 Load Config

SAVE CONFIGURATION

You can enter Saving Configuration for saving settings. Choose yes and press ENTER to

confirm.

(
	Save Co	nfigurat	ion?			
	Yes		No			

LOAD CONFIGURATION

With this menu, you can select a loading source and press ENTER to confirm. You can restore the device into the last saved configuration by choosing "6.1" and restore the device into factory configuration by choosing "6.2" the display will show this menu as below:



VERSION

You can check the software version and hardware version of this equipment under this submenu.





WEB Interface based NMS Operation

You can not only use front panel to set configuration, but also control and set the configuration with a PC (Personal Computer) or Laptop by connecting the device to the RJ45 WEB-IF NMS Port

(Network Management Setup). You should ensure that the computer's IP address is different from the MPE-4000's IP address (default = 192.168.0.136) otherwise, it would cause IP conflict.

Login

The default IP address of this device is 192.168.0.136. You can modify the IP Address through the front panel – menu 4.1. or by WEB-IF.

Connect the PC and the device with a network cable, and use ping command to confirm they are on the same network segment.

Use your web browser (recommended Mozilla newest version) to connect the device with a PC by inputting the device's IP address in the browser's address bar and press Enter.

It will display the Login interface as Figure-1. Input the Username and Password (Both the default Username and Password are "admin".) and then click "LOGIN" to start the device setting.



Figure-1

Operation

• System Information

After login, it shows the SYSTEM INFORMATION as Figure-2 where you can view the current system information:

→ C' ^{Sta}	1tus Parameter	 M 192.168.0.136/ Advanced - System - 	3afa4b.html	enter the corre interface to ch information or parameters.	esponding eck set the	7 \ Reboot SW:2.15	HW:1.43	S
SYSTEM S	STATE							
Status	TS Lock	a	Audio Port	SDI	Video Port	SDI		
	Bitrate	6.53/10.00 Mbps	Video Format	1920x1080 50p	Encode Type	MPEG2		
	Alarms	None	Encode Status	Encoding	Date Time	2016-12-25 17:14:17		
Version	n Soft	ware 2.15	Hardware 1.43) Web	3.61	ROM 029.19		



Date-Time system settings

"Help" Function **A**?

In "Encode Setting" Interface, whenever the mouse cursor is suspended on one item, a question mark appears by the cursor and the corresponding item comes to a hyperlink state. Click the hyperlink item to trigger a text window to give instructions on properly setting the corresponding item.

AUDIO HELP X ACP Select audio input interface. Select audio input interface. Audio Port SDI SDI SDI W % SDI SDI SDI PAIR 1 PAIR 2 PAIR PAIR Select audio input interface. Pass Through OFF Volume		AUDIO	
ACPSolutionAudioPortSDISolutionVigSolutionPAIR 1PAIR 2PAIR 1PAIR 2PAIR 1PAIR 2PAIR 2PAIR	AUDIO	HEIP	x
	ACP Audio Port SDI NS PAIR 1 PAIR 2 PAIR	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	e Re um II Volume

ACP			
Audio Port	SDI N	\sim	
	SDI 😽		
PATE 1 PAIE 2	HDMI	\mathbf{k}_{2}	
	AES	_	
AEN	RCA		
Audio PID	XLR		Stream ID
Pass Through	OFF	×.	Volume
Audio ES Mode	Stereo	\sim	Audio Dels

System settings

First of all we should take care about some basic settings like network IP addresses and Time/Date settings:

Status Par	System -				
		SaveLoad			
YSTEM STATE	Upgrade				
Status	Backup				
TS Lock	Password	io Port	SDI		
Bitrate	Network	eo Format	1920x1080	50p	
Alarms	- U En	code Status	Encoding		

SAVE and Load Menu



Subnet Mask								
eneral is	255.255.255.0,it is	; must the same in a local ar	ea network.					
Gateway								
f the devi	ce is in different	net segment, you must set the	gateway.					
Setting								
IP Address 192.168.0.136 Subnet Mask 255.255.255.0								
	Gateway	192.168.0.1	MAC	82:03:31:7A:10:29				
		Apply	Get Config					
		4						

The description is self-explaining...

SAVE LOAD CONFIG
Save
When you change the parameter, you shoud save configuration ,otherwise the new configuration will lost after reboot.
Load Load latest saved configuration,after click the "Load" then please click the "Save" button,otherwise the "Restore" parameter will lost after reboot
Factory Set all configuration back to default, after click the "Factory Set" then please click the "Save config" button,otherwise the default parameter will lost after reboot.
Save Load Factory
Advanced - System - SaveLoad Uperlade BacKup I If new Firmware is released, you can upload it here.
UPGRADE
Firmware Warning: 1. Update firmware(software and hardware) to get new function, please choose the right firmware to update.If you use a wrong file, the device may not work. 2. Update will keep a long time, please do not turn off the power, otherwise the device will not work. 3. After update, you must power off and reboot device manually. 4. All configurations will lost after upgrade firmware, Please backup configuration before upgrade.
Derdezeget . Jeans Exten aurgewählt.
Keine Datei ausgewählt.





So better to BACKUP before Upgrade! :

BACKUP
Backup Backup current configuration to the local file,we suggest do this before set the configuration or update firmware.
-Load Configuration
Load the backup file to restore your configuration. Warning: 1. New configuration will replace the old one,please backup current configuration before load file.If you use a wron file,the device may not work. 2. Please do not turn off the power while file loading, otherwise the device will not work.
Derdader . Zeine fates aurgest

A popup will appear to safe the file 'config.bin'. This would be the upload file after a factory reset.



Change password here. If you'll lose it, you must reset the machine by

Front-Panel Keypad:

Status Parameter - Advanced -	System -		Reboot	SW:2.15 HW:1.43						
PASSWORD										
Tetxo										
Modify the login name and password to make the device safely. If forget the name or password, you can reset it by keyboard. The										
default login name and password is "admin".Also please note the capital character and lowercase character.										
Setting										
Current User Name admin Current Password Y										
New User Name		New Password	1							
Confirm New Password										
Apply Default										
L										

Another important value to consider: Time and Date Information setup:



Status	Parameter	- Advanced	l - System -		
	Audio Se	ettings			
SYSTEM STATE	Video Se	ettings			
Status	Output \$	Settings			
TS I	NTP Sett	tings		Audio Port	SDI
Bitr	ate 🖑	6.54/10.00	Mbps	Video Format	1920;
Alar	ms	None		Encode Status	Enco

You should connect the unit to a local NTP server (5 max.) for syncing of actual correct time and date and offset:

Current Time:		Timezone:		
Wed Apr 4 14:48:5	8 CEST 2018	(GMT+01:00) Ams	terdam, Berlin, Bern,	, Rome, Stockholm, V: 🗸
NTP Server 1:	NTP Server 2:	NTP Server 3:	NTP Server 4:	NTP Server 5:
104 35 134 106	102 52 102 104	7.7	Nono	7.7

To be able to insert TDT/TOT Information in the output TS this time & date & GMT offset information are necessary.

Because we want to output the encoded TS as ASI and IP-Stream, we need to setup the

OUTPUT SETTINGS:

Click *"Output Setting"* on the top column and it displays interface as Figure-7. You can set the output parameters by inputting a value or selecting a mode in the pull-down list.





onfig					
Output Mode	RTP 🗸 🗸	Dest IP Addr	224.2.2.222	Dest Port	21002
Subnet Mask	255.255.255.0	Source IP	192.168.2.136	Source Port	21000
Fateway	192.168.2.1	Dest MAC		Source MAC	00:22:33:44:55:44
filter Null Packet	No	Insert SDT	Yes 🗸	Bitrate(Mbps)	10.00
SI Trans Mode	Byte 🗸	Keep Stream	Forced 🗸	Output bitrate. Ra	nge: 0,5Mbps-to 60 Mbps
		Ouput		The value should b	be larger than the encoding
DT/TOT					
Insert TDT	Yes 🗸	Insert TOT	Yes 🗸	Country Code	DEU
Country Region ID	000000	Polarity	UTC+ ~	Local Time Offset	01:00
lime Of Change	2018-04-04 15:22:26	Next Time Offset	00:00		
ст					
Insert VCT	No 🗸	Vct Mode	TVCT 🗸	Source ID	4
Short Name	TV-001	Major Channel Number	2	Minor Channel Number	3
Modulation Modes	0	Carrier Frequency	0		

Config-Section:

In this part, all settings for the output stream from the DATA –RJ45 network interface can be adjusted. Of course a streamer need an IP Address (Source), GW and NM settings. RTP or UDP can be chosen. The MAC should be unique but can be adjusted somehow. If the IP Stream output should be a VBR, the Zero-packets (PID 8191dec) can be skipped. This doesn't work on ASI output because ASI is always a CBR incl. Zero packets filling up to the Bitrate you can setup to your needs. The ASI port can be used as Burst or Byte mode. An Insertion of the SDT is for TS related multiplexers and even for IPTV streams nearly mandatory.

TDT/TOT must be generated if the ASI / IP Stream output demands this for the further multiplexer devices. Reason: While an SDI or HDMI or even CVBS analogue Video signal must not carry time and date information, it is almost a must-have to insert this information in a Transportstream (TS). See also: <u>https://www.dvb.org/resources/public/standards/a38_dvb-si_specification.pdf</u> While VCT is a part of the ATSC norm, as well as CC Closed caption information (Subtitles as Overlays similar to DVB-Teletext) you can insert a VCT-PID containing relevant information or skip this part. Some explanations from Internet:

http://www.tvwithoutborders.com/tutorials/dtv_intro/atsc_psip/vct/

The first thing that service information has to describe is the organization of the transport stream. This is defined as part of the MPEG standard, and so these tables are common across all types of digital TV system, be it DVB or ATSC. The most important table is the Program Association Table (PAT). This is the entry point into the service information, and so it must be broadcast on a well-known PID within the transport stream – PID 0. Programs in MPEG are the same as services in a digital TV context. The Program Association Table lists how many services there are in the transport stream, and provides pointers to more detailed descriptions of those services. Each service has an associated Program Map Table(PMT) that describes the elementary stream s that make up the service. For every elementary stream in the service, the PMT for that service contains information about the type of that stream (audio, video or data, and what type of audio, video or data) and the PID of that elementary stream. Since there are several instances of the PMT in a transport stream, these are broadcast on different PIDs. The PID for each PMT is carried in the PAT entry for that service. Now that the receiver knows how the network is organized at the stream level, some extra logical information is needed to make this more





useful to the receiver. The PMT provides a list of how each service is organized in the transport stream, but it doesn't actually give much information about how services are organized from the perspective of the viewer. The viewer cares specifically about TV channels, and shouldn't even know about transport streams and elementary streams or any other part of the broadcasting system. To do this, ATSC uses another table called the Virtual Channel Table, or VCT. Cable, satellite and terrestrial networks all have slightly different versions of this table. ...

ADVANCED: Dolby Meta-Data:

Status Parameter -	Advanced - System -
	Dolby Metadata
OUTPUT SETTINGS	SDI Channel Set
Config	OSD Settings
Output Mode RTP	OSD Timer st

Because Dolby Labs are a margin optimizing oriented company, you should be sure to own the license for that. So we are asking for the confirmation of this notable issue.





Dialnorm Init Image: [-27dB] DC Filter Enable Enable Comp Char Film Strandard (Mix Level [-27dB] D2 comp Film Light Compr Usedeemph Disable Center Mix Level [-4.5dB] Use Phase 90 Enable Bitstream ind Enable Surround Mix [-1NF] A/D Conterter Standard Dcomp Unspecified Level [N/A] Orignal bs Copied Bitstream Mode Complete Main(Cl Lt/Rt C Mix [N/A] Dolby Surround Enabled LFE Filter Flag Disabled Level [N/A] Bultstream Mode Complete Main(Cl Lo/Ro C Mix Image: [N/A] Dolby Surround Enabled LFE Filter Flag Disabled Lo/Ro Sur Mix [N/A] EW Filter Enable Disabled Room Type Small Room, Flat Lo/Ro Sur Mix [N/A] Copyright Bit Non-Copyright Room Type Small Room, Flat Lo/Ro Sur Mix Enabled Imabled Unspecified Surround EX Mode Enabled	oiny necauata-		-				
Mix Level [-25dB] D2comp Film Light Compt Usedeemph Disable v Center Mix Level [-4.5dB] Use Phase 90 Enable Bitstream ind Enable v Surround Mix Level [-INF] A/D Conterter Type Standard v Dcomp Unspecified v Lt/Rt C Mix Level [N/A] Orignal bs Copied Bitstream Mode Complete Main(Cl v Lt/Rt Sur Mix Level [N/A] Dolby Surround Mode Enabled LFE Filter Flag Disabled v Lo/Ro C Mix Level [N/A] BW Filter Enable Disabled Headphone Mode Unspecified v Lo/Ro Sur Mix Level [N/A] Copyright Bit Non-Copyright Room Type Small Room, Flat Lo/Ro Sur Mix Level [N/A] Down Mix Mode Unspecified Surround EX Mode Enabled v	Dialnorm Init		- — [-27dB]	DC Filter Enable	Enable 🗸	Comp Char	Film Strandard (\vee
Center Mix Level [-4.5dB] Use Phase 90 Enable Bitstream ind Enable Surround Mix Level [-INF] A/D Conterter Type Standard Dcomp Unspecified Lt/Rt C Mix Level [N/A] Orignal bs Copied Bitstream Mode Complete Main(Cl v Lt/Rt Sur Mix Level [N/A] Dolby Surround Mode Enabled LFE Filter Flag Disabled v Lo/Ro C Mix Level [N/A] BW Filter Enable Disabled Headphone Mode Unspecified v Lo/Ro Sur Mix Level [N/A] Copyright Bit Non-Copyright Room Type Small Room, Flat v Lo/Ro Sur Mix Level Imabled v Down Mix Mode Unspecified v	Mix Level		●[-25dB]	D2comp	Film Light Compr 🗸	Usedeemph	Disable 🗸
Surround Mix Image: Construction of the text of	Center Mix Level		[-4.5dB]	Use Phase 90	Enable 🗸	Bitstream ind	Enable 🗸
Lt/Rt C Mix Image: N/A] Orignal bs Copied Bitstream Mode Complete Main(Cl v Level Dolby Surround Enabled LFE Filter Flag Disabled v Lo/Ro C Mix Image: N/A] BW Filter Enable Disabled Headphone Mode Unspecified v Lo/Ro Sur Mix Image: N/A] Copyright Bit Non-Copyright Room Type Small Room, Flat Lovel Image: N/A] Down Mix Mode Unspecified Surround EX Mode Enabled v	Surround Mix Level		[-INF]	A/D Conterter Type	Standard 🗸	Dcomp	Unspecified \lor
Lt/Rt Sur Mix Dolby Surround Dolby Surround LFE Filter Flag Disabled > Level Dolby Surround Node Disabled > Headphone Mode Unspecified > Lo/Ro Sur Mix Dolby Surround Enabled Non-Copyright Room Type Small Room, Flat Level Down Mix Mode Unspecified Surround EX Mode Enabled >	Lt/Rt C Mix Level			Orignal bs	Copied 🗸	Bitstream Mode	Complete Main(CI 🗸
Lo/Ro C Mix Level Disabled V Headphone Mode Unspecified V Lo/Ro Sur Mix Level N/A] Copyright Bit Non-Copyright V Room Type Small Room, Flat Xbsilex Enabled V Down Mix Mode Unspecified V Surround EX Mode Enabled V	Lt/Rt Sur Mix Level			Dolby Surround Mode	Enabled 🗸	LFE Filter Flag	Disabled 🗸
Lo/Ro Sur Mix Image: Copyright Bit Non-Copyright Room Type Small Room, Flat Level Image: Copyright With Mode Unspecified Surround EX Mode Enabled Image: Copyright With Mode	Lo/Ro C Mix Level			BW Filter Enable	Disabled 🗸	Headphone Mode	Unspecified 🗸
Xbsilex Enabled V Down Mix Mode Unspecified V Surround EX Mode Enabled V	Lo/Ro Sur Mix Level			Copyright Bit	Non-Copyright 🗸	Room Type	Small Room, Flat 🗸
	Xbsilex	Enabled	\sim	Down Mix Mode	Unspecified \lor	Surround EX Mode	Enabled 🗸
3dB Sur Atten Enabled V Audio Product Exist V	3dB Sur Atten	Enabled	\sim	Audio Product Info	Exist 🗸		

After confirmation of the License nag-screen, all of these parameters can be set according to your needs and independently for all 4 Audio-channel pairs.

PAIR 1 PAIR 2	PAIR 3	PAIR 4		2			
-Dolby Metadata							
Dialnorm Init		●—[-27dB]	DC Filter Enable	Enable	\sim	Comp Char	Film Strandard (\checkmark
Mix Level		[-25dB]	D2comp	Unspecified		Usedeemph	Disable 🗸
Center Mix Level	•	[-3dB]	Use Phase 90	Enable	\sim	Bitstream ind	Enable 🗸
Surround Mix Level	•	[-3dB]	A/D Conterter Type	Standard	\sim	Doomp	Unspecified \lor
Lt/Rt C Mix Level			Orignal bs	Not Copied	\sim	Bitstream Mode	Complete Main(CI 🗸
Lt/Rt Sur Mix Level			Dolby Surround Mode	Disabled	\sim	LFE Filter Flag	Disabled 🗸
Lo/Ro C Mix Level			BW Filter Enable	Disabled	\sim	Headphone Mode	Unspecified ~
Lo/Ro Sur Mix Level			Copyright Bit	Copyright	\sim	Room Type	Small Room, Flat 🗸
Xbsilex	Disabled	\sim	Down Mix Mode	Unspecified	\sim	Surround EX Mode	Disabled 🗸
3dB Sur Atten	Disabled	\sim	Audio Product Info	Non Exist			

SDI-Channel SET:

In this menu – if the SDI-Input carries multiple AUDIO pairs already, you can select these and re-organize them.

Status Parameter -	Advanced - System -
	Dolby Metadata
SDI CHANNEL SETTINGS	SDI Channel Set
Config	OSD Settings
Primary Audio Group	OSD Timer





SDI CHANNEL SETTINGS									
Config Primary Audio Group Secondary Audio Group	From Group #1 V From Group #2 V	Grou	p #1	Grou	p #2	Grou	ıp #3	Grou	p #4
Pair 1 L Pair 1 R Pair 2 L	Primary CH 1 V Primary CH 2 V Primary CH 3 V		Primary Group			Secondary Group			
Pair 2 R Pair 3 L Pair 2 P	Primary CH 4 V Secondary CH 1 V	Pl	₽2	₽З	Ρ4	s1	\$2	\$3	S 4
Pair 4 L Pair 4 R	Secondary CH 2 V Secondary CH 3 V Secondary CH 4 V	1L	1R	21	2R	ЗL	ЗR	41	4 R
	Pair 4 R Secondary CH 4								

Groups and primary / secondary channels can be changed for the encoding output.

Parameter -> Audio Setting

Select "Audio Setting" on the top column and it shows the AUDIO interface. You can configure the Audio parameters:

Stat	us :	Parameter	 Advanced 	l - System -					Reboot	ສ ⊍: 2.15	HW:1.43
CIVCETTI C	3.017		ettings								
SYSTEM ST	ATF	Video-Se	ettings								
Status	-	Output \$	Settings								
	rs i	NTP Set	ings		Audio Port	SDI		Video Port	SDI		
	Bitra	ate	6.53/10.00	Mbps	Video Format	1920x1080 50p		Encode Type	MPEG2		
	Alarn	ns	None		Encode Status	Encoding		Date Time	2016-12-2	5 17:20:0	8
Version		Soft	are 2.15		Hardware 1.43	}	Web 3.6	1	ROM 029.	19	

ACP		-			
Audio Port	SDI 🗸	Sample Rate	48 Kbps 🗸	Audio Pair	Pair 1 2 3 4 🗸
_		3			
AIR 1 PAIR 2	PAIR 3 PAIR 4				
AEN					
Audio PID	512	Stream ID	192	Encode Type	MPEG1-L2
Pass Through	off 🗸 🗸	Volume	Level 1 \sim	Bitrate	256 Kbps 🗸

Capture Mode:

MPE-4000 supports 4 stereo (8 mono) or one DD 5.1 (AC3) audios embedded to mix with the video to form a stream output.

Drop: Audio data is captured.

Frame-1: A single (channel 1) audio stream is captured.



Frame-2: 2 audio (channel 1&2) streams are captured.Frame-3: 3 audio (channel 1 to 3) streams are captured.Frame-4: 4 audio (channel 1 to 4) streams are captured.5.1CH: Surround (5.1) for Dobby/AC3 5.1 channel.

Parameter -> Video Setting

Select "Video Setting" on the top column and it shows its interface. Configuring the Video parameters:

Status	Parameter - Ad	lvanced - Sy	ystem -	Chroma sampl:	ing to use for th	ne encode.		
	Audio Settin	igs		4:2:0 : Suppo 4:2:2 : Suppo	ort H.264 and MPE	(G2 (ofile) and MPE	RG2	
VIDEO SETTI	N Video Settin	igs		WARNING: High	Profile is requi	red when use		
Config	Output Setti	.ngs		4:2:2 under H.264 encode type				
Video Form	a NTP Settings		v					
VIDEO SETTINGS								
Config								
Video Format	1920x1080 50p	Video Port	SI	v I	Encode Type	MPEG2	\sim	
Closed Caption	None 🗸	Video PID	25	6	Stream ID	224		
Chroma Sampling	4:2:0 ~	Aspect Rati	.0 16	5 x 9 🗸 🗸	Rescaled	Disabled	\sim	
GOP Structure	Automatic 🗸 🗸	GOP Size	0		Close GOP	NO	\sim	

IDR Frequency	No IDRs	\sim	SyncLoss Image	Color Bar	\sim	Coding Mode	Automatic	
Profile	Up To Main	\sim	Level	Automatic		TS Bitrate(Mbps)		
PMT PID	80		PCR PID	256		VEN Bitrate(Mbps)	5.00	
Latency (ms)	650	\sim	PCR Interval	35		Video Buffer	Enable	\sim
Source Error	Detect	\sim	Adj Win Format	Disable		Adj Line Number	0	
		ſ	ānnļu	Cat Config	Fnco	le		
			мррту	set toning	Encor			

Video Format: 1920x1080 50p is related to the detected INPUT Resolution! No adjustment possible.

GOP Structure: Specifies the GOP structure of the encoded video.

-For H.264 650ms latency the max number of B frames is 2 for 29.97/25Hz, and 3 for 60/50Hz.

-For MPEG-2 650ms latency the max number of B frames is 1 for 29.97/25/24Hz, and 2 for 60/50Hz.

WARNING: There are no B frames for 150ms latency.

IDR-Frequency: Specifies the IDR frequency relative to I-Frames.

Profile: The maximum profile to be used for encoding. Coding tools for profiles higher than specified will be disabled. The encoder will signal the lowest profile in the bitstream that allows for the currently enabled coding tools.

PMT PID: Set TS PMT PID Number for the DVB / ATSC related Program map table -> See DVB/ATSC specs. Avoid reserved PID's like 11dec = NIT, 18dec = EIT, WARNING: Please do not set this value identical as other PID's!

PID Range: 19 ... 8190 (8191 = zero packets)

Latency: 150ms, 200ms, 350ms, 650ms optional.

Source Error: Detect or ignore the source error. NOTE: Only SDI source input is supported yet.

WARNING: For safety sake, in general, please use the Detect options.



Video Port:

Select video input interface. Input availability Matrix:

FMT\V	SDI		HDMI	YPbPr	CVBS	
480I	\checkmark		-	-	\checkmark	
576I	\checkmark		-	-	\checkmark	
720P	\checkmark		\checkmark	\checkmark	-	
1080I			\checkmark	\checkmark	–	Ι

VIDEO PID: WARNING: Please do not set this value identical like other PIDs!

PID Range: 19...8190

Aspect Ratio: Select the aspect ratio for video encoding.

SD: 4x3 16x9 14x9 HD : 16x9 Note: Only h.264 encoding supports 14x9

GOP Size: The size of each GOP in frames. The value of 0 for GOP size indicates AUTO, which is the following: -150ms/250ms/350ms <u>MPEG-2 and h.264</u>:

The default GOP size is infinite. This means that there will be I-fields only at scene changes and all other fields will be P-fields using Continuous Decoder Refresh (CDR) method.

-650ms MPEG-2: The default GOP size is 132 frames

-650ms H.264: The default GOP size is 300 frames

SyncLoss-Image: The image type to encode during loss of video source syncronisation. Color bar or Black screen

Level	Automatic 📉
PCR PID	Automatic 😽
PCR Interval	422 High
Adj Win Format	High
	422 Main
	High 1440
Арр⊥у	Main

PCR-PID: The value for the TS output PCR-PID. Here please beware of the PID regions like above. **PCR-Interval:** Set PCR interval in milliseconds. WARNING: Range: 1...40, default 35

Adj Win Format: Active adjust the window format:



Stream ID: Set video stream ID. ID Range:-1...225 , default:224

WARNING: Generally, please use default value.

Rescaled: Horizontal rescale the input video to this resolution.

For 1920 pixel wide inputs, valid values are: 1440 (3/4), 960

For 1280 pixel wide inputs, valid values are: 960 (3/4), 640

For 720 pixel wide inputs, valid values are: 704 (drop), 640 (square pixels), 544 (3/4), 528 (3/4 of 704), 480, 352

Close GOP	NO NO
Coding Mode	NO
TS Bitrate(Mbps)	YES

Close GOP structure yes/no.



Coding Mode: The coding mode to use.

WARNING: For MPEG2 encoding only AUTO is supported (field coding for interlaced/frame coding for progressive).

For H.264 150ms latency only AUTO is supported (field coding for interlaced/frame coding for progressive).

For H.264 650ms latency, FIELD mode is supported for interlaced content if B pictures are disabled. Otherwise AUTO will select MBAFF for interlaced or FRAME for progressive.

TS Bitrate: Output bit rate of the transport mux

WARNING: This parameter is read only, and is related to the Bitrate (Mbps) parameter which has been configured in the output page.

VEN Bitrate (Mbps): Video bit rate in bits per seconds (BPS). MPEG2: Range 0,52Mbps ... 60Mbps h.264: Range 0,256Mbps ... 60Mbps

WARNING: Encoding Bitrate (video and audio) can't be larger than the TS Bitrate!

Video Buffer: When source input signal is unstable, enabling this parameter can protect the encoder to avoid crashing. NOTE: Only the SDI source input is supported. WARNING: If enabled video buffer, the time of system latency will increase about 200ms, and audio will out of synch about 1...10 frames with the video! Adj Line number: Active window start line offset

OSD settings:



In this Menu you can add multiple logos, text and QR









Right click: Settings of the logo can be modified.



Video Format:1920x1080 50p



Caption-Caption insert configuration

OSD SETTINGS		
Logo Capti	on QRCode	Video Format:1920x1080 50p
Channel 2 Direction L Speed Lee Period 20 Length 600 Font Family Ar Font Size px Fon Text Color Bac	<- R v evel 1 v sec 0 px tial sans-seris atWeight v skground:	Put your caption anywhere
res we can	Select the tex color and background color	Live Time 0 inserted OSD, then Nait Time 0 name it and select one Alpha 255 Enable ON
Characters:10	_± [‡] Adđþ≫>	Channel: 2 Name: Affairs Idx 1 USED Y Save Delete
][5 6

QRcode–QR code insert configuration

		07.07.1						
rogo	Caption				Video Format:	1920x1080 50p		
Channel	3	\lor						
RCode Size	328	X 328						
RCode URL:								
nttp://								
ext Location	Botton	m 🗸						
'ext	No Tex	t						
RCode Logo	Durchaucher	P . Neare Dates arrays/a						
Upload		Create						
No	image her	re!						
			Channel:1	Name : Internation	Affairs Id	x 1 🗸	Save	Delete
	Add>>>							



Advanced -> OSD affairs settings

Click "OSD affairs settings" on the top column will show the setup where you can configure the OSD affairs as per configuration.



Troubleshooting

The manufacturers ISO9001 quality assurance system has been approved by CQC organization. For guarantee the products' quality, reliability and stability. All products have been passed the testing and inspection before shipping out from factory. The testing and inspection scheme already covers all the Optical, Electronic and Mechanical criteria which have been published by the Manufacturer. To prevent potential hazard, please strictly follow the operational conditions.

Prevention Measure

- Installing the device at the place in which environment temperature between 0 to 45 °C
- Making sure good ventilation for the heat-sink on the rear panel and other heat-sink bores if necessary
- Checking whether the input AC voltage is within the power supply working range and the connection is correct before switching on device
- Checking all signal cables have been properly connected
- Frequently switching on/off of the device is prohibited; the interval between every switching on/off must be higher than 10 seconds.

Conditions need to unplug power cord

- Power cord or socket damaged.
- Any liquid flowed into device.
- Any stuff causes circuit short
- Device in damp environment
- Device was suffered from physical damage
- Longtime idle.
- After switching on and restoring to factory setting, device still cannot work properly.
- Maintenance needed



Packing List

MPE-4000 MPEG2/H.264 HD Encoder	1 pcs
this Manual	1 pcs
HDMI Cable	1 pcs
SDI Cable	1 pcs
YPbPr Cable	1 pcs*
CVBS Cable	1 pcs*
XLR adapter Cables	2 Sets*
RCA adapter Cables	1 Set*
Power Cord	1 pcs
4 I	

*) optional

Recommendations:

As a Multicast capable Switch we recommend is the HP (ARUVA) 2530 24G or 48G. (For Floor switches we have an own branded one and support IGMP as well) IGMP should be set to ON in the port configs. The latest HP Firmware might not be the best choice. Better to test IGMP functions before installation into a HOT running System and eventually do a downgrade of the Firmware. This one works:

Unit Information	Change ?
Product Name:	HP 2530-24G Switch (J9776A)
IP Address:	192.168.0.30
Base MAC Address:	a0 1d 48 45 26 40
Serial Number:	CN41FP70DF
Mgmt Server:	http://h17007.www1.hpe.com/device_help
Version:	YA.15.18.0013, ROM YA.15.19
	12

General notes about Streams:

Multicast streams:

Multicast Address Ranges:

We recommend, that the addressing of your Multicast streams should be in conjunction with this listings to avoid conflicts with other network equipment or protocols.

https://www.iana.org/assignments/multicast-addresses/multicast-addresses.xhtml

One small part from this:

IPv4 Multicast Address Space Registry

Last Updated 2018-01-05 Expert(s) Stig Venaas



Note

Host Extensions for IP Multicasting [RFC1112] specifies the extensions required of a host implementation of the Internet Protocol (IP) to support multicasting. The multicast addresses are in the range 224.0.0.0 through 239.255.255.255. Address assignments are listed below.

The range of addresses between 224.0.0.0 and 224.0.0.255, inclusive, is reserved for the use of routing protocols and other low-level topology discovery or maintenance protocols, such as gateway discovery and group membership reporting. Multicast routers should not forward any multicast datagram with destination addresses in this range, regardless of its TTL.

Available Formats W<u>XML</u> <u>HTML</u> <u>Plain text</u>

Registries included below

- Local Network Control Block (224.0.0.0 224.0.0.255 (224.0.0/24))
- Internetwork Control Block (224.0.1.0 224.0.1.255 (224.0.1/24))
- AD-HOC Block I (224.0.2.0 224.0.255.255)
- <u>RESERVED (224.1.0.0-224.1.255.255 (224.1/16))</u>
- <u>SDP/SAP Block (224.2.0.0-224.2.255.255 (224.2/16))</u>
- AD-HOC Block II (224.3.0.0-224.4.255.255 (224.3/16, 224.4/16))
- <u>RESERVED (224.5.0.0-224.251.255.255 (251 /16s))</u>
- DIS Transient Groups 224.252.0.0-224.255.255.255 (224.252/14))
- <u>RESERVED (225.0.0.0-231.255.255.255 (7 /8s))</u>
- <u>Source-Specific Multicast Block (232.0.0.0-232.255.255.255 (232/8))</u>
- GLOP Block
- AD-HOC Block III (233.252.0.0-233.255.255.255 (233.252/14))
- <u>Unicast-Prefix-based IPv4 Multicast Addresses</u>
- <u>Scoped Multicast Ranges</u>
- <u>Relative Addresses used with Scoped Multicast Addresses</u>

Multicast (as opposed to unicast) is used to send UDP packets from 1 source to multiple destination servers. This is useful for example for streaming from a satellite/DVB-T receiver to multiple receiving PCs for playback. Multicast can also be used on the output of an encoder to feed multiple streaming servers. Multicast only works with UDP and is not possible with TCP due to the 2 way nature of TCP, most commonly multicast is used with RTP and MPEG2-TS.

A multicast IP address must be chosen according to IANA information, we recommend using an address in the range **239.0.0 to 239.255.255.255** as this is reserved for private use. Using multicast addresses in the 224.0.0.0 range may clash with existing services and cause your stream to fail. For more details see

http://www.iana.org/assignments/multicast-addresses/multicast-addresses.xml

Choosing a UDP port number for multicast streams is also important. Even if you use a different multicast IP for each of your streams, we strongly recommend using different UDP port numbers as well. This is because a server and all software running on the server



receives ALL multicast traffic on an open port and extra processing is required to filter out the required traffic. If the each stream arrives on a different port, the server can safely ignore any traffic on ports that are not open. Port numbers MUST be chosen so that don't clash with any existing services or ephemeral ranges. The ephemeral range for Windows Vista, 7, 2008 is 49152 to 65535, for older Windows it is 1025 to 5000 and for Linux it is 32768 to 61000. For more information on Windows see

<u>http://support.microsoft.com/kb/929851</u> Care should also be taken to avoid system ports 0 to 1024. See <u>http://www.iana.org/assignments/service-names-port-numbers/service-names-port-numbers.xml</u> Generally one of the unassigned You Ports (**1024-49151**) should be used, you can run the **netstat -abn** (as admin under windows) command to see which ports are currently in use.

Registered port

A **registered port** is a <u>network port</u> (a sub-address defined within the <u>Internet Protocol</u>, in the range 1024–49151) assigned by the <u>Internet Assigned Numbers Authority</u> (IANA) (or by <u>Internet Corporation for Assigned Names and Numbers</u> (ICANN) before March 21, 2001,^[1] or by USC/ISI before 1998) for use with a certain protocol or application.

Ports with numbers 0–1023 are called *system or well-known ports*; ports with numbers 1024-49151 are called *you or registered ports*, and ports with numbers 49152-65535 are called *dynamic and/or private ports*.^[2] Both system and you ports are used by transport protocols (TCP, UDP, DCCP, SCTP) to indicate an application or service.

- Ports 0–1023 system or well-known ports
- Ports 1024–49151 you or registered ports
- Ports >49151 dynamic / private ports

https://en.wikipedia.org/wiki/List of TCP and UDP port numbers

Range for Ephemeral port

The Internet Assigned Numbers Authority (IANA) suggests the range 49152 to 65535 ($2^{15}+2^{14}$ to $2^{16}-1$) for dynamic or private ports.^[1]

Many <u>Linux kernels</u> use the port range 32768 to 61000. [note 2] <u>FreeBSD</u> has used the IANA port range since release 4.6. Previous versions, including the <u>Berkeley Software Distribution</u> (BSD), use ports 1024 to 5000 as ephemeral ports.^{[2][3]}

<u>Microsoft Windows</u> operating systems through XP use the range 1025–5000 as ephemeral ports by default.^[4] <u>Windows Vista</u>, <u>Windows 7</u>, and <u>Server 2008</u> use the IANA range by default.^[5] <u>Windows</u> <u>Server 2003</u> uses the range 1025–5000 by default, until Microsoft security update MS08-037 from 2008 is installed, after which it uses the IANA range by default.^[6] Windows Server 2008 with Exchange Server 2007 installed has a default port range of 1025–60000.^[7] In addition to the default range, all versions of Windows since Windows 2000 have the option of specifying a custom range anywhere within 1025–65535.^{[8][9]}



Packet	stru	cture			
			UDP Head	ler	
Offsets	<u>Octet</u>	0	1	2	3
<u>Octet</u>	<u>Bit</u>	0 1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21 22 23	24 25 26 27 28 29 30 31
0	0	Sou	rce port	Destinat	ion port
4	32	Le	ength	Chec	ksum

The UDP header consists of 4 fields, each of which is 2 bytes (16 bits).^[1] The use of the fields "Checksum" and "Source port" is optional in IPv4 (pink background in table). In IPv6 only the source port is optional (see below).

Source port number

This field identifies the sender's port when meaningful and should be assumed to be the port to reply to if needed. If not used, then it should be zero. If the source host is the client, the port number is likely to be an ephemeral port number. If the source host is the server, the port number is likely to be a well-known port number.^[4]

Destination port number

This field identifies the receiver's port and is required. Similar to source port number, if the client is the destination host then the port number will likely be an ephemeral port number and if the destination host is the server then the port number will likely be a well-known port number.^[4]

Length

A field that specifies the length in bytes of the UDP header and UDP data. The minimum length is 8 bytes because that is the length of the header. The field size sets a theoretical limit of 65,535 bytes (8 byte header + 65,527 bytes of data) for a UDP datagram. However the actual limit for the data length, which is imposed by the underlying <u>IPv4</u> protocol, is 65,507 bytes (65,535 – 8 byte UDP header – 20 byte <u>IP header</u>).^[4]

In IPv6 jumbograms it is possible to have UDP packets of size greater than 65,535 bytes.^[5] <u>RFC 2675</u> specifies that the length field is set to zero if the length of the UDP header plus UDP data is greater than 65,535.

Checksum

The <u>checksum</u> field may be used for error-checking of the header and data. This field is optional in IPv4, and mandatory in IPv6.^[6] The field carries all-zeros if unused.^[7]

RTP:

a part from: https://tools.ietf.org/html/rfc3550

Chapter 11:

RTP relies on the underlying protocol(s) to provide demultiplexing of

RTP data and RTCP control streams. For UDP and similar protocols,

RTP SHOULD use an **even** destination port number and the corresponding

RTCP stream SHOULD use the next higher (odd) destination port number.

For applications that take a single port number as a parameter and derive the RTP and RTCP port pair from that number, if an odd number is supplied then the application SHOULD replace that number with the next lower (even) number to use as the base of the port pair. For



applications in which the RTP and RTCP destination port numbers are specified via explicit, separate parameters (using a signaling protocol or other means), the application MAY disregard the restrictions that the port numbers be even/odd and consecutive although the use of an even/odd port pair is still encouraged. The RTP and RTCP port numbers MUST NOT be the same since RTP relies on the port numbers to demultiplex the RTP data and RTCP control streams.

In a unicast session, both participants need to identify a port pair for receiving RTP and RTCP packets. Both participants MAY use the same port pair. A participant MUST NOT assume that the source port of the incoming RTP or RTCP packet can be used as the destination port for outgoing RTP or RTCP packets. When RTP data packets are being sent in both directions, each participant's RTCP SR packets MUST be sent to the port that the other participant has specified for reception of RTCP. The RTCP SR packets combine sender information for the outgoing data plus reception report information for the incoming data. If a side is not actively sending data (see <u>Section</u> <u>6.4</u>), an RTCP RR packet is sent instead.



any port (even, not odd > 1024)

Note: Regarding SAP (Session Announcement Protocol)

IPv4 global scope sessions use multicast addresses in the range 224.2.128.0 - 224.2.255.255 with SAP Announcements being sent to 224.2.127.254 Port 9875 (note that 224.2.127.255 is used by the obsolete SAPv0 and MUST NOT be used).

IPv4 administrative scope sessions using administratively scoped IP multicast. The multicast address to be used for SAP announcements is the highest multicast address in the relevant administrative scope zone. For example, if the scope range is 239.16.32.0 - 239.16.33.255, then 239.16.33.255 is used for SAP Announcements.



We assume, that this professional unit is used by professional technicians knowing all relevant norms, regulations, abbreviations (i.e. DVB, ATSC, ...) and specifications.

Actual Versions:

Status	Parameter - Ad	lvanced - System-				Re	eboot	SW:2.2	2 HW:1	.44
TEM STAT	re									
Status										
Status	TS Lock	•	Audio Port	SDI	Video Port	SDI				
Status	TS Lock Bitrate).10/10.00 Mbps	Audio Port Video Format	SDI unknown	Video Port Encode Type	SDI MPEG2				
Status —	TS Lock Bitrate Alarms	0.10/10.00 Mbps TS Lose	Audio Port Video Format Encode Status	SDI unknown Not Encode	Video Port Encode Type Date Time	SDI MPEG2 2016-12-25 14:51:17				

'Never change a running system' ... If the device might have bugs or its operation might be unusual, please report these in details incl. the above screenshot to give the relevant OS data to the service/developers:

Contact:

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Appendix Product Disposal

Warning! Ultimate disposal of this product should be handled according to all national laws and reg

製品の廃棄

この製品を廃棄処分する場合、国の関係する全ての法律・条例に従い処理する必要があります。

警告

本产品的废弃处理应根据所有国家的法律和规章进行。

警告

本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen. ¡Advertencia!

Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.

Attention

La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.

טילוק הערצר

אחתיה : סילוק סופי פול סרצר זה חייב להיות בהופוס להבחיות וחוקי הפריונה.

عند انخلس انهلي من هذا المقتح ينبغي انعامل معه وقا لجميع انوانين والرائح الرطنية

경고!

이 제품은 해당 국가의 관련 법규 및 규정에 따라 폐기되어야 합니다.

Waarschuwing

De uiteindelijke verwijdering van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.



Elektronische Geräte gehören nicht in den Hausmüll, sondern müssen - gemäß Richtlinie 2002/96/EG DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 27. Januar 2003 über Elektro- und Elektronik-Altgeräte fachgerecht entsorgt werden.

Bitte geben Sie dieses Gerät am Ende seiner Verwendung zur Entsorgung an den dafür vorgesehenen öffentlichen Sammelstellen ab.



Electronic equipment is not household waste - in accordance with directive 2002/96/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL dated 27th January 2003 on used electrical and electronic equipment, it must be disposed of properly.

At the end of its service life, take this unit for disposal to an appropriate official collection point

Montage und Sicherheitshinweise / Installation and safety instructions

- Die beschriebenen Geräte dienen ausschließlich der Installation von Satelliten-Empfangsanlagen.
- The equipment described is designed solely for the installation of satellite receiver systems.
- Jegliche anderweitige Nutzung oder die Nichtbeachtung dieses Anwendungshinweises hat den Verlust der Gewährleistung bzw. Garantie zur Folge.
- Any other use, or failure to comply with these instructions, will result in voiding of warranty cover.
- Die Geräte dürfen nur in trockenen Innenräumen montiert werden. Nicht auf oder an leicht entzündlichen Materialien montieren.
- The equipment may only be installed in dry indoor areas. Do not mount on or against highly combustible materials.
- Die Geräte sind mit einer Potenzial-Ausgleichsleitung (Cu, mindestens 4 mm²) zu versehen.
- The equipment must be provided with an earthing wire (Cu, at least 4 mm2).
- Die Sicherheitsbestimmungen der jeweils aktuellen Normen EN 60728-11 und EN 60065 sind zu beachten.
- The safety regulations set out in the current EN 60728-11 and EN 60065 standards must be complied with
- Verbindungsstecker: HF-Stecker 75 Ohm (Serie F) nach EN 61169-24
- Connector: HF plug 75 Ohm (series F) to EN 61169-24.
- Nicht benutzte Teilnehmerausgänge sollten mit 75-Ohm Widerständen (z. B. EMK 03) abgeschlossen werden. (Verringerung der terrestrischen Signalwelligkeit)
- Unused subscriber ports should be closed off by 75 Ohm resistors (e.g. EMK 03).
- Nicht benutzte Kaskadenausgänge sind mit 75 Ohm Widerständen inkl. DC-Blocker abzuschließen. 75 Ohm Widerstände ohne Gleichspannungssperren können das Gerät beschädigen!
- **Unused trunk outputs** must be terminated with 750hm resistors including DC Blocker. Otherwise the device may be inoperable or damaged.
- Bitte überprüfen Sie die Anlage vor Inbetriebnahme auf evtl. Kurzschlüsse der Koaxial-Kabel. Es ist darauf zu achten, dass die Eingangspegel der SAT-Ebenen möglichst gleich hoch sind. Power-LEDs zeigen den Betrieb an. Falls die nicht leuchten, bitte die Stromzufuhr kontrollieren.
- Please check the installation against shortage in coax cables and connectors before switching on. The



input levels should be adjusted accordingly. Power-LED's showing operational mode. If this is not illuminated, please check the power source.

- Stromführendes Gerät
- Current-carrying unit
- Nicht öffnen oder am Gerät manipulieren!
- Do not open or tamper with the unit!
- Bei Arbeiten an der Anlage immer die Netzstecker aus der Steckdose ziehen!
- When working on the system always unplug the mains plug from the wall socket!
- Auf ausreichenden Abstand achten! Nach allen Seiten mind. 5 cm!
- Ensure adequate clearance! Min. 5 cm to all sides!
- Nicht über Kopf montieren.
- Do not install overhead.
- Für die Gerätekühlung muß freie Luftzirkulation möglich sein. Überhitzungsgefahr!
- Free circulation of air must be possible to discharge the heat emitted by the unit. Risk of overheating!
- Zulässige Umgebungstemperatur -20 bis +50°C
- Permissible ambient temperature -20 to +50°C



Wir empfehlen die Benutzung von Gleitschienen bevor das Gerät im 19 " Schrank installiert und angeschlossen wird.

We recommend using and installing 19" rails in your rack before you mount the device and install the F-connectors and cables.

Zur Beachtung / Important notes:

- Auf das Netzgerät dürfen keine mit Flüssigkeit gefüllten Gegenstände gestellt werden.
- No liquid-filled items may be placed on top of the power supply unit.
- Das Netzgerät darf nicht Tropf- oder Spritzwasser ausgesetzt sein.
- The power supply unit must not be exposed to dripping or splashing water.
- Der Netzstecker muss ohne Schwierigkeiten zugänglich und benutzbar sein.
- The mains plug must be easily accessible and operable.
- Das Gerät kann nur durch Ziehen des Netzsteckers vom Netz getrennt werden.
- The only reliable method of disconnecting the unit from the mains is to unplug it.
- Bei größerem Durchmesser des Kabel- Innenleiters als 1,2 mm bzw. Grat können die Gerätebuchsen zerstört werden.
- If the inner cable conductor diameter is greater than 1.2 mm or in case of burr, the device sockets may be destroyed.