

## MPEG2 & h.264 AVC Broadcast Encoder



### Features:

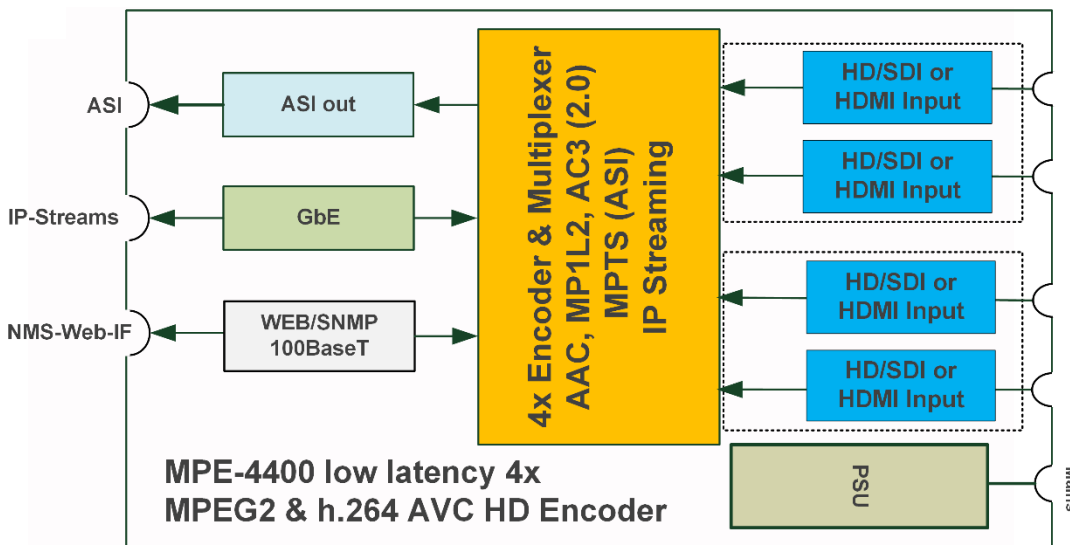
- MPEG-2 HD/SD and MPEG-4 AVC/H.264 HD/SD video encoding
- IN: 1080p, 720P, 480i, 576i Video resolution and downscaling
- Low latency
- Modules can be mixed 2/2
- MPEG1 Layer II, HE-AAC (v1 & v2), LC-AAC and DD AC3 2.0 audio encoding and adjustment
- Support Volume normalization (for AC3)
- Dual parallel ASI output and IP as MPTS and 4 SPTS, UDP & RTP
- LCD / Keypad control and Web based management by Ethernet port
- Dual power supply
- VBR/CBR encoding rate control mode
- PSI/SI editing and inserting
- IP Zero packet filter (PID 8191dec)

### MPE-4400:

MPEG-2/H.264 SD/HD 4x Encoder is a broadcasting audio & video encoding device with powerful functionality. Equipped with 2 Modules 2x 2x HD-SDI or 2x 2x HDMI or mix of.

Multiple audio and video encoding formats are available to meet your flexible and various requirements. AC3 (2.0) can be processed as well.

The encoded program will finally output in a DVB conform TS through 2 parallel ASI and 1 IP port: MPTS & 4 SPTS.



*4x HD-SDI or 4x HDMI (or 2x2)  
ASI & IP TS outputs*

## Technical Data:

<b>Video Encoding</b>	MPEG2 & h.264 AVC
Input Resolution	HD-SDI x 4 or HDMI x 4 or 2x2 1920 x 1080_60P, 1920 x 1080_50P, (-for MPEG4 AVC/H.264 only) 1920 x 1080_60i, 1920 x 1080_50i, 1280 x 720_60p, 1280 x 720_50P 720 x 480_60i, 720 x 576_50i
Output restriction:	Progressive Input will be encoded in Interlaced output p=>i
Bit Rate	0.5...19.5Mbps for H.264 encoding 1...19.5Mbps for MPEG-2 encoding
Rate Control Mode	CBR/VBR
Chroma Sample	4:2:0
Aspect Ratio	16:9, 4:3
<b>Audio encoding</b>	MPEG1 Layer II, MPEG2-AAC, MPEG4-AAC, Dolby Digital AC3 (2.0)
Volume Normalization (Applicable for DD AC3 encoding only)	-31 ... -1 dB
Sample rate	48KHz
<b>System</b>	
Bit rates	64kbps, 96kbps, 128kbps, 192kbps, 256kbps, 320kbps
Local interface	LCD + Keypad
Remote management	Web Interface
Low Latency Mode	Normal, mode 1, mode 2
<b>Output</b>	2 x ASI out (BNC type)
	IP (1 MPTS & 4 SPTS) over UDP, RTP (RJ45, GbE)
NMS interface	RJ45, 100BaseT
Power	AC 100V...240V, 45W
Dimensions	482 x 400 x 44mm
Weight	4.5 kg
Operation temperature	0...45°C

### Corresponding Headend-Products:

DVB-C QAM-Modulators: HDC-5004/5016 (4 or 16 DVB-C channels), BSS-Platform (QAM Modules)

DVB-S2/T2 Modulators: HDM-Series

IPTV distribution in corporate/broadcast or even Hospitality Networks (STB based or directly to TV's)

IRENIS GmbH – Hauptstrasse 29 - D-31171 Nordstemmen / Germany - [info@blankom.de](mailto:info@blankom.de) - [www.blankom.de](http://www.blankom.de)  
 Technical changes are subject to change w/o further notice

We are adding these Manuals in English only because the technical oriented world of RF/ SMATV/ CATV and IP are international oriented and understanding English. If not, you can use google translator or any other better like deepl.com apps.

***We strongly recommend the installation by technical skilled people:***

**Anmerkung:**

Alle von uns veröffentlichten Betriebsanleitungen richten sich an den Antennen- und IT-Fachmann, der über grundlegende Kenntnisse der Empfangs-, Netzwerk- und Anlagentechnik verfügt. Die Einhaltung aller relevanten Vorschriften und Richtlinien für den Aufbau und Betrieb von solchen Anlagen obliegt dem Installateur und/oder dem Betreiber. Insbesondere sind die in den jeweiligen Ländern geltenden Vorschriften und Richtlinien für die Inbetriebnahme speziell für den Stromanschluss und alle mit den Produkten in Zusammenhang stehenden und geltenden Normen und Gesetze einzuhalten.

**Remark:**

*All operating instructions published by us are intended for the antenna and IT specialist who has basic knowledge of reception, network and system technology. Compliance with all relevant regulations and guidelines for the installation and operation of such systems is the responsibility of the installer and/or the operator. In particular, the regulations and guidelines applicable in the respective countries for commissioning, especially for the power connection, and all standards and laws related to the products must be complied with.*

**Annotation:**

*Tous les modes d'emploi que nous publions sont destinés aux professionnels de l'antenne et de l'informatique qui ont des connaissances de base en matière de réception, de mise en réseau et de technologie des équipements. Le respect de toutes les réglementations et directives pertinentes pour l'installation et l'exploitation de ces systèmes relève de la responsabilité de l'installateur et/ou de l'exploitant. En particulier, il convient de respecter les réglementations et directives applicables dans les pays respectifs pour la mise en service, notamment pour le raccordement électrique, ainsi que toutes les normes et lois relatives aux produits.*

**Annotazione:**

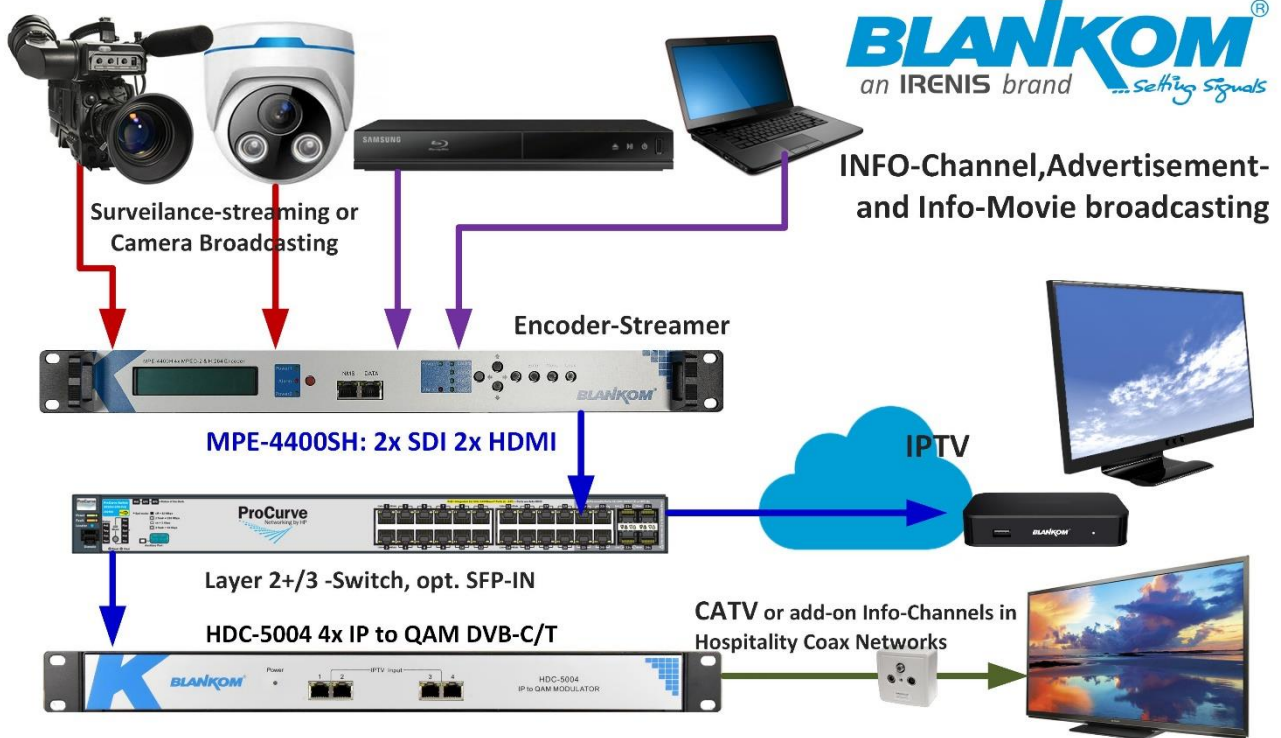
*Tutte le istruzioni per l'uso da noi pubblicate sono destinate al professionista dell'antenna e dell'informatica che ha una conoscenza di base della tecnologia di ricezione, di rete e delle apparecchiature. Il rispetto di tutti i regolamenti e le linee guida pertinenti per l'installazione e il funzionamento di tali sistemi è responsabilità dell'installatore e/o dell'operatore. In particolare, devono essere rispettati i regolamenti e le linee guida applicabili nei rispettivi paesi per la messa in funzione, soprattutto per il collegamento alla rete elettrica e tutte le norme e le leggi relative ai prodotti.*

**Anotación:**

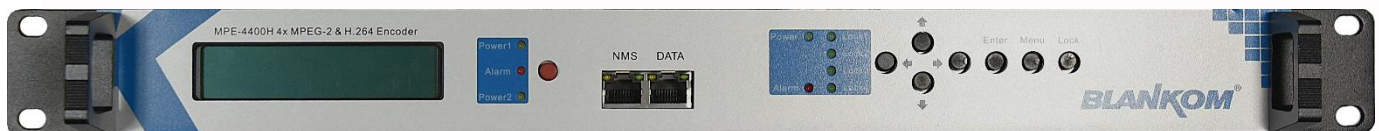
*Todas las instrucciones de uso publicadas por nosotros se dirigen al profesional de la antena y de la informática que tiene conocimientos básicos de recepción, de redes y de tecnología de equipos. El cumplimiento de todos los reglamentos y directrices pertinentes para la instalación y el funcionamiento de dichos sistemas es responsabilidad del instalador y/o del operador. En particular, deben cumplirse los reglamentos y directrices aplicables en los respectivos países para la puesta en marcha, especialmente para la conexión de la energía y todas las normas y leyes relacionadas con los productos.*

**Anotação:**

*Todas as instruções de operação publicadas por nós são destinadas ao profissional de antena e TI que possui conhecimentos básicos de recepção, rede e tecnologia de equipamentos. O cumprimento de todos os regulamentos e diretrizes relevantes para a instalação e operação de tais sistemas é de responsabilidade do instalador e/ou do operador. Em particular, os regulamentos e diretrizes aplicáveis nos respectivos países para comissionamento, especialmente para a conexão de energia e todas as normas e leis relacionadas aos produtos devem ser obedecidas.*



## Front and rear-connections



The display always shows the operating mode and the device can be almost configured by the Keypad and the Display.

Because the unit comes with 2 Power supplies, the **ALARM LED (RED)** will switch ON if one of these are interrupted. The **Red Button** just right of the ALARM LED can be used to switch ON/OFF an alarm signal beeper.

Before using the Keypad, the LOCK-Button has to be pressed for a short time to enable the menu. This method has been chosen to avoid accidentally settings by mechanical circumstances.

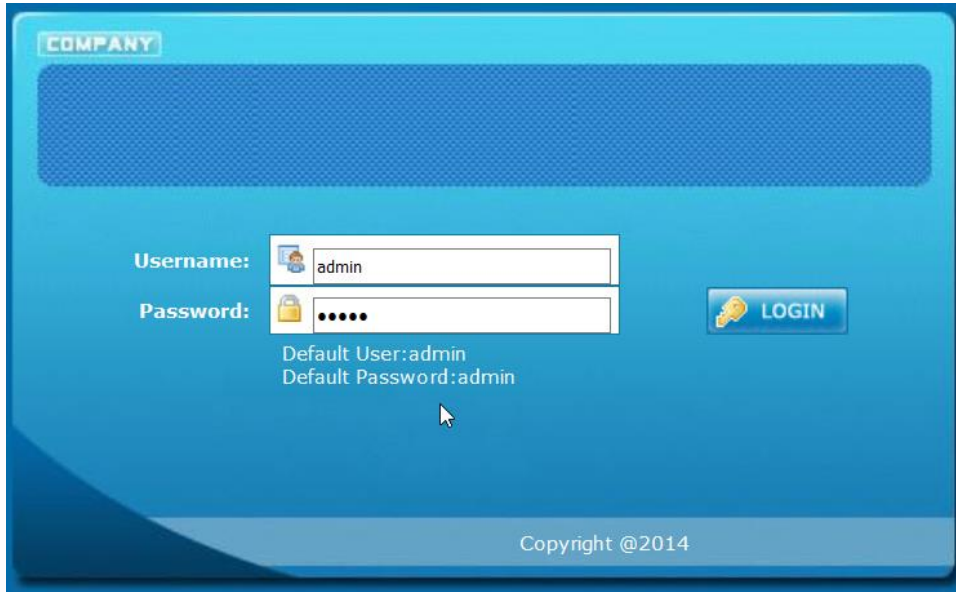
After pressing 'Lock' you can Enter into the Menu, starting scrolling into the different chapters and with the ENTER Button – Enter them and scroll with the arrow-keys to the chapter you want to. Reaching the IP Settings of the Devices NMS (which shows you its actual IPv4 address, Gateway, NM, ...) and can be changed also...

Chapters:

- 1: Status
- 2: Input sets
- 3: TS config
- 4: Network
- 5: System

These are nearly harmonizing with the Web-Interface – which we recommend to use after you have configured your Network NMS- Port to your own network parameter needs to start browsing to it





**REAR:**



Almost Simple: 2x2 HDMI Inputs numbered 1 and 2 in each module, The left module is No.1...

ASI 1 and 2 outputs for the multiplexed TS, 2x PSU-IEC connectors 100-230VAC 50/60Hz. Fuse included in the connectors, Power ON/FF button. Ground.

The 2 modules can be removed/exchanged but we recommend to **not** do this in HOT running mode.

Back to the WEB-IF: (This device has IP 192.168.1.236) **Default is 192.168.0.136** ...

Version Information	
Software Version:	1.67sa Build 134 Aug 1 2020
Hardware Version:	0.4
Web Version:	1.32

Status Information		
Input		
	Input 1	Input 2
Interface:	HDMI	HDMI
Bitrate:	14.672 Mbps	0.000 Mbps

Output	
Maxout Bitrate:	80.001 Mbps
Current Bitrate:	14.771 Mbps
TS Overflow:	<span style="color: green;">●</span>

The status Window shows actual device information... which might be important when contacting support. Status shows The Input connected and bitrates (here only Module 1, HDMI 1 ist active).

We recommend to always use the Backup/Load (External file based Ex-Import) and Safe/Restore (Locally) using after you finished your coinfiguration (even in steps) – not to lose them if power will be cut...accidently...

- Welcome
- Parameter
  - Input 1
  - Input 2
  - IP Output
  - VCT
  - General
  - **Save/Restore**
- System
  - Reboot
  - Firmware
  - Network
  - Password
  - Backup/Load

**Save Configuration**

When you change the parameter,you shoud save configuration ,otherwise the new configuration will lost after reboot.

---

**Restore Configuration**

Load latest saved configuration,after click the "Restore" then please click the "Save config" button,otherwise the "Restore" parameter will lost after reboot.

---

**Factory Set**

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.

Basics:

- Welcome
- Parameter
  - Input 1
  - Input 2
  - IP Output
  - VCT
  - General
  - Save/Restore
- System
  - Reboot
  - Firmware
  - **Network**
  - Password
  - Backup/Load

**Network**

**IP Address:** The manage address,use this address to visit the manage web.The format is xxx.xxx.xxx.xxx(like 192.168.0.1). After set the IP address,you must use the new address to visit the manage web.

**Subnet Mask:** General is 255.255.255.0,it is must the same in a local area network.

**Gateway:** If the device is in different net segment,you must set the gateway.

**Web Manage Port:** The default web manage port is 80,if you change it(like 8001),you can visit the manage web only use IP address and port(likes as http://192.168.0.1:8001).This function will work after device reboot.

IP Address:

Subnet Mask:

Gateway:

MAC Address:

Web Manage Port:

- Welcome
- Parameter
  - Input 1
  - Input 2
  - IP Output
  - VCT
  - General
  - Save/Restore
- System
  - Reboot
  - Firmware
  - Network
  - Password
  - Backup/Load

**Backup Configuration**

Backup current configuration to the local file,we suggest do this before set the configuration or update firmware.

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**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 wrong file,the device may not work.

2. Please do not turn off the power while file loading, otherwise the device will not work. If load correct,device will reboot automatically.

File:  Keine Datei ausgewählt.

- Welcome
- Parameter
  - Input 1
  - Input 2
  - IP Output
  - VCT
  - General
  - Save/Restore
- System
  - Reboot
  - Firmware
  - Network
  - **Password**
  - Backup/Load

**Password**

Modify the login name and password to make the device safely. If forget the name or password, you can reset it by keyboard in LCD menu. The default login name and password is "admin". Also please note the capital character and lowercase character.

Current UserName:

Current Password:

New UserName:

New Password:

Confirm New Password:

Keyboard and LCD Lock

Almost self-explaining ;-)...

**General:**

- Welcome
- Parameter
  - Input 1
  - Input 2
  - IP Output
  - VCT
  - **General**
  - Save/Restore
- System
  - Reboot
  - Firmware
  - Network
  - Password
  - Backup/Load

**General Configuration**

MPTS out Bitrate	<input type="text" value="80.000"/>	(0-99Mbps)
TransStream ID	<input type="text" value="0x1"/>	
OriginalNetworkID	<input type="text" value="0x1"/>	
NIT	<input type="text" value="Insert External"/>	▼
SDT	<input type="text" value="Auto"/>	▼
PMT	<input type="text" value="Auto"/>	▼
ASI Output	<input type="text" value="MPTS"/>	▼
Burst Mode	<input type="text" value="OFF"/>	▼

**ASI Out / MPTS output Bitrates are limited to max. 99Mb/s**

For ASI out, you should know what Burst mode is and if your ASI connection supports that.

We also assume that the technician who handles this unit has a proper education and understanding in DVB, Tables and Video /HDMI/SDI Knowledge.

ASI out can be the multiplex of all 4 Encoding parts or one of the single ones:

ASI Output

Burst Mode

MPTS

MPTS

SPTS A

SPTS B

SPTS C

SPTS D

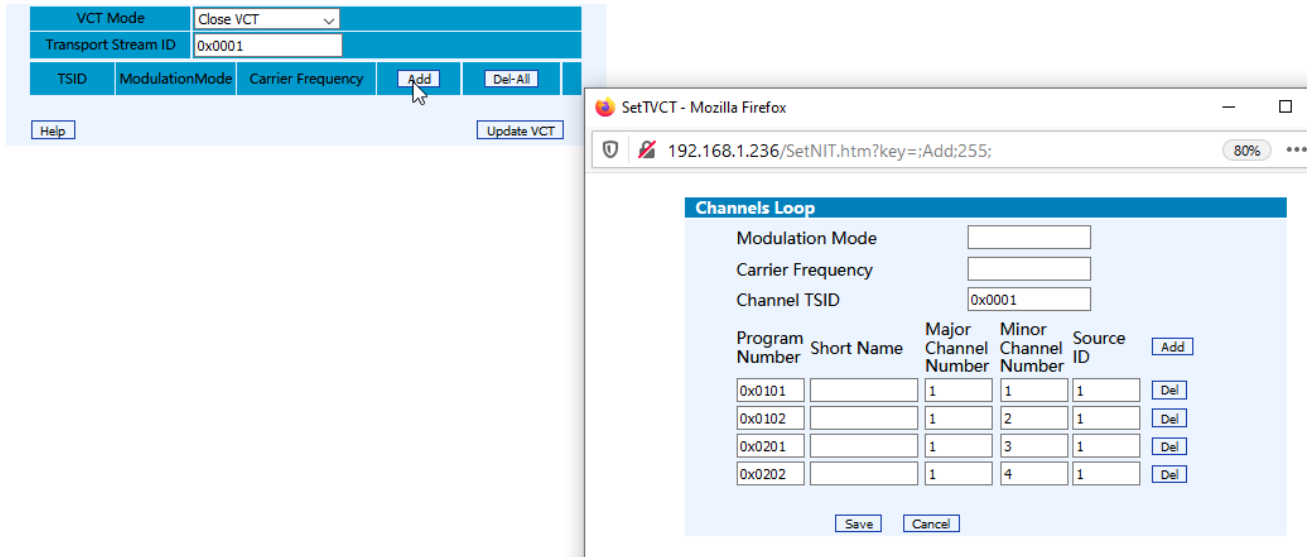
The VCT Menu is only for American ATSC based systems, so if you are DVB, you can disable all of these because

- Welcome
- Parameter
  - Input 1
  - Input 2
  - IP Output
  - VCT
  - General
  - Save/Restore

VCT Mode	<input type="text" value="TVCT"/>	▼
Transport Stream ID	<input type="text" value="TVCT"/>	
TSID	<input type="text" value="CVCT"/>	
Modulation	<input type="text" value="Close VCT"/>	

this (CLOSE means: OFF)  
VIRTUAL – CHANNEL – TABLE is nearly a similar info as LCN in DVB NIT:

Logical Channel Number (v1 supported) assignment in the NIT (Network Information table) -> And that's the DVB-tool you can use and setup here if needed when adding these to an existing network:

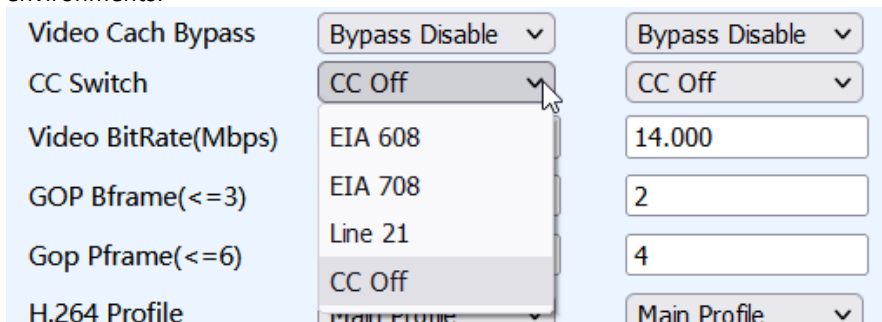


Close VCT and ADD pressing will open a POPUP Window'. Here you **can not** assign your NIT for the modulators behind this unit to serve a DVB (T/C network). Please note: The multiplexing addons like VCT are only for US related standards. NIT / DVB is not supported yet, so this has to be injected externally or after the device by the other channel modulators in the network.

**Table 6.5 Modulation Modes**

modulation_mode	Meaning
0x00	[Reserved]
0x01	<b>Analog</b> — The virtual channel is modulated using standard analog methods for analog television.
0x02	<b>SCTE_mode_1</b> — The virtual channel has a symbol rate of 5.057 Msps, transmitted in accordance with ANSI/SCTE 07 [21] (Mode 1). Typically, mode 1 will be used for 64-QAM.
0x03	<b>SCTE_mode_2</b> — The virtual channel has a symbol rate of 5.361 Msps, transmitted in accordance with ANSI/SCTE 07 [21] (Mode 2). Typically, mode 2 will be used for 256-QAM.
0x04	<b>ATSC (8 VSB)</b> — The virtual channel uses the 8-VSB modulation method conforming to A/53 Part 2 [2].
0x05	<b>ATSC (16 VSB)</b> — The virtual channel uses the 16-VSB modulation method conforming to A/53 Part 2 [2].
0x06-0x7F	[Reserved for future use by ATSC]
0x80-0xFF	[User Private]

The ClosedCaption insertion setup is also for american ATSC /DVB-C AnnexB standard and must not be used in DVB environments:



We recommend to first setup the required output parameters before configuring the encoders:



- Welcome
- Parameter
  - Input 1
  - Input 2
  - **IP Output**
  - VC
  - General
  - Save/Restore
- System
  - Reboot
  - Firmware
  - Network
  - Password
  - Backup/Load

### IP Output Configuration

IP Output Enable: If not set, the following parameters will be no use, the IP Output will not work.

Service IP: The IP Output port address. The format is xxx.xxx.xxx.xxx (like as 192.168.2.137).

Output IP: The IP Output data receive address. The format is xxx.xxx.xxx.xxx (like as 224.2.2.2). After set the Output IP address, you must use the new address to receive IP Output data.

Subnet Mask: General is 255.255.255.0, it must be the same in a local area network.

Gateway: If the device is in different net segment, you must set the gateway.

Port: The UDP/RTP protocol port (like as 8001), you should use Output IP and new port to receive IP Output data (like as udp://224.2.2.2:8001).

Protocol: Turn on/off RTP protocol

IP Output Enable(MABCD):

Filter Null Pkt(MABCD):

MPTS :	224.2.2.2	Port:	2234	Protocol:	UDP	TTL:	128		
SPTS A:	224.2.2.2	Port:	2236	Protocol:	UDP	TTL:	128	Bitrate:	16.000
SPTS B:	224.2.2.2	Port:	2238	Protocol:	UDP	TTL:	128	Bitrate:	16.000
SPTS C:	224.2.2.2	Port:	2240	Protocol:	UDP	TTL:	128	Bitrate:	16.000
SPTS D:	224.2.2.2	Port:	2242	Protocol:	UDP	TTL:	128	Bitrate:	16.000

Service IP:

Subnet Mask:

Gateway:

MAC Address:

The menu items might differ from Firmware version to newer versions as well...:

- Welcome
- Parameter
  - Input 1
  - Input 2
  - IP Output
  - VCT
  - General
  - Save/Restore
- System
  - Reboot
  - Firmware
  - Network
  - Password
  - Backup/Load

2CH Mpeg2/H.264 HD Encoder Configuration (EN13)		2CH Mpeg2/H.264 HD Encoder Configuration (EN13)	
Video Format	H.264	H.264	Mpeg2
Aspect Ratio	16:9	16:9	16:9
Field/Picture Encoding	Picture	Picture	Picture
Low delay	Normal	Normal	Normal
Video BitRate(Mbps)	14.000	14.000	14.000
GOP Bframe(<=3)	2	2	2
Gop Pframe(<=6)	4	4	4
H.264 Profile	Main Profile	Main Profile	Main Profile
H.264 Level	Level 3.1	Level 3.1	Level 3.1
Auto Config	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Resolution	1920*1080_50i	1920*1080_50i	1920*1080_50i
Audio Format	AC 3	AC 3	AC 3
Dialog Normalization	-31 (-31- -1)dB	-31 (-31- -1)dB	-31 (-31- -1)dB
Audio Delay	0 (-1000-1000)ms	0 (-1000-1000)ms	0 (-1000-1000)ms
PCR Interval	20 (1-500)ms	20 (1-500)ms	20 (1-500)ms
Audio BitRate	192 Kbps	192 Kbps	192 Kbps
Audio Gain(0-400%)	100	100	100
Program Out Enable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Service Provider	TV-Provider	TV-Provider	TV-Provider
Program Name	TV-101	TV-102	TV-201
Service ID	0x101	0x102	0x201
Service Type	0x1	0x1	0x1
PMT PID	0x100	0x104	0x200
Video PID	0x101	0x105	0x201
Audio PID	0x102	0x106	0x202
PCR PID	0x103	0x107	0x203
Video:	<span style="color: green;">●</span> 1920x1080 50p	<span style="color: red;">●</span> unknown	<span style="color: red;">●</span> unknown
Encoding:	<span style="color: green;">●</span>	<span style="color: red;">●</span>	<span style="color: red;">●</span>
Bitrate:	14.628 Mbps	0.000 Mbps	0.000 Mbps
Rom Version:	0.0.3.211	0.0.3.211	0.0.3.211
<a href="#">Help</a> <a href="#">Default</a> <a href="#">Apply</a>		<a href="#">Help</a> <a href="#">Default</a> <a href="#">Apply</a>	

Most of them are self-explaining but note: p50 / p60 inputs are taken, but the encoder can only do FHD outputs in max. 1080 with Interlaced modes: So the output encoded streams will be max 1920x1080i50 (or i60)). Downscaling is possible...

And a hint for the Encoding in AUTO-Mode see below chapter:

- Welcome
- Parameter
  - Input 1
  - Input 2
  - IP Output
  - VCT
  - General
  - Save/Restore
- System
  - Reboot
  - Firmware
  - Network
  - Password
  - Backup/Load

2CH Mpeg2/H.264 HD Encoder Configuration (EN13)	
Video Format	H.264
Aspect Ratio	16:9
Field/Picture Encoding	Picture
Low delay	Normal
Video BitRate(Mbps)	14.000
GOP Bframe(<=3)	2
Gop Pframe(<=6)	4
H.264 Profile	Main Profile
H.264 Level	Level 3.1
Auto Config	<input checked="" type="checkbox"/>
Resolution	1920*1080_50i

by Input is shown as 1080p50 (or p60) – the AUTO Mode fill do the p50/60, If switching off Auto, you can adjust the lower values as downscaling modes and the p50/p60 is not shown here:

H.264 Profile	Main Profile	Main Profile
H.264 Level	Level 5.1	Level 3.1
Auto Config	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Resolution	1920*1080_50i	1920*1080_50i
Audio Format	1920*1080_60i	AC 3
Dialog Normalization	1920*1080_50i	-31 (-31- -1)dB
Audio Delay	1440*1080_60i	0 (-1000-1000)

Because its doing only up to i60 (p=>i)

H.264 Profile	Main Profile	Main Profile
H.264 Level	Level 5.1	Level 3.1
Auto Config	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Resolution	1920*1080_50i	1920*1080_50i
Audio Format	1920*1080_60i	AC 3
Dialog Normalization	1920*1080_50i	-31 (-31- -1)dB
Audio Delay	1440*1080_60i	0 (-1000-1000)ms
PCR Interval	1440*1080_50i	20 (1-500)ms
Audio BitRate	1280*720_60p	192 Kbps
Audio Gain(0-400%)	1280*720_50p	100
Program Out Enable	720*480_60i	<input checked="" type="checkbox"/>
Service Provider	720*576_50i	TV-Provider
Program Name	720*480_60p	TV-102
Service ID	720*480_30p	0x102
Service Type	720*480_25p	0x1
	720*576_50p	
	720*576_30p	
	720*576_25p	

**BTW: Pressing help *sometimes* helps:**

### Encoder Help

[Return](#)

**Video BitRate:** The range of values from 1.000 to 19.500 Mbps.For SD signal,3.000 Mbps is ok,HD signal at least need 6.000 Mbps.

**Audio BitRate:** Audio encode bitrate configuration.You can select the suitable audio bitrate from list.

**Brightness:** The range of values from 0 to 255(Only for SD signal).

**Contrast:** The range of values from 0 to 255(Only for SD signal).

**Saturation:** The range of values from 0 to 255(Only for SD signal).

**Hue:** The range of values from -127 to 127(Only for SD signal).

**Sharpness:** Configures the sharpness of the video image.You can select one of several preset values(Only for 2CH MPEG2 SD Encoder).

**Aspect Ratio:** Configures the aspctet ratio of the video image.You can select one of several preset values(Only for 2CH MPEG2 SD Encoder).

**Program Name:** Only support character and number. the length can not over 32 byte

**Service ID:** Also called progam number,it is must different from other program.If you change it,you shoud modify the LCN.

**PMT PID:** Program Mapping Table PID

**Video:** Green is normal,red means signal input error,please check signal input and video format.

**Encoding:** Green is normal,red means encoder is not work,please check signal input and video format.

**Norm:** Display the video format of the input(Only for SD signal).

**Video Format:** Display the vidoe format of the input(Only for HD signal).

**HDMI Input:** Display which HDMI port is used(Only for HDMI Band Input).

**Bitrate:** Display the current encoder bitrate.

**Rom Version:** Display software version(Only for H.264 encoder).

### SDI-VERSION – AUDIO-SELECTION:

The SDI-Input supports 8 embedded Audio decodings and Closed Caption (CC) anxilary Data processing:

Audio Format	Mpeg4 AAC	Mpeg2
Dialog Normalization	-31 (-31 - -1)dB	-31 (-31 - -1)dB
Audio Delay	0 (-1000-1000)ms	0 (-1000-1000)ms
PCR Interval	20 (1-500)ms	20 (1-500)ms
Audio BitRate	192 Kbps	192 Kbps
Audio Gain(0-400%)	100	100
Audio Group	Group 2	Group 1
Audio Pair	Group 1	Pair 1
Program Out Enable	Group 2	<input checked="" type="checkbox"/>
Service Provider	Group 3	TV-Provider
Program Name	Group 4	TV-102
Service ID	0x101	0x102



**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	
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.hp.com/device_help
Version:	YA.15.18.0013, ROM YA.15.19

**PLEASE DO NOT MESS UP WITH IGMP-SNOOPING, THIS IS NOT THE SAME LIKE FULL IGMP V2/3 FILTERING SUPPORT.**

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  [XML](#)  [HTML](#)  [Plain text](#)

**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 \(224.0.2.0 - 224.0.255.255\)](#)
- [RESERVED \(224.1.0.0-224.1.255.255 \(224.1/16\)\)](#)
- [SDP/SAP Block \(224.2.0.0-224.2.255.255 \(224.2/16\)\)](#)
- [AD-HOC Block II \(224.3.0.0-224.4.255.255 \(224.3/16, 224.4/16\)\)](#)

- [RESERVED \(224.5.0.0-224.251.255.255 \(251 /16s\)\)](#)
- [DIS Transient Groups 224.252.0.0-224.255.255.255 \(224.252/14\)\)](#)
- [RESERVED \(225.0.0.0-231.255.255.255 \(7 /8s\)\)](#)
- [Source-Specific Multicast Block \(232.0.0.0-232.255.255.255 \(232/8\)\)](#)
- [GLOP Block](#)
- [AD-HOC Block III \(233.252.0.0-233.255.255.255 \(233.252/14\)\)](#)
- [Unicast-Prefix-based IPv4 Multicast Addresses](#)
- [Scoped Multicast Ranges](#)
- [Relative Addresses used with Scoped Multicast Addresses](#)

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 **239.0.0.0 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 <http://support.microsoft.com/kb/929851>. Care should also be taken to avoid system ports 0 to 1024. See <http://www.iana.org/assignments/service-names-port-numbers/service-names-port-numbers.xml> 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 [network port](#) (a sub-address defined within the [Internet Protocol](#), in the range 1024–49151) assigned by the [Internet Assigned Numbers Authority](#) (IANA) (or by [Internet Corporation for Assigned Names and Numbers](#) (ICANN) before March 21, 2001,<sup>[1]</sup> 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*.<sup>[2]</sup> 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](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.<sup>[1]</sup>

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

[Microsoft Windows](#) operating systems through XP use the range 1025–5000 as ephemeral ports by default.<sup>[4]</sup> [Windows Vista](#), [Windows 7](#), and [Server 2008](#) use the IANA range by default.<sup>[5]</sup> [Windows Server 2003](#) 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.<sup>[6]</sup> Windows Server 2008 with Exchange Server 2007 installed has a default port range of 1025–60000.<sup>[7]</sup> 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.<sup>[8][9]</sup>

## PACKET STRUCTURE

		UDP Header																															
Offsets	Octet	0				1				2				3																			
Octet	Bit	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	Source port																Destination port															
4	32	Length																Checksum															

The UDP header consists of 4 fields, each of which is 2 bytes (16 bits).<sup>[1]</sup> 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.<sup>[4]</sup>

### 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.<sup>[4]</sup>

### 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 [IPv4](#) protocol, is 65,507 bytes (65,535 – 8 byte UDP header – 20 byte [IP header](#)).<sup>[4]</sup> In IPv6 [jumbograms](#) it is possible to have UDP packets of size greater than 65,535 bytes.<sup>[5]</sup> [RFC 2675](#) 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 [checksum](#) field may be used for error-checking of the header and data. This field is optional in IPv4, and mandatory in IPv6.<sup>[6]</sup> The field carries all-zeros if unused.<sup>[7]</sup>

### 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 [Section 6.4](#)), an RTCP RR packet is sent instead.

RTP (Real-Time Transport Protocol)	
<b>Familie:</b>	Netzwerkprotokoll
<b>Einsatzgebiet:</b>	Transport von Medien-Streams
<b>Port:</b>	beliebiger freier, gerader Port größer 1024
RTP im TCP/IP-Protokollstapel:	
Anwendung	RTP
Transport	UDP
Internet	IP (IPv4, IPv6)
Netzzugang	Ethernet    Token Bus    Token Ring    FDDI ...
<b>Standard:</b>	<a href="#">RFC 3550</a> (RTP: A Transport Protocol for Real-Time Applications, 2003)

any port (even, not odd > 1024)

## Troubleshooting

Our ISO9001 quality assurance system has been approved by CQC organization. We guarantee the products' quality, reliability and stability. All of our 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 us. To prevent potential hazard, please strictly follow the operational conditions.

## Installation pre-conditions

- 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 the input AC voltage within the power supply working range and the connection is correct before switching on device
- Checking the RF output level varies within tolerant range if it is necessary
- Checking all signal cables have been properly connected
- Frequently switching on/off device is prohibited; the interval between every switching on/off must greater 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

## Important Notes!

This manual is for use by qualified personnel only. Handling this device or system requires special electronic technical knowledge. To reduce the risk of electrical shock or damage to the equipment, do not perform any servicing other than the installation and operating instructions contained in this manual unless you are qualified to do so. This device operates in the given voltage and frequency range without requiring manual adjustment.

Do not open the top case w/o unplugged power source because serious injury or death may be the result! Inside are components under risk from electrostatic discharge. To avoid equipment damages do not touch these components or, observe the respective handling rules!

For continued protection against fire, the fuses may only be replaced by identical fuses with the same electrical specifications which are designed for the corresponding fuse positions.

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IRENIS GmbH provides this manual without warranty of any kind, neither implied nor expressed, this includes also any warranties regarding the merchantability and fitness for a particular purpose. IRENIS GmbH may improve this manual or make changes in the products described herein at any point of time.

## Installation Notes

All types of the IRENIS-BLANKOM family are 19" devices with 1 RU height designed for installation in 19" racks. In addition to the front panel screws an internal module support is required at the rack.

Depending on the Frontend used and the operating adjustments, the SAT-RF-input ports carrying DC Voltage (13V /18V, max. 400 mA).

By connecting a mains cable, the device can become functional without any auxiliary appliances. The power supply units are designed for the wide range of 100-230V AC; a manual adjustment of the voltage is not necessary.

For some models the second power connector is feeding another independent power supply for internal redundancy. For a maximum of redundancy both power supplies should use different circuits.

All the outputs are decoupled from one another. Thus, the circuit does not have any effect on the functioning of the device. Connections that are not required need not to be terminated.

**Suggestion:** CAT 6E Ethernet cable for GbEthernet, DSTP (double shielded twisted pair) for the streaming ports

**Note:**

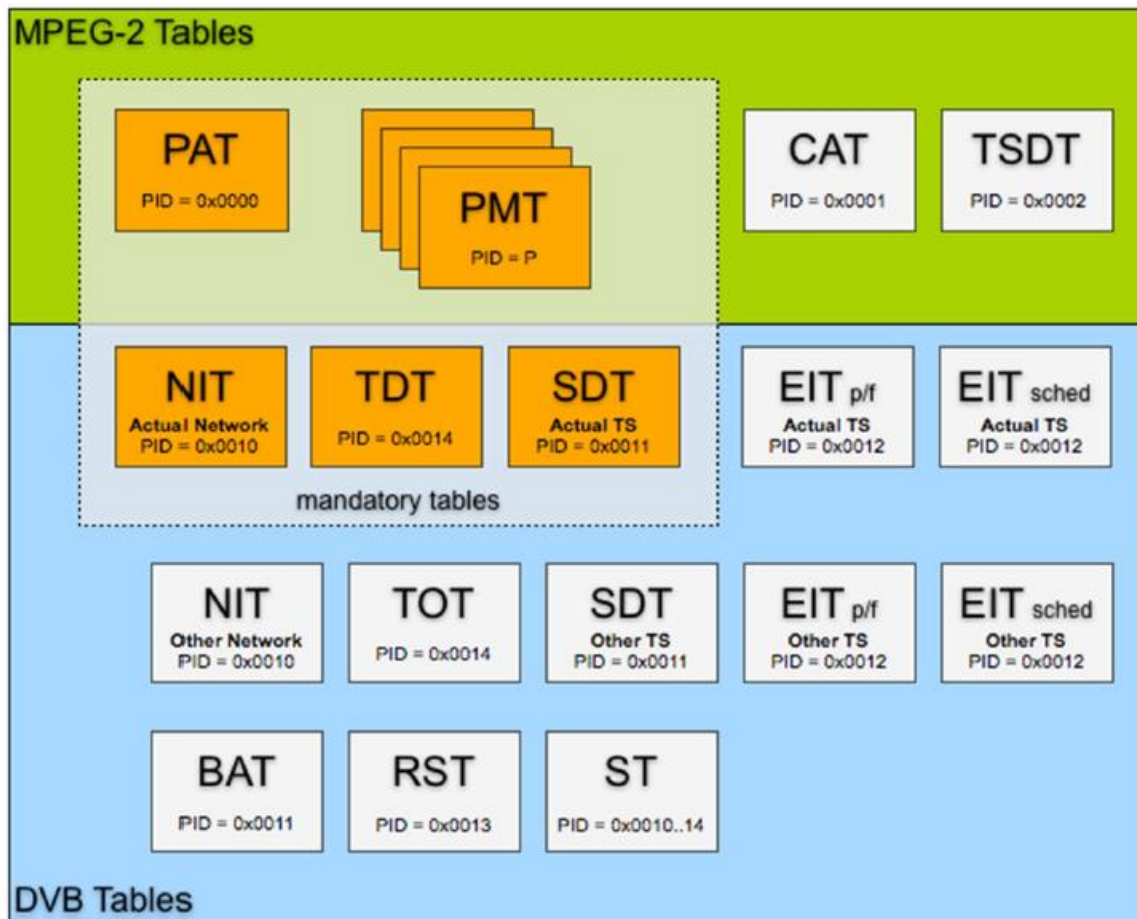
IPv4 global scope sessions use multicast addresses in the range 224.2.128.0 - 224.2.255.255 with SAP Announcements being sent to 224.2.127.254 Port 9875 (note that 224.2.127.255 is used by the obsolete SAPv0 and MUST NOT be used).

IPv4 administrative scope sessions using administratively scoped IP multicast. The multicast address to be used for 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.

**Sources:**

[http://www.etsi.org/deliver/etsi\\_en/300400\\_300499/300468/01.15.01\\_60/en\\_300468v011501p.pdf](http://www.etsi.org/deliver/etsi_en/300400_300499/300468/01.15.01_60/en_300468v011501p.pdf)  
<https://www.dvb.org/standards>



**Table 1: PID allocation for SI**

<b>Table</b>	<b>PID value</b>
PAT	0x0000
CAT	0x0001
TSDT	0x0002
reserved	0x0003 to 0x000F
NIT, ST	0x0010
SDT, BAT, ST	0x0011
EIT, ST, CIT (ETSI TS 102 323 [13])	0x0012
RST, ST	0x0013
TDT, TOT, ST	0x0014
network synchronization	0x0015
RNT (ETSI TS 102 323 [13])	0x0016
reserved for future use	0x0017 to 0x001B
link-local inband signalling	0x001C
measurement	0x001D
DIT	0x001E
SIT	0x001F

We assume, that the user is familiar with all abbreviations mentioned in this manual as well with the ATSC tables which we do not describe here.

## Appendix A

### Product Disposal



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

#### 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.

⚠️

⚠️

⚠️

⚠️

#### 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 mm<sup>2</sup>) zu versehen.
- *The equipment must be provided with an earthing wire (Cu, at least 4 mm<sup>2</sup>).*
- 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 75Ohm 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 BMS and install the F-connectors and cables.*

**Bitte auf die Erdung achten**

*Please connect Ground accordingly*



### 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.*

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...Setting Signals