



## BLANKOM IRD-6300 HD IRD



## User Manual

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# Chapter 1 Product Outline

## Outline

This BLANKOM IRD-6300 HD IRD receives Transponder RF-signals from the installed tuner (DVB-S/S2/S2X, DVB-C, DVB-T/T2, ISDB-T, ATSC-T optional), ASI and IP-Input sources. After demodulating, de-scrambling, re-multiplexing and decoding, it gives content out through various video/audio interfaces (HDMI, CVBS, 3G-SDI) or ASI or IP.

The BLANKOM IRD-6300 HD IRD is featured with two CAM/CI slots and BISS which supports to descramble encrypted Tuner, ASI or IP signals.

## Statement:

*Text and pictures herein are subject to changes w/o notifications.*

*The user manual will be updated in real time without special notice.*

*This user manual is provided only as a reference guide for technicians as examples.*

## Default Values

*The factory default administrator account: **admin***

*The factory-default user password: **admin***

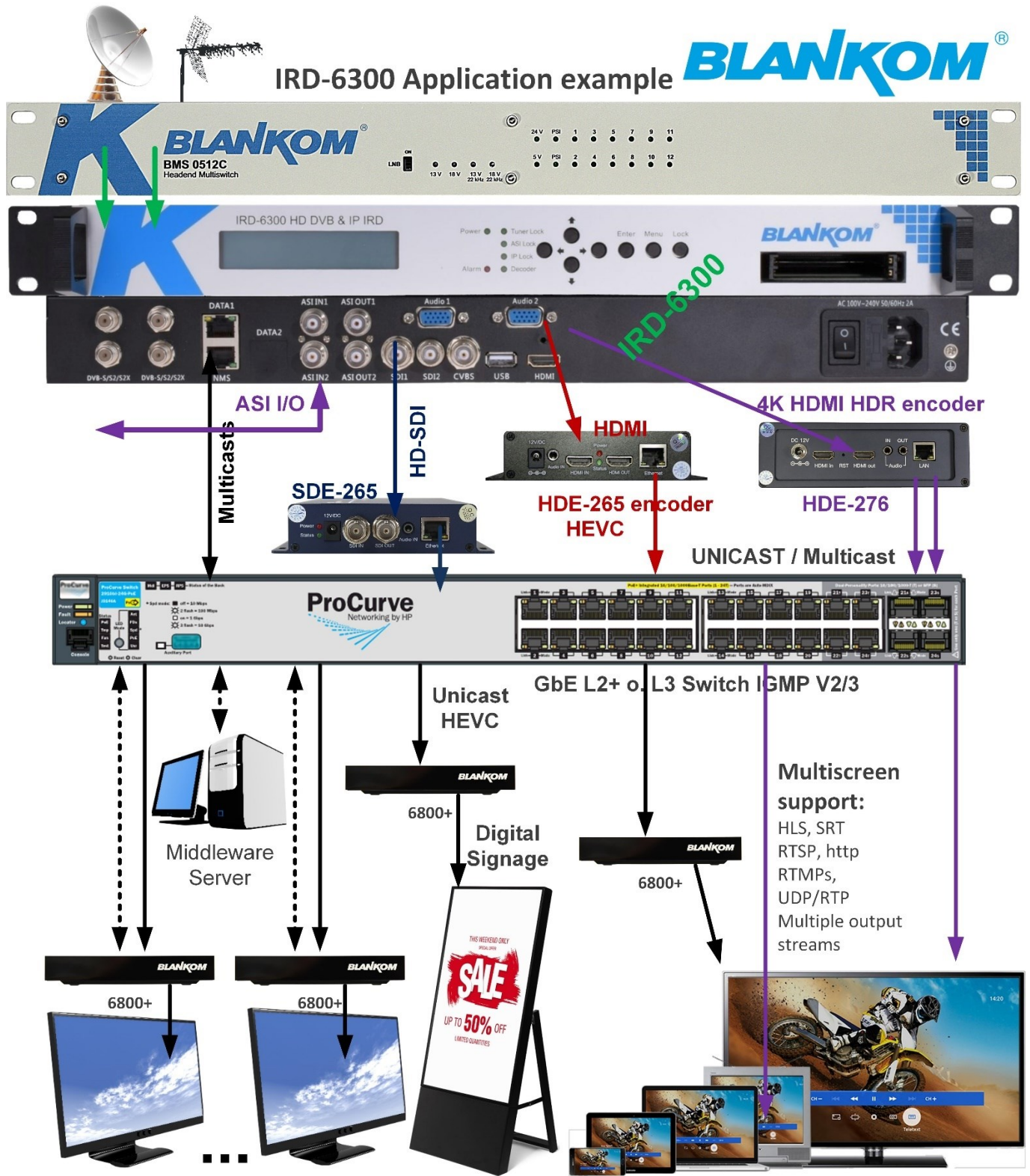
*The factory default IP address: **192.168.0.136** **NM 255.255.255** **GW 192.168.0.1***

Set the administrator's computer IP as: 192.168.0.\* to avoid IP conflicting with the units own IP address 192.168.0.136.  
192.168.0.\*: use an IP setting "\*" in the number range 2-254 and except the units default IP.

Remark: .0 is often the network router, .1 often the Gateway of the used router, .255 might be a network broadcasting address.

Please change these account settings according to your local policy and network. -> Do not forget to save and backup the configuration by Web-Interface and its related system-sub-menu.

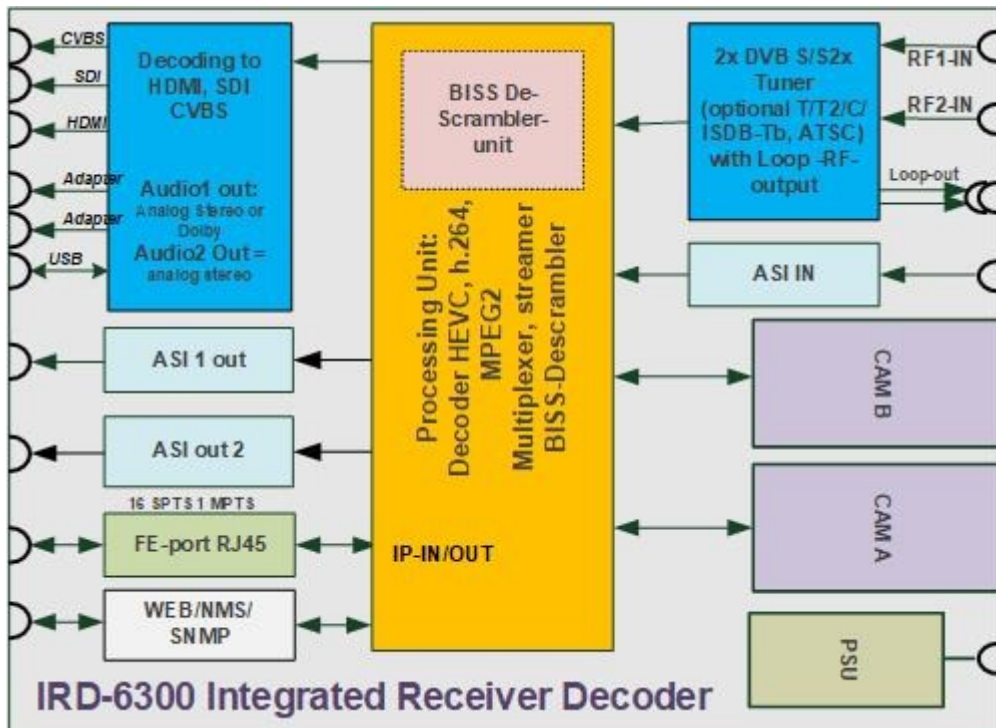
# Application Example



## Features

- Demodulator + descrambler +re-mux+ decoder in one box
- 1 or 2 Tuner inputs (DVB-C/T/T2/S/S2/S2X/ATSC-T/ISDB-T optional) for option
- 2 ASI & 16 IP UDP/RTP input for re-mux
- Support 1ch HDMI/CVBS/3G-SDI video out (SDI1 and SDI2 mirrored out)
- Support 1ch or 2ch Audios out for option
- Support HD/SD/MPEG2, MPEG4AVC/H.264, HEVC/H.265 and
- AVS/AVS+ decoding
- Support MPEG 1 Layer II, LC-AAC, HE-AAC, HE-AAC V2, Dolby Digital/Dolby Digital Plus decoding and AC3 passthrough
- IP (1 \*MPTS & 16\* SPTS) output over UDP and RTP/RTSP; 2 ASI mirrored out as a copy of the IP MTPS
- Each CAM can decrypt multiple programs from Tuner/ASI/IP
- BISS descrambling (Up to 120Mbps)
- Support CC (EIA608, EIA708) & Teletext (Applicable for SDI port)
- Support maximum 128 PID mapping per input
- LCD/Keyboard and web-based NMS management
- Updates via web

## Block diagram



## Specifications:

<b>Input</b>		1 or 2 *Tuner for option, F type, (DVB-C/T/T2/S/S2/S2X/ATSC-T/ISDB-T optional as per order) 2*ASI input for re-mux, BNC interface 16*IP input for re-mux (UDP/RTP), RJ45			
<b>Tuner Section</b>	Multi-mode tuners switchable	Cable	Input Frequency	60~890 MHz	
			Standard	DVB-C/J.83A, J.83C	J.83B
			Constellation	16/32/64/128/256 QAM	64/256 QAM
			Symbol rate	1.0~7.0Msps	
		DVB-T	Input Frequency	60~890 MHz	
			Constellation	QPSK, 16QAM, 64QAM	
			Bandwidth	6/7/8 M	
		DVB-T2	Input Frequency	60~890 MHz	
	Constellation		QPSK, 16QAM, 64QAM, 256QAM		
	Bandwidth		5/ 6/7/8 M		
	ISDB-T	Input Frequency	60~890 MHz		
		Constellation	DQPSK, QPSK, 16QAM, 64QAM		
	Satellite	DVB-S	Input Frequency	950~2150MHz	
			Symbol rate	0.5~45Msps	
			Signal Strength	- 65 - -25dBm	
			FEC	1/2, 2/3, 3/4, 5/6, 7/8	
Constellation			QPSK		
DVB-S2		Input Frequency	950~2150MHz		
		Symbol rate	QPSK/8PSK/16APSK: 0.5~45Msps 32APSK: 0.5~40Msps;		
		FEC	QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 16APSK: 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 32APSK: 3/4, 4/5, 5/6, 8/9, 9/10		

		Constellation	QPSK, 8PSK, 16APSK, 32APSK	
	DVB-S2X	Input Frequency	950~2150MHz	
		Symbol rate	QPSK/8PSK/16APSK: 0.5~45MSPS 8APSK/32APSK: 0.5~40MSPS	
		FEC	QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10, 13/45, 9/20, 11/20 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 8APSK: 5/9-L, 26/45-L 16APSK: 2/3, 3/4, 4/5, 5/6, 8/9, 9/10, 1/2-L, 8/15-L, 5/9-L, 26/45, 3/5, 3/5-L, 28/45, 23/36, 2/3-L, 25/36, 13/18, 7/9, 77/90 32APSK: 3/4, 4/5, 5/6, 8/9, 2/3-L, 32/45, 11/15, 7/9	
		Constellation	QPSK, 8PSK, 8APSK, 16APSK, 32APSK	
		Input Frequency	54~858MHz	
	ATSC	Bandwidth	6M	
		Constellation	8VSB	
<b>Descrambling</b>	CAM/CI Quantity	2		
	BISS Mode	Mode 1, Mode E (up to 120Mbps)		
<b>Output</b>	IP (1*MPTS & 16*SPTS) out over UDP, RTP/RTSP.			
	1000Base-T Ethernet interface (unicast / multicast)			
	2*ASI mirrored out, BNC <u>interface</u>			
	Decode Output	Video	Interface: 1* CVBS/HDMI/3G-SDI (SDI1 and SDI2 mirrored out)	
			Decode: MPEG-2, MPEG4 AVC/H.264, HEVC/H.265 and AVS/AVS+	
			Resolution: 1920x1080_60p, 1920x1080_60i, 1920x1080_50p; 1920x1080_50i; 1280x720_60P, 1280x720_50P; 480i, 576i	
Chroma: 4:2:0				
Audio	Audio	Interface: HDMI, SDI, DB15 to (XRL, RCA, AES, S/PDIF)		
		Number of channels: 1 or 2 for option (as per order)		
		Decode: MPEG 1 Layer II, LC-AAC, HE-AAC, HE-AAC V2, Dolby Digital/ Dolby Digital Plus		
		Audio Output Mode: Left, Right, Stereo <u>audio</u>		
<b>System</b>	Local interface	LCD + control buttons		
	Remote management	Web-server Management		
	Language	English		
	Upgrade	USB, web management		
<b>Miscellaneous</b>	Dimension	482*300*44.5mm (WxLxH)		
	Approx weight	3.5kg		

	Environment	0~45°C(work); -20~80°C (Storage)
	Power requirements	100~240VAC, 50/60Hz
	Power consumption	20W

## Order Guide

Please specify both **Tuner Input** and **Audio out channel** options when you place order:

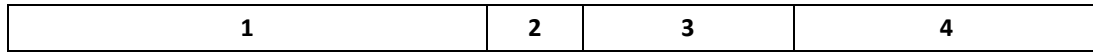
<b>Tuner Input</b>	Option 1	1*DVB-S/S2/S2X tuner
	Option 2	1*DVB-C/T/T2/ISDB-T tuner
	Option 3	1*ATSC-T tuner
	Option 4	2*DVB-S/S2/S2X tuner
	Option 5	2*DVB-C/T/T2/ISDB-T tuner
	Option 6	2*ATSC-T tuner
	Option 7	1*DVB-S/S2/S2X tuner + 1*DVB-C/T/T2/ISDB-T tuner
	Option 8	1*DVB-S/S2/S2X tuner + 1* ATSC-T tuner
	Option 9	1*DVB-C/T/T2/ISDB-T tuner + 1*ATSC-T tuner

<b>Audio Out Channel</b>	Option 1	1*Audio out
	Option 2	2*Audio out



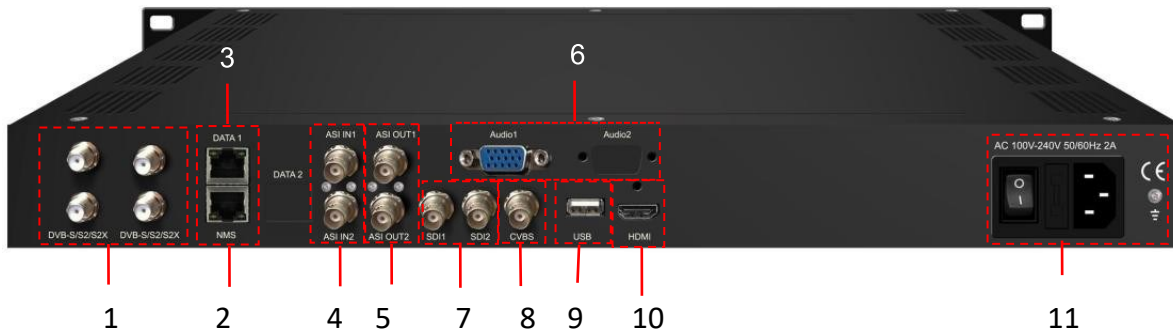
# Appearance and description

## Front Panel Illustration:



1	monitor LCD display for device control and configuration
2	Indicators Area (to indicate locking status of tuner, ASI and IP input; Decoder: to indicate the decoding status)
3	Up/Down/Left/Right Buttons Enter Key Menu Key Lock Key
4	CAMs /Smart card slots A & B

## Rear Panel Illustration



1	2 RF signal inputs and loop-through 1 & 2
2	NMS port for management
3	Data port for IP in and out
4	ASI input Port for re-mux
5	ASI mirrored output ports
6	Analog audio output interface
7	SDI video/audio output interfaces, SDI2 out as mirror of SDI1
8	Composite video output interface (CVBS)
9	USB upgrade port
10	HDMI video/audio output interface
11	Power switch/Fuse/Socket/ Grounding Wire

## Chapter 2 Installation Guide

### Accessories

When you open the package of the device, it is recommended to check delivered items according to the packing list. Normally it should include the following items:

- BLANKOM IRD-6300 HD IRD
- User's Manual (*optional as download PDF*)
- HDMI Cable
- CVBS Cable
- SDI Cable
- Audio Adapter Cable
- Power Cord depending *on country*
- Ground lead

If any item is missing or mismatching with the list above, please contact our sales rep.

### Installation Preparation

When users install device, please follow the below steps. The details of installation will be described at the rest part of this chapter. Users can also refer rear panel chart during the installation.

The main content of this chapter including:

- Checking the possible device missing or damage during the transportation
- Preparing relevant environment for installation
- Installing modulator
- Connecting signal cables
- Connecting communication port (if it is necessary)

## Environment Requirement

Item	Requirement
Machine Hall Space	When user installs machine frame array in one machine hall, the distance between 2 rows of machine frames should be 1.2...1.5m and the distance against wall should be no less than 0.8m.
Machine Hall 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 $450 \text{Kg/m}^2$ )
Environment Temperature	5...40°C (sustainable), 0...45°C (short time) , installing air-conditioning is recommended
Relative Humidity	20%...80% sustainable 10%...90% short time
Pressure	86...105kpa
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
Power	Requiring device power, air-conditioning power and lighting power are independent to each other. Device power requires AC power 100-240V 50-60Hz. Please carefully check before running.

## Grounding Requirement

- All function modules' good grounding is the basis of reliability and stability of devices. Also, they are the most important guarantee of lightning arresting and interference rejection. Therefore, this system must follow this rule.
- Coaxial cables outer conductor and isolation layer should keep proper electric conducting with the metal housing of device.
- Grounding conductor must adopt copper conductor in order to reduce high frequency impedance, and the grounding wire must be as thick and short as possible.
- Users should make sure the 2 ends of grounding wire well electric conducted and be antirust.
- It is prohibited to use any other device as part of grounding electric circuit
- The area of the conduction between grounding wire and device's frame should be no less than  $25 \text{mm}^2$ .

### Frame / Rack Grounding

All the machine frames should be connected with protective copper strip. The grounding wire should be as short as possible and avoid circling. The area of the conduction between grounding wire and grounding strip should be no less than  $25 \text{mm}^2$ .

### Device Grounding

Connecting the device's grounding rod to frame's grounding pole with copper wire.

## Wire Connection

The grounding wire conductive screw is located at the right end of rear panel, and the power switch, fuse, power supply socket is just besides, whose order goes like this, power switch is on the left, power supply socket is on the right and the fuse is just between them.

- Connecting Power Cord

The user can insert one end into the power supply socket, while insert the other end to AC power.

- Connecting Grounding Wire

When the device solely connects to protective ground, it should adopt independent way, say, share the same ground with other devices. When the device adopts united way, the grounding resistance should be less than 1Ω.

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### ⚠ Caution:

**Before connecting the power cord to the BLANKOM IRD-6300 HD IRD, the user should set the power switch to "OFF".**

## Signal Cable Connection

We assume, that the installation will be done by an experienced technician and all to be installed connection cables are used according to their specifications.

## IRD-6300 HD IRD Satellite Receiver Signal Cable Connections:

### RF IN and LOOP OUT Connection:

The User can find the RF IN and LOOP OUT interface on the device according to the connectors marked and described on the rear panel illustration, and connect the right cables. One end is connected to the RF IN interface of satellite receiver (or DVB T/T2/C/...) while the other end is connected to the satellite signal source equipment or LOOP OUT interface of the previous satellite receiver when several satellite receivers are in serial connection (See remark below).



We recommend to avoid using the loop RF-output in particular for the SAT Input

- **ASI IN and ASI OUT Connection:**

Users can find the ASI IN and ASI OUT interface on the device according to the connectors marked and described on the rear panel illustration. One end is connected to ASI IN interface of the BLANKOM IRD-6300 HD IRD, the other end is connected to any device that has ASI output. If connecting the ASI OUT interface, the other end of the connection is mostly used for encoders and multiplexers:



- **Component Output, CVBS and Audio Output Connection:**

The User can connect the YPbPr, CVBS and Left/Right sound channel interfaces on the device according to the connectors described on the rear panel illustration. The other end of the wire is connected to encoders or other equipment.



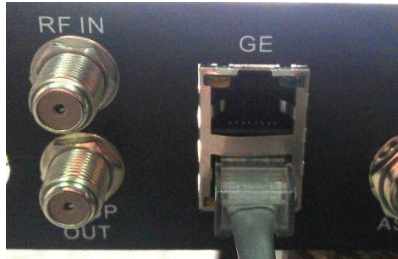
- **HDMI Output Connection:**

The User can find the HDMI interface on the device according to the connector described on the rear panel illustration, and then connect the wire. One end of the wire should be connected to the HDMI output interface of the BLANKOM IRD-6300 HD IRD, while the other end can be connected to an encoder or other equipment like a TV set:



- **IP Input and Output Connection:**

The user can find the IP IN/OUTPUT interface on rear of the device according to the connector described on the rear panel illustration. One end of the wire is connected to the RJ45 Ethernet IP output interface of the BLANKOM IRD-6300 HD IRD, the other end should go to a streaming switch:



## Chapter 3 Operation

The front panel of the BLANKOM IRD-6300 HD IRD is one of the user-operating interfaces and the equipment can be conveniently operated and used by the user according to the procedures displayed on the LCD; the simple using method for the machine is as follows:

### ***Keypad Function Description:***

**MENU:** Cancel current entered value, resume previous setting; Return to previous menu.

**ENTER:** Activate the parameters which need modifications, or confirm the change after modification.

**LEFT/RIGHT:** Choose and set the parameters.

**UP/DOWN:** Modify activated parameter or paging up/down when parameter is inactivated.

**LOCK:** Lock the screen/cancel the lock state. After pressing the lock key, the LCD will display the current configuring state.

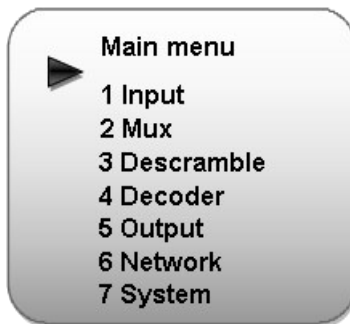
## General Setting

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



- HD IRD: Device's name
- 192.168.0.136 indicates the current NMS IP address.

Press LOCK key on the front panel to enter the main menu. The LCD will display the following pages where user can configure the parameters for the device:

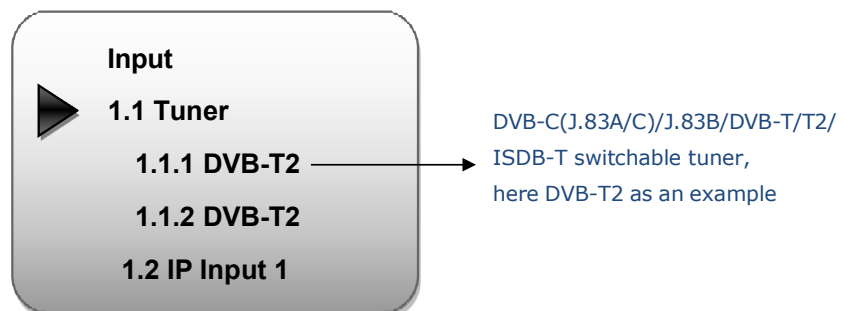


User could do all the settings according to the 7 directions displayed on the LCD. User can press UP/DOWN buttons to specify menu item, and then press ENTER to enter the submenus as below:

## Input Setting

IRD-6300 supports 1/2 tuner inputs, 2 ASI inputs and 16 IP stream inputs. Users can enter 'Input Sets' to configure the tuner/IP parameters to receive the transport streams and select programs to mux out.

It displays as below:



**Tuner In** (taking DVB-S2 HD IRD module as an example)

The menu from 1.1 to 1.3 represents the tuner, ASI and IP input ports of the IRD. User can multiplex the input programs from any port to output any program or all the programs at the same time. By pressing the “Enter” key, the device will take a while to analyze the input TS or signal and then display the program list at the submenu, say, 1.1.1-1.1.6

1.1.1 Prog Parse  
1.1.2 Sat freq Set  
1.1.3 LNB freq Set  
1.1.4 Symbol rate  
1.1.5 LNB Voltage  
1.1.6 22KHZ Switch

By pressing the “Enter” key to enter the submenu of 1.1.1

1.1.1 Prog Parse  
Prog:00          Mux:00

At the submenu 1.1.1, it displays the quantity of total parsed programs and multiplexed programs.

User also could check and set the Satellite frequency, LNB frequency, Symbol rate and LNB voltage in its corresponding submenu “1.1.2”, “1.1.3”, “1.1.4”, “1.1.5”.

1.1.2 Sat freq Set  
11567MHZ

1.1.3 LNB freq Set  
5150MHZ

1.1.4 Symbol rate  
17500KHZ

1.1.5 LNB Voltage  
Horizonta(18V)

At the submenu 1.1.6, user can decide whether to turn on/off the 22 KHZ Switch.



1.1.6 22KHZ Switch

▶ OFF ON

## ASI IN

By pressing the “Enter” key to enter into the submenu of 1.2.1

1.2.1 Prog Parse

Prog:00 Mux:00

## IP IN

By pressing the “Enter” key, it displays below page:

1.3.1 Prog Parse

1.3.2 Input Ip Addr

1.3.3 Input Port

By pressing the “Enter” key to enter the submenu of 1.3.1, 1.3.2 and 1.3.3 respectively, it will display below pages:

1.3.1 Prog Parse

Prog:00 Mux:00

1.3.2 Input Ip Addr

224.002.002.002

1.3.3 Input Port

1234

## Output Setting

User can press “Enter” key to enter into below menu of the output setting.

2.1 Multiplex Set

2.2 Output Bitrate

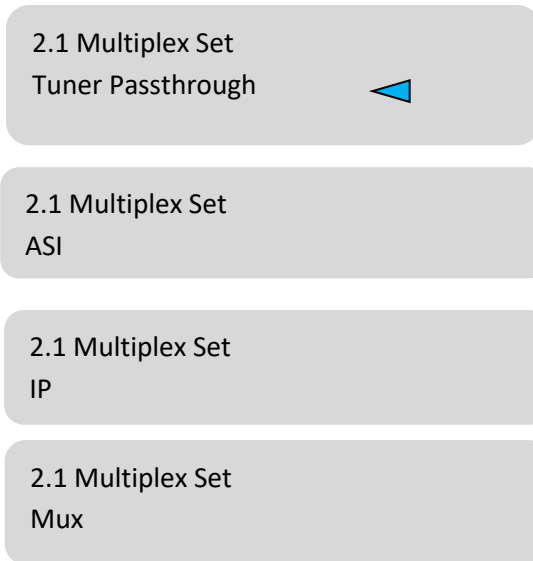
2.3 Transtream ID

2.4 Original NetID

2.5 IP Output

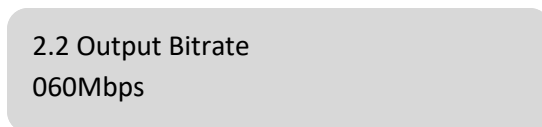
## Multiplex Setting

User can enter to the menu 2.1 and select the modes of outputting. By pressing UP/DOWN key after pressing Enter key, user can see the four modes of outputting the Signals in turn: ASI, IP, Tuner passthrough and Mux.



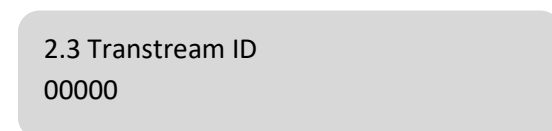
## Output Bit rate

By pressing the “Enter” key to enter into the menu of 2.2



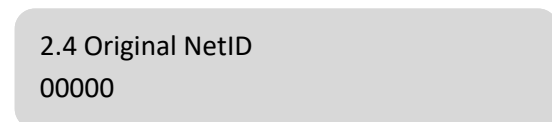
## Transportstream ID

By pressing the “Enter” key to enter into the menu of 2.3



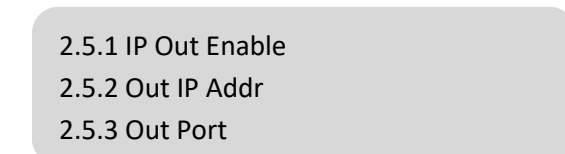
## Original Network ID

By pressing the “Enter” key to enter into the menu of 2.4



## IP Output

By pressing the “Enter” key to enter into the submenu of 2.5, it will display below pages. User can set the output IP address, output port and decide whether to output the signals from IP port.



2.5.1 IP Out Enable  
▶ ON OFF

2.5.2 Out IP Addr  
224.002.002.002

2.5.2 Out Port  
1001

## Decoder Setting

User can press “Enter” key to enter into below menu of the decoder setting and execute video setting, audio setting, program selecting, searching and decoder selecting.

3.1 Video Setting  
3.2 Audio Setting  
3.3 Program Select  
3.4 Search  
3.5 Decoder Select

## Video Setting

After pressing enter key, user can enter into the submenus: 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6.

3.1.1 Resolution  
Auto

By pressing UP/DOWN after entering into above menu, user can see all the options of the resolution: 1080I@50, 1080I@60, 720P, 576P, 576I, 480I, 480P, 1080I@59.94, 720P@59.94.

3.1.2 Standard  
PALBDGHI

By pressing UP/DOWN after entering into above menu, user can see all the options of standard.

3.1.3 Subtitle  
▶ OFF ON

3.1.4 CC Switch  
OFF  
ELA608  
ELA600

3.1.5 Finger Switch  
OFF

3.1.6 Aspect Ratio

## Audio Setting

User can enter into below submenu by pressing the “Enter” key. Then select the audio, choose the ES mode (consists of stereo, left channel, right channel), adjust the volume, select modes of Audio SPDIF and Audio channel.

3.2.1 Audio Select  
3.2.2 ES Mode  
3.2.3 Volume

3.2.1 Audio Select  
---

3.2.2 ES Mode

3.2.3 Volume

3.2.4 Audio SPDIF

3.2.4 Audio Channel

## Program Selecting

Before entering into below menu to select the programs, user should enter the menu 3.5 and 3.4 in turn to find the programs.

3.3 Program Select

1 Das Erste HD



By pressing UP/DOWN after entering into above menu, all the searched programs will be displayed individually as below:

3.3 Program Select

2 ZDF HD



## Searching

The device will start searching the programs automatically after user select the mode of decoding in the menu 3.5.

3.4 Search

Start Searching

## Decoder Selecting

There are three ways of decoding: Tuner, ASI and IP. User can press UP/DOWN to see the way individually after entering below menu.

3.5 Decoder Select

1 Tuner



## Descramble Setting

User can press "Enter" key to enter into below menu of the descramble setting. The detailed operations about the descramble functions will be explained in the NMS operation part.

4.1 Card Setting

4.2 Biss

Two functions of descrambling,  
each option works alone.

## Card Setting

After enter into the submenu of 4.1, it will display the following page:

4.1.1 Input

Select

4.1.2 A Card Info

4.1.3 B Card Info

4.1.4 Pro Select

4.1.5 CI Bitrate

User can set the input signals here.

If users don't insert any card, after entering into the menu of 4.1.2 and 4.1.3, it will show "Empty" to indicate there is no card information.

## BISS

BISS is one of the descrambling functions which support two modes: mode 1 and mode E. And the application needs to be matched with BISS scrambler. User can select the mode based on the kind of BISS scrambler.

4.2.1 Select  
Mode  
4.2.2 Mode 1  
4.2.3 Mode E

## Network Setting

User can press “Enter” key to enter into below menu of the network setting.

5.1 IP Address  
5.2 Subnet Mask  
5.3 Gateway  
5.4 MAC Address  
5.5 Service IP  
5.6 SPTS Net  
Config

## IP Address

After entering into the menu 5.1, it will display the following page:

5.1 IP Address  
192.168.000.136

## Subnet Mask

After entering into the menu 5.2, it will display the following page:

5.2 Subnet Mask  
255.255.255.000

## Gateway

After entering 5.3, it will display the following page:

5.3 Gateway  
192.168.002.001

## MAC Address

After entering into the menu 5.4, it will display the following page:

5.4 MAC  
Address

## Service IP

After entering into the menu 5.5, it will display the following page:

5.5 Service  
IP

## SPTS Net Configuration

After entering into the menu 5.6, it will display the following page:

5.6.1 SPTS Config  
5.6.2 SPTS IP Addr  
5.6.3 SPTS Gateway  
5.6.4 SPTS Enable  
5.6.5 SPTS Para Prog

## SPTS Configuration

After entering into the menu of 5.6.1, it will display the following page:

5.6 Output Disable Digital 1	→ By pressing UP/DOWN button after entering this interface, user can see 10 programs in turn.
Enable Select ON          OFF	→ By selecting ON/OFF to output the program through GE port.
5.6.1 IP Addr Set 224.002.002.002	→ Device supports multicast under this IP Address and unicast under the IP Address 192.168.xxx.xxx
5.6.2 IP Port Set 1001	

## SPTS IP Address

After entering into the menu of 5.6.2, it will display the following page:

5.6.2 SPTS IP  
Addr  
192.168.012

## SPTS Gateway

After entering into the menu of 5.6.3, it will display the following page:

5.6.3 SPTS  
Gateway

## SPTS Enable

After entering 5.6.4, it will display the following page:

5.6.4 SPTS Enable ON          OFF	→ By turning ON/OFF button to enable or disable the SPTS output function.
--------------------------------------	---

## SPTS Parse Program

After entering into the menu of 5.6.5, it will display the following page:

5.6.5 SPTS Para Prg Analysis Finish ##	→ By pressing "Enter" key to parse the programs to be outputted through GE port.
---	--

## Saving Configuration

User can choose "Yes" or "No" to save the current configuration parameters in this menu.

6 Saving Config ?  
Yes          No

## Loading Configuration

User can restore the device into the last saved configuration by choosing the menu 7.1 "Saved Config", and also user can restore the device into factory default configuration by choosing the menu 7.2 "Default Config".

7.1 Saved Config  
7.2 Default Config

7.1 Saved Config ?  
Yes          No

7.2 Default Config ?  
Yes          No

## Version

User can check the device's hardware version and software version in this menu.

XXX Electronic  
SW 2.10  
HW 1.06

**All described issues and topics are subject to technical changes w/o any notification**

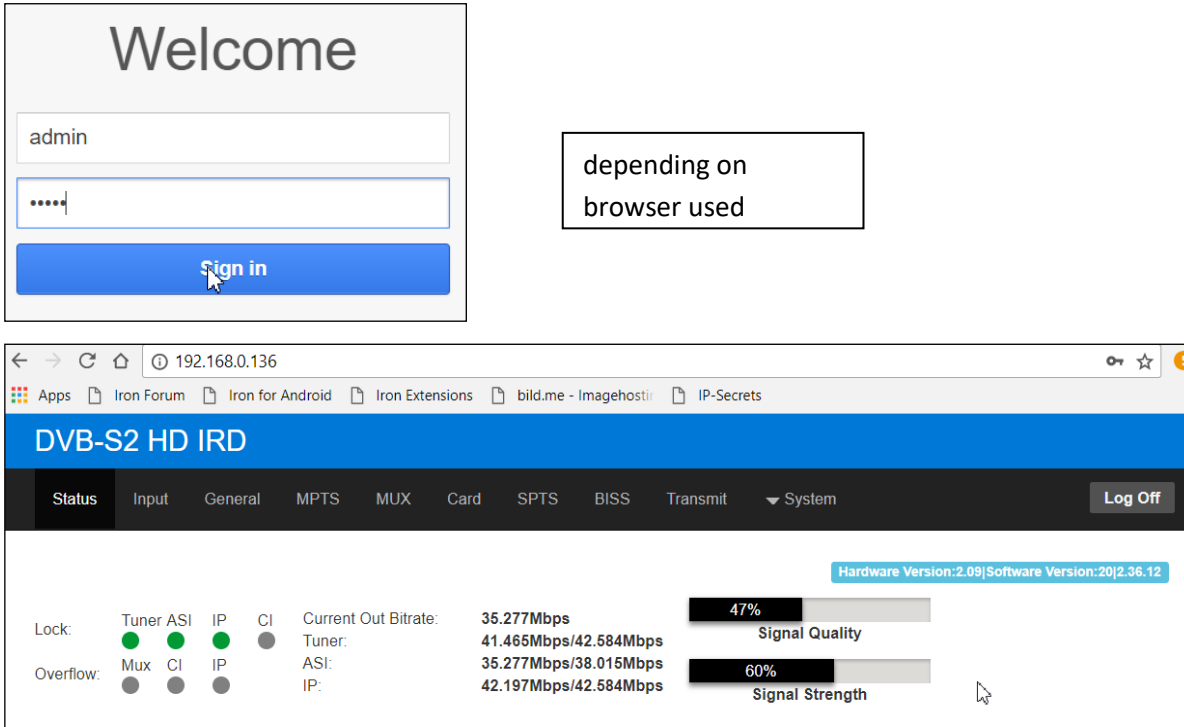


## Chapter 4 Web Browser configuration

We recommend to use the latest Firefox browser on your PC/Laptop for this operation.

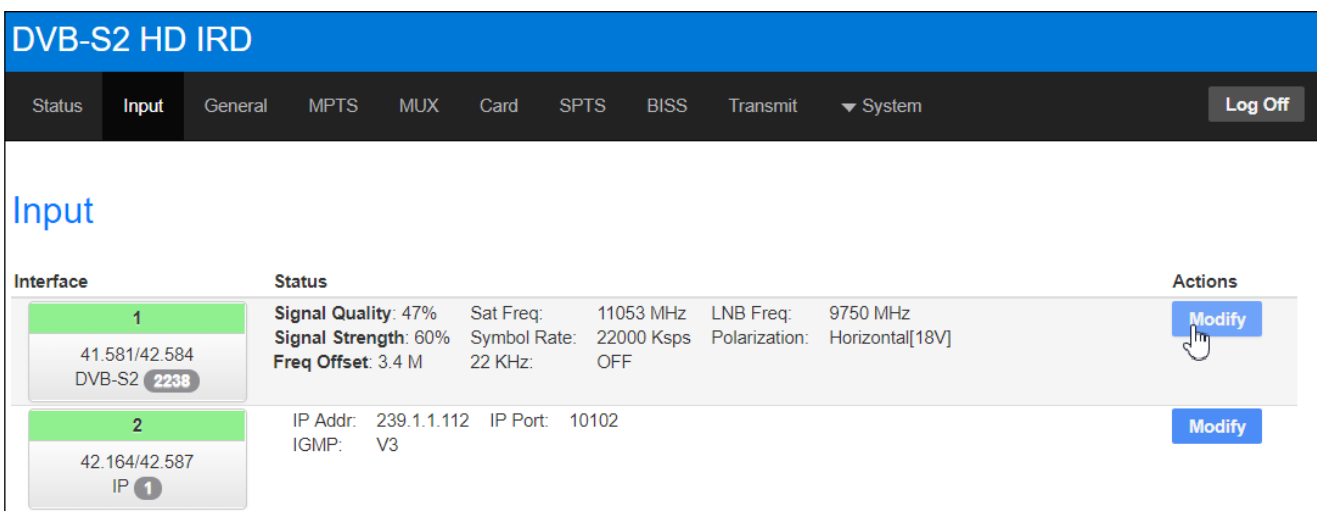
### Login Interface

A login interface will pop up firstly when the software is running and give a user prompt to input user name and password (The default user name is admin and password is admin). User can add users and passwords as needed. Details, please refer to below ... other Settings). The menu shows up as follows:



The user can login to the WEB-IF-NMS by **Sign In** after the input of the login data.

### Main Interface



The INPUT menu shows already connected and configured Inputs and let you modify them:

**DVB-S2 HD IRD**

Input

Interface	Status	Actions
1 41.531/42.585 DVB-S2 2238	Signal Quality: 47% Signal Strength: 60% Freq Offset: 3.4 M	Modify
2 42.181/42.582 IP 1	IP Addr: 239.1.1.112 IGMP: V3	Modify

**Tuner Set**

**Channel 1**

Sat Freq(MHz): 11053

LNB Freq(MHz): 9750

Symbol Rate(kSymb): 22000

Polarization: Horizontal[18V]

22 kHz: OFF

Sweep Range(10 KHz): 0

Buttons: Close, Set

**DVB-S2 HD IRD**

Input

Interface	Status	Actions
1 41.459/42.585 DVB-S2 2238	Signal Quality: 47% Signal Strength: 60% Freq Offset: 3.4 M	Modify
2 42.17/42.585 IP 1	IP Addr: 239.1.1.112 IGMP: V3	Modify

**Tuner Set**

**Channel 2**

IP Addr: 239.1.1.112

IP Port: 10102

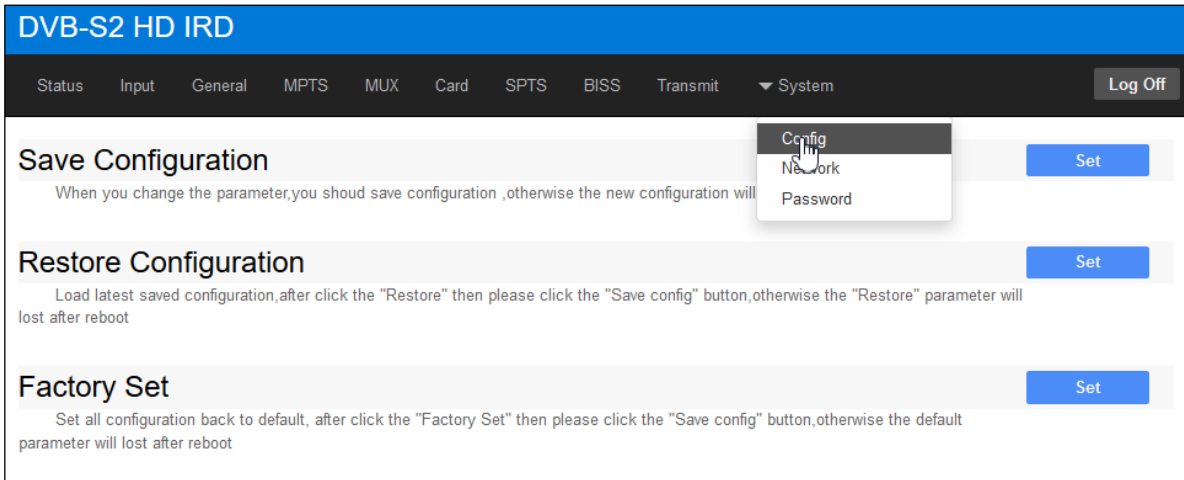
IGMP: V3

Buttons: Close, Set

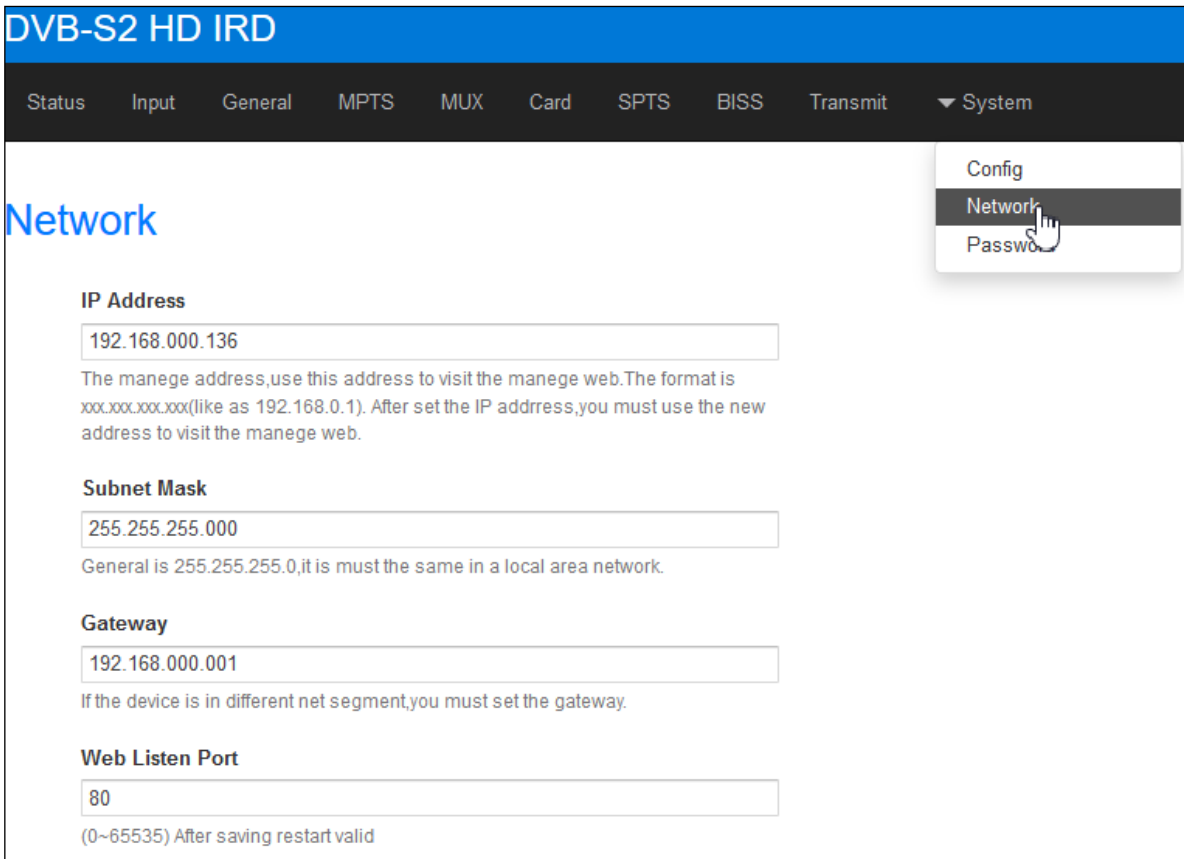
IGMP-Version can be chosen for IP-Inputs to assure that only the required IP-Input address will be opened from the connected switch, so make sure, the port will not be flooded- by the many streams you have eventually got in total > 100Mb/s.

So, for the streamings we recommend an IGMP V2/3 switch like the HP-Procurve (ARUVA) 2530 24G or 48G.

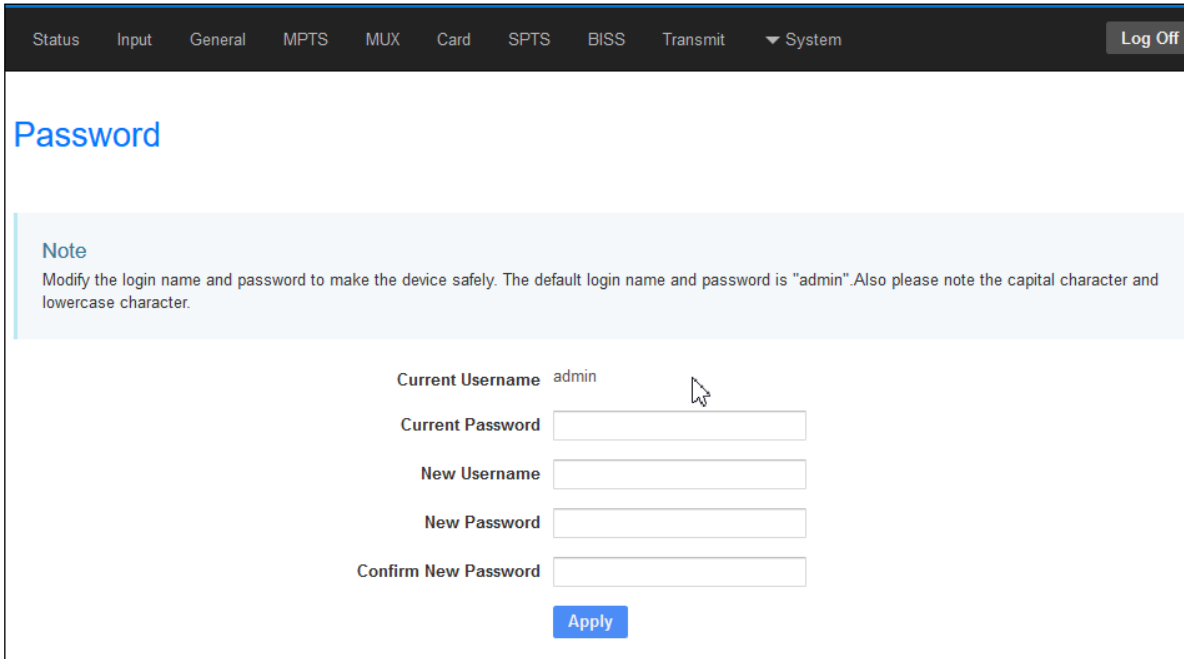
# System config:



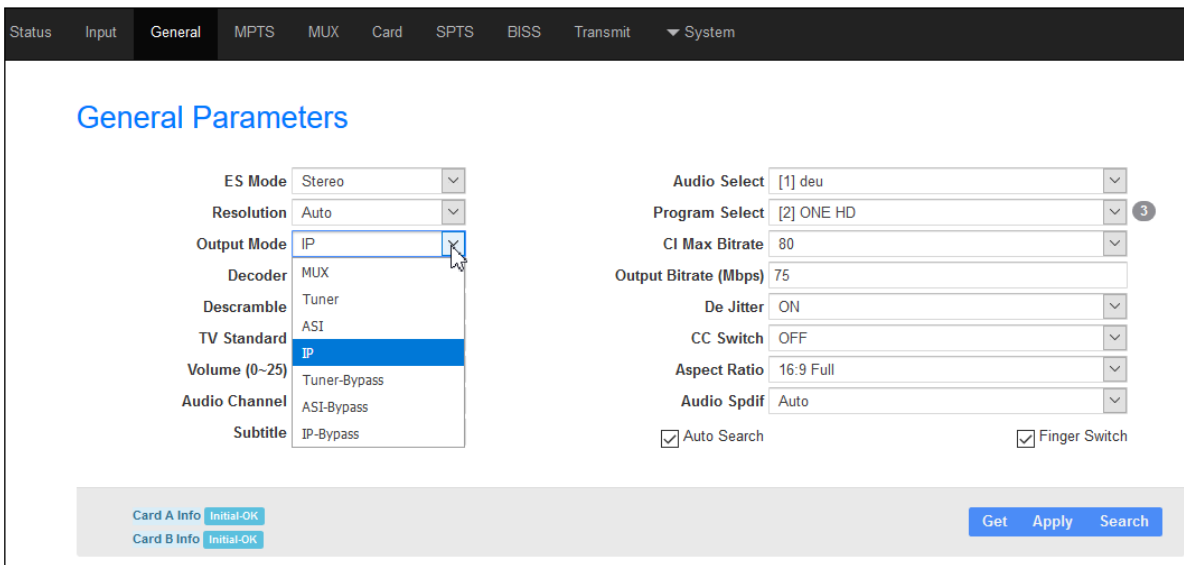
Save/Restore/Factory set are self-explaining...



As well as NMS-Port settings of the device and password changing:



## General Settings for the DECODER & Output values:



First of all the user should understand, that the Decoder parameters and other functions (like i.e. MUX) depending from each other. See above screenshot: 2 CAMs are inserted and initial connected. Select decoding source Input:

### General Parameters

ES Mode	Stereo	▼	Audio Select	[1] deu	▼
Resolution	Auto	▼	Program Select	[2] ONE HD	▼
Output Mode	IP	▼	CI Max Bitrate	80	▼
Decoder	Tuner	▼	Output Bitrate (Mbps)	75	
Descramble	Tuner	▼	De Jitter	ON	▼
TV Standard	ASI	▼	CC Switch	OFF	▼
Volume (0-25)	IP	▼	Aspect Ratio	16:9 Full	▼
Audio Channel	Two-Channel	▼	Audio Spdif	Auto	▼
Subtitle	OFF	▼	<input checked="" type="checkbox"/> Auto Search		<input checked="" type="checkbox"/> Finger Switch

Card A Info [Initial-OK](#)    Card B Info [Initial-OK](#)    [Get](#) [Apply](#) [Search](#)

The selected Program will be decoded to SDI-Out, YPbPr, HDMI and the AUDIO outputs:

### General Parameters

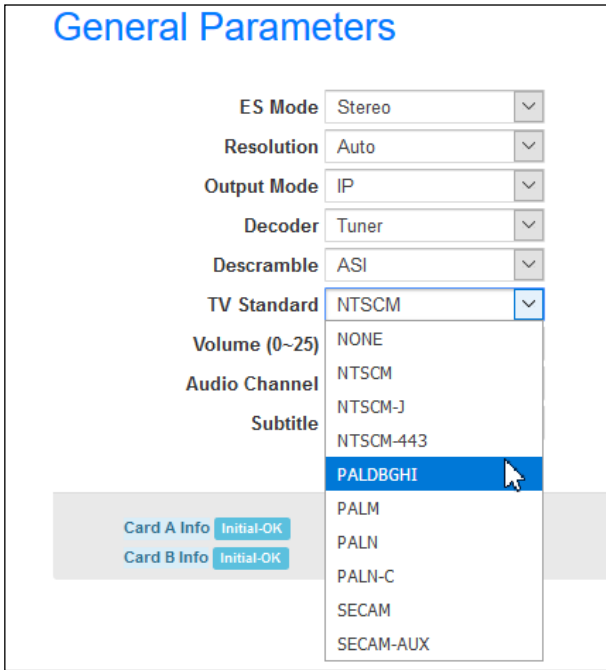
ES Mode	Stereo	▼	Audio Select	[1] deu	▼
Resolution	Auto	▼	Program Select	[1] tagesschau24 HD	▼
Output Mode	MUX	▼	CI Max Bitrate	[1] tagesschau24 HD	▼
Decoder	Tuner	▼	Output Bitrate (Mbps)	[2] ONE HD	▼
Descramble	Tuner	▼	De Jitter	ON	▼
TV Standard	NTSCM	▼	CC Switch	OFF	▼
Volume (0-25)	10		Aspect Ratio	16:9 Full	▼
Audio Channel	Two-Channel	▼	Audio Spdif	Auto	▼
Subtitle	OFF	▼	<input checked="" type="checkbox"/> Auto Search		<input checked="" type="checkbox"/> Finger Switch

Card A Info [Initial-OK](#)    Card B Info [Initial-OK](#)    [Get](#) [Apply](#) [Search](#)

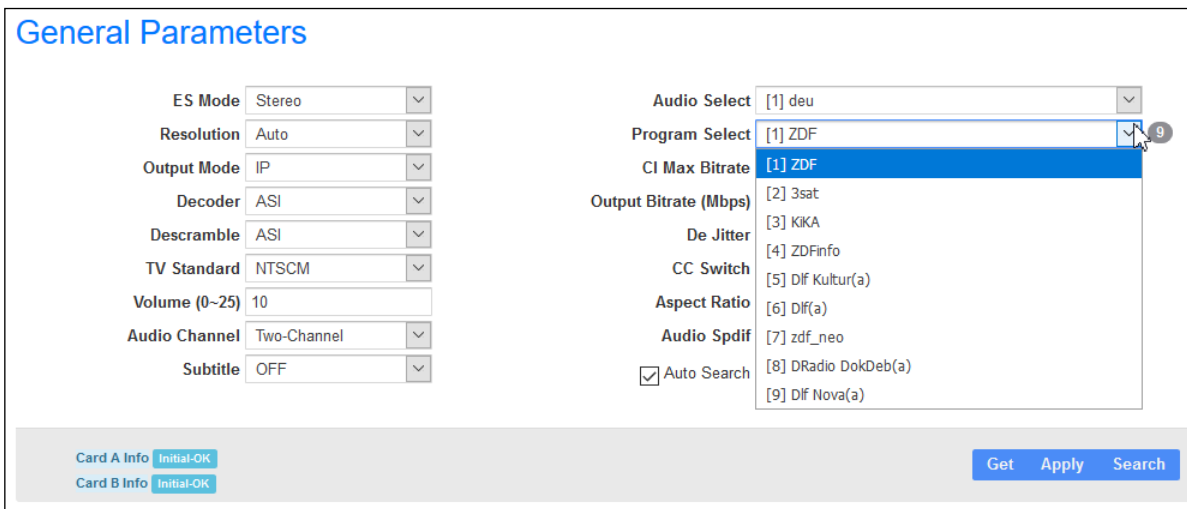
Descrambling selection:

ES Mode	Stereo	▼
Resolution	Auto	▼
Output Mode	IP	▼
Decoder	Tuner	▼
Descramble	ASI	▼
TV Standard	ASI	▼
Volume (0-25)	IP	▼
Audio Channel	Tuner	▼
Subtitle	None	▼
	OFF	▼

Decoding standard can be set but its almost automatic – so don't worry if it stays i.e. @ NTSC...:



After changing the Decoder Input, you need to check GET and maybe Auto Search and Finger Switch to re-load the Input device into this menu:



## Cross connection to the CAM-CARD-Menu:

Index	Program Name	Card Select
1	ZDF	Card A
2	3sat	No-selection
3	KiKA	Card B
4	ZDFinfo	No-selection
5	Dlf Kultur(a)	No-selection
6	Dlf(a)	Card A
7	zdf_neo	Card B
8	DRadio DokDeb(a)	No-selection
9	Dlf Nova(a)	No-selection

Buttons: Get Set

The CAM's can be used independently but only for the selected TS Input and descramble settings formerly chosen in the General-Menu.

Please note: You cannot assign any CAM to decrypt something before you haven't configured the Input. The CAM needs a working Transport stream (TS) from any of the Inputs (Tuner, ASI or MPTS by IP) before it can operate.

## MPTS-Output:

**MPTS Parameters**

Output IP: 225.0.0.111

Output Port: 10000

Source IP: 192.168.1.201

Source Submask: 255.255.255.0

Source Gateway: 0.0.0.0

Source Mac Addr: 92 04 10 7A 10 79

Destination Mac Addr: 01 00 5E 00 00 6F

Protocol: RTP (selected)

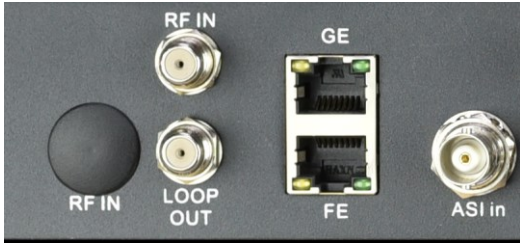
Buttons: Get Apply

Self explaining? OFF, RTP/UDP Protocol used (for RTP see explanations at the end of this document)

The MPTS-Output will work in parallel on ASI out: Pass mode from Input: ASI 2+4, Muxed-Mode: ASI 1+2 OUT. The source IP values are necessary for Unicast streaming, where the receiver needs to setup the source address where it comes from. The multicast are the destinations where this unit streams out.

**Note again:**

SPTS (Single Program Transport Stream) output comes via FE-Connector, MPTS (Multi Program transport Stream) output through the GE connector.



MPTS Input from external Sources (IGMP setting is recommended) is done through FE.

## MUX-Mode:

### General Parameters

ES Mode: Stereo Resolution: Auto Output Mode: MUX Decoder: Tuner Descramble: Tuner TV Standard: PALDBGHI Volume (0-25): 10 Audio Channel: Two-Channel Subtitle: OFF	Audio Select: [1] deu Program Select: [1] tagesschau24 HD CI Max Bitrate: 80 Output Bitrate (Mbps): 75 De Jitter: ON CC Switch: OFF Aspect Ratio: 16:9 Full Audio Spdif: Auto <input checked="" type="checkbox"/> Auto Search <input checked="" type="checkbox"/> Finger Switch
---	---

Card A Info [Initial-OK](#)
Card B Info [Initial-OK](#)
[Get](#) [Apply](#) [Search](#)

Prior to use the mux mode, you must enable it in the General settings.

You will start with the input source which are shown but empty -> So you need to select each and PARSE the content:

### Mux

⇐ Lost    ⇒ Locked    [Parse](#)
Current Output Mode: MUX
⇐ Lost    ⇒ Normal    ⇒ Overflow

Input Program Information

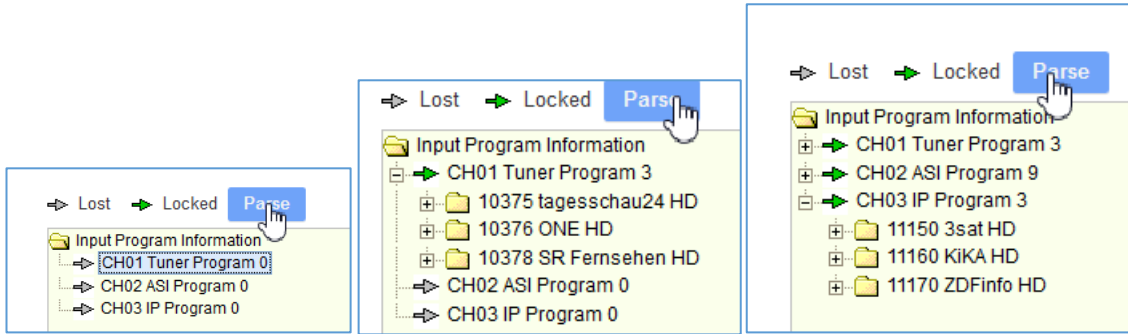
- ⇐ CH01 Tuner Program 0
- ⇐ CH02 ASI Program 0
- ⇐ CH03 IP Program 0

[Refresh](#)  
  
 ⇐  
  
 ⇐  
  
[Modify](#)

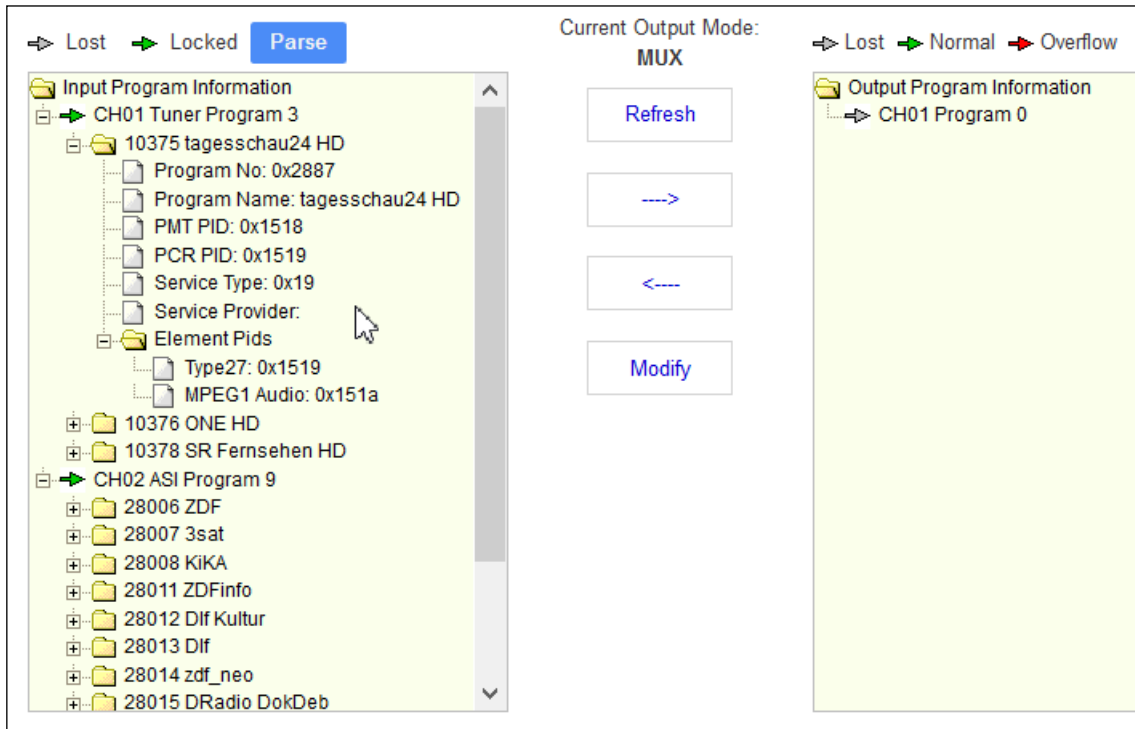
Output Program Information

- ⇐ CH01 Program 0





Clicking on the + will open more details:



Now you can select Services from differentsources and create a new multiplex to the right-output. As shown here, the PID's will be automatically remapped:

Current Output Mode: **MUX**

Input Program Information:

- CH01 Tuner Program 3
- CH02 ASI Program 9
- CH03 IP Program 3
- 11150 3sat HD
  - Program No: 0x2ba2
  - Program Name: ZDFinfo HD
  - PMT PID: 0x1a2c
  - PCR PID: 0x1a36
  - Service Type: 0x19
  - Service Provider:
- 11160 KiKA HD
- 11170 ZDFinfo HD
  - Program No: 0x2ba2
  - Program Name: ZDFinfo HD
  - PMT PID: 0x1a2c
  - PCR PID: 0x1a36
  - Service Type: 0x19
  - Service Provider:
  - Element Pids
    - Type27: 0x1a36
    - MPEG1 Audio: 0x1a40

Output Program Information:

- CH01 Program 3
  - 257 tagesschau24 HD
    - 514 3sat
      - Program No: 0x202
      - Program Name: 3sat
      - PMT PID: 0x200
      - PCR PID: 0x20a
      - Service Type: 0x1
      - Service Provider:
    - Element Pids
      - 771 ZDFinfo HD
        - Program No: 0x303
        - Program Name: ZDFinfo HD
        - PMT PID: 0x300
        - PCR PID: 0x30a
        - Service Type: 0x19
        - Service Provider:
        - Element Pids
          - Type27: 0x30a
          - MPEG1 Audio: 0x303

By using the right service selected and press Modify, you are able to change PIDwise:

Current Output Mode: **MUX**

Mux Set

Description	Type	Value(0x)
Program No		101
Program Name		tagesschau24 HD
PMT PID		100
PCR PID		10a
Service Type		19
Service Provider		
Type27	27	10a
MPEG1 Audio	3	103

Close Set

# SPTS-Outputs:

These former selected TV Services from the MUX setup are automatically assigned to the SPTS Menu:

**SPTS Parameters**

Source IP: 192.168.1.201  
 Source Gateway: 192.168.1.1  
 SPTS Enable

Index	Program No	Program Name	Enable	Output IP	Port	Bitrate(Mbps)	Source Mask	Destination Mac	Modify
1	101	tagesschau24 HD	UDP	224.2.2.2	1001	0	255.255.255.0	01005e020202	Set
2	202	3sat	UDP	224.2.2.2	1002	0	255.255.255.0	01005e020202	Set
3	303	ZDFinfo HD	UDP	224.2.2.2	1003	0	255.255.255.0	01005e020202	Set

Get Set Parse

The Source IP is the Network interface IP Address of the FE-Ethernet RJ45 output port. Sometimes if you change the IP addresses of your ports, the unit needs a reboot.

By MODIFY-SET you can change the settings of each stream:

**SPTS Set**

Index: 1      Program No: 101  
 Program Name: tagesschau24 HD      SPTS Enable: UDP  
 IP Address: 224.2.2.2      Port: OFF  
 Bitrate(Mbps): 0      Source Mask: UDP

Close      Set

default is VBR-Streaming

(so variable bit rate) in opposite to CBR Constant Bit Rate which inserts null-packets on PID8191dec up to the adjusted bitrate. Do not forget to set a valid bitrate (and not less than the content of the VBR peaks already have) if you want to insert the Zero-packets into the Streams:

Examples: VBR ohne Null-Packets

The screenshot shows the BLANKOM IRD-6300 interface. On the left, the 'PID info' window displays details for various services including PAT, SDT-actual, PMT, MPEG-1 Audio, AIT, and AVC/H.264 Video. On the right, a table lists the output streams:

Output IP	Port	Bitrate(Mbps)	Source Mask	Destination Mac	Modify
224.2.2.2	1001	0	255.255.255.0	01005e020202	Set
224.2.2.2	1003	0	255.255.255.0	01005e020202	Set
224.2.2.2	1004	0	255.255.255.0	01005e020202	Set
224.2.2.2	1005	0	255.255.255.0	01005e020202	Set
224.2.2.2	1006	0	255.255.255.0	01005e020202	Set
224.2.2.2	1007	0	255.255.255.0	01005e020202	Set
224.2.2.2	1002	0	255.255.255.0	01005e020202	Set

Configure a Datarate above (and with some percentage overhead security) the content:

The 'SPTS Set' dialog box is shown with the following configuration:

Index	1	Program No	101
Program Name	TV Mainfranken HD	SPTS Enable	UDP
IP Address	224.2.2.2	Port	1001
Bitrate(Mbps)	12	Source Mask	255.255.255.0

Buttons: Close, Set

Results in:

The screenshot shows the updated BLANKOM IRD-6300 interface. The 'PID info' window now includes 'Null packets' (0x1FFF) with a bitrate of 5.409.993 bps / 45.1%. The 'Services' window shows 'TV Mainfranken HD' with a bitrate of 6.6 Mbps / 54.8%. The table of output streams is updated:

Output IP	Port	Bitrate(Mbps)	Source Mask	Destination Mac	Modify
224.2.2.2	1001	12	255.255.255.0	01005e020202	Set
224.2.2.2	1003	0	255.255.255.0	01005e020202	Set
224.2.2.2	1004	0	255.255.255.0	01005e020202	Set
224.2.2.2	1005	0	255.255.255.0	01005e020202	Set
224.2.2.2	1006	0	255.255.255.0	01005e020202	Set
224.2.2.2	1007	0	255.255.255.0	01005e020202	Set
224.2.2.2	1002	0	255.255.255.0	01005e020202	Set
224.2.2.2	1008	0	255.255.255.0	01005e020202	Set
224.2.2.2	1009	0	255.255.255.0	01005e020202	Set
224.2.2.2	1010	0	255.255.255.0	01005e020202	Set

If setting up same multicast address and RTP please assure that RTP needs a port number usually above 5004 and **it must be an even number** as well as the next odd port shouldn't be in use in any case. So its better to assure that:

Index	Program No	Program Name	Enable	Output IP	Port	Bitrate(Mbps)	Source Mask	Destination Mac	Modify
1	101	tagesschau24HDD	UDP	224.2.2.2	1001	12	255.255.255.0	01005e020202	<a href="#">Set</a>
2	202	3sat	RTP	224.2.2.2	10020	15	255.255.255.0	01005e020202	<a href="#">Set</a>
3	303	ZDFinfo HD	UDP	224.2.2.2	10031	16	255.255.255.0	01005e020202	<a href="#">Set</a>

Regarding RTP and more hints see the Annex.

## Transmit:

The screenshot shows the 'Transmit' configuration page with a 'Transmit Add' dialog box open. The dialog box contains the following fields:

- Index:** (empty)
- Input Channel:** 1 (range: 1:Tuner 2:ASI 3:IP)
- Input PID(0x):** 12 (range: 0x0000..0x1FFF)
- Output PID(0x):** 12 (range: 0x0000..0x1FFF)

Buttons for 'Close' and 'Set' are visible at the bottom of the dialog. In the background, a table with columns 'Index' and 'Input Channel' is partially visible.

The transmit part is actually the PID Passing. Under some circumstances, there are certain PID's which don't belong to any program, but the user might want to pass them through the multiplexing module without any data missing or changing. This is the main purpose of this function.

Enables the passing of particular PID's. Be sure you enter them as hexadecimal values.

# Now we crosscheck what we are getting out of the box:

ASI 1+2 MUXED output:

The screenshot displays a software interface for monitoring and decoding ASI 1+2 MUXED output. The interface is divided into several sections:

- Top Bar:** Includes navigation tabs (Home, Decoding, TR 101 290, Recording, View) and control buttons (Freeze, Refresh, Reset, Dec, Hex, Gate, Time Slice). The input adapter is identified as "1: ASI/SDI (DTU-245B)".
- PID info (32):** A list of PID streams with their respective rates and percentages. Key entries include:
  - 0x0000 PAT (4.3 kbps / 0.01%)
  - 0x000B Synchronized Download Protocol (149 kbps / 0.2%)
  - 0x0011 SDT-actual (4.2 kbps / 0.01%)
  - 0x0012 EITpf, EITs (656 kbps / 0.9%)
  - 0x001F Synchronized Download Protocol (203 kbps / 0.3%)
  - 0x0045 User private (258 kbps / 0.3%)
  - 0x0100 PMT (4.2 kbps / 0.01%)
  - 0x0103 MPEG-1 Audio (203 kbps / 0.3%)
  - 0x0106 Unknown (470 kbps / 0.6%)
  - 0x0107 Unknown (9.8 kbps / 0.01%)
  - 0x0108 Unknown (9.9 kbps / 0.01%)
  - 0x010A AVC/H.264 Video (9.4 Mbps / 12.5%)
  - 0x0130 Unknown (1.41 Mbps / 1.9%)
  - 0x0200 PMT (4.2 kbps / 0.01%)
  - 0x0203 MPEG-1 Audio (262 kbps / 0.3%)
  - 0x0204 MPEG-1 Audio (200 kbps / 0.3%)
  - 0x0205 AC-3 Audio (460 kbps / 0.6%)
  - 0x0206 MPEG-1 Audio (200 kbps / 0.3%)
  - 0x0207 Teletext Data (300 kbps / 0.4%)
  - 0x0208 PES Private Data (2.9 kbps / 0.00%)
  - 0x0209 AIT (9.9 kbps / 0.01%)
  - 0x020A MPEG-2 Video (7.5 Mbps / 10.0%)
  - 0x0300 PMT (4.2 kbps / 0.01%)
  - 0x0303 MPEG-1 Audio (264 kbps / 0.4%)
  - 0x0304 MPEG-1 Audio (200 kbps / 0.3%)
  - 0x0305 AC-3 Audio (460 kbps / 0.6%)
  - 0x0306 MPEG-1 Audio (201 kbps / 0.3%)
  - 0x0307 Teletext Data (304 kbps / 0.4%)
  - 0x0308 AIT (9.8 kbps / 0.01%)
- Transport stream 0:** Shows details for the selected transport stream, including:
  - Services (3): tagesschau24HD (10.7 Mbps / 14.3%), 3sat (8.9 Mbps / 11.9%), ZDFinfo HD (14.0 Mbps / 18.6%)
  - Tables: PAT (Table ID: 0, Transport Stream ID: 0), Program: 0 (Defines Network PID), Program: 257 (tagesschau24HD), Program: 514 (3sat), Program: 771 (ZDFinfo HD), PMT (Program: 257 (tagesschau24HD), Program: 514 (3sat), Program: 771 (ZDFinfo HD)), SDT-actual, EIT-actual, EIT-actual p/f, EIT-actual schedule, EIT-other, EIT-other p/f, AIT, PID 521, PID 776.
- Messages:** Displays system messages such as "Input signal detected" and "Synchronised to stream with 188-byte packets".
- Bit-rate:** A graph showing the bit-rate over time, with a current value of 188 Byte and a TsRate of 74.999.418bps.

ASI 3+4: PASSTHROUGH

The screenshot shows the 'Decoding' tab for TR 101 290. The 'PID Info' list on the left includes various streams such as PAT, CAT, NIT-actual, SDT-actual, EITpf, TDT, AIT, 13818-6 type C, AIT, 13818-6 type C, 13818-6 type B, AIT, 13818-6 type C, PMT, AVC/H.264 Video, MPEG-1 Audio, Teletext Data, AC-3 Audio, and PES Private Data. The 'Transport stream 1039' tree view on the right shows services for tagesschau24 HD (14.7 Mbps / 34.4%), ONE HD (15.0 Mbps / 35.2%), and SR Fernsehen HD (11.5 Mbps / 26.9%). It also lists tables including PAT, PMT, NIT-actual, NIT-other, BAT, SDT-actual, SDT-other, EIT-actual, EIT-other, EIT-other p/f, TDT, TOT, and AIT. A bitrate graph at the bottom right shows a peak of 100 Mbps.

## IP Streams: SPTS:

The screenshot shows the 'Decoding' tab for TR 101 290 with an IP stream source (2: IP (Local IP: 192.168.0.88)). The 'PID Info' list on the left includes streams such as PAT, Synchronized Download Protocol, SDT-actual, Synchronized Download Protocol, User private, PMT, MPEG-1 Audio, Unknown, Unknown, Unknown, AVC/H.264 Video, and Null packets. The 'Transport stream 0' tree view on the right shows a service for tagesschau24HD (10.7 Mbps / 89.3%). It lists tables including PAT, PMT, SDT-actual, and Service Descriptor. The Service Descriptor shows a service type of 25 (Advanced codec HD digital television) and a service name of tagesschau24HD. The bitrate is 1.267.505 bps / 10.6% and the type is Null packets.

Visually checked the HDMI-Out with a TV Set: tagesschau24HD comes out.

HD-SDI output should be there as well.

Before checking MPTS we need to switch MPTS=On

DVB-S2 HD IRD

Status
Input
General
MPTS
MUX
Card
SPTS
BISS
Transmit
▼ System

MPTS Parameters

Output IP	<input type="text" value="225.0.0.111"/>	<input type="text" value="UDP"/>	<input type="text" value="▼"/>
Output Port	<input type="text" value="10000"/>		
Source IP	<input type="text" value="192.168.1.201"/>		
Source Submask	<input type="text" value="255.255.255.0"/>		
Source Gateway	<input type="text" value="0.0.0.0"/>		
Source Mac Addr	<input type="text" value="92"/> <input type="text" value="04"/> <input type="text" value="10"/> <input type="text" value="7A"/> <input type="text" value="10"/> <input type="text" value="79"/>		
Destination Mac Addr	<input type="text" value="01"/> <input type="text" value="00"/> <input type="text" value="5E"/> <input type="text" value="00"/> <input type="text" value="00"/> <input type="text" value="6F"/>		

Home
Decoding
TR 101 290
Recording
View

DVB
Freeze
PID
Service ID
Bitrate
short-term
2: IP (Local IP: 192.168.0.88)
Address
udp://225.0.0.111:10000

Refresh
Dec
Dec
Gate
1s
Info

Reset
Hex
Hex
Time Slice
100ms

Settings
Bitrate profile
Input Adapter

**PID info (32)**

- 0x0000 PAT (4.5 kbps / 0.01%)
- 0x000B Synchronized Download Protocol (149 kbps / 0.2%)
- 0x0011 SDT-actual (4.5 kbps / 0.01%)
- 0x0012 EITpf, EITs (657 kbps / 0.9%)
- 0x001F Synchronized Download Protocol (204 kbps / 0.3%)
- 0x0045 User private (262 kbps / 0.3%)
- 0x0100 PMT (4.5 kbps / 0.01%)
- 0x0103 MPEG-1 Audio (204 kbps / 0.3%)
- ! 0x0106 Unknown (469 kbps / 0.6%)
- ! 0x0107 Unknown (8.9 kbps / 0.01%)
- ! 0x0108 Unknown (10.4 kbps / 0.01%)
- ! 0x010A AVC/H.264 Video (10.2 Mbps / 13.6%)
- ! 0x0130 Unknown (1.40 Mbps / 1.9%)
- 0x0200 PMT (4.5 kbps / 0.01%)
- 0x0203 MPEG-1 Audio (263 kbps / 0.4%)
- 0x0204 MPEG-1 Audio (201 kbps / 0.3%)
- 0x0205 AC-3 Audio (460 kbps / 0.6%)
- 0x0206 MPEG-1 Audio (199 kbps / 0.3%)
- 0x0207 Teletext Data (302 kbps / 0.4%)
- 0x0208 PES Private Data (4.4 kbps / 0.01%)
- 0x0209 AIT (10.3 kbps / 0.01%)
- ! 0x020A MPEG-2 Video (3.5 Mbps / 4.7%)
- 0x0300 PMT (4.5 kbps / 0.01%)
- 0x0303 MPEG-1 Audio (263 kbps / 0.4%)
- 0x0304 MPEG-1 Audio (199 kbps / 0.3%)
- 0x0305 AC-3 Audio (460 kbps / 0.6%)
- 0x0306 MPEG-1 Audio (201 kbps / 0.3%)
- 0x0307 Teletext Data (306 kbps / 0.4%)
- 0x0308 AIT (10.4 kbps / 0.01%)

**Transport stream 0**

- Services (3)
  - tagesschau24HD (11.5 Mbps / 15.4%)
  - 3sat (4.9 Mbps / 6.6%)
  - ZDFinfo HD (14.9 Mbps / 19.9%)
- Tables:
  - PAT
  - PMT
    - Program: 257 (tagesschau24HD)
    - Program: 514 (3sat)
    - Program: 771 (ZDFinfo HD)
  - SDT-actual
  - EIT-actual
    - EIT-actual p/f
    - EIT-actual schedule
    - EIT-other
    - EIT-other p/f
  - AIT
    - PID 521
    - PID 776

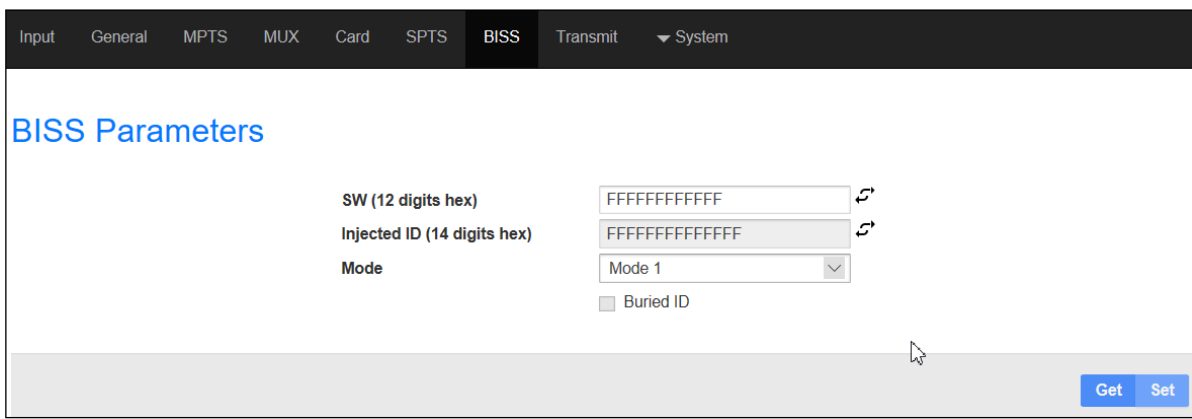
PID
TS
Grid
PID
TS
Grid
TV
PCR
TR 101 290



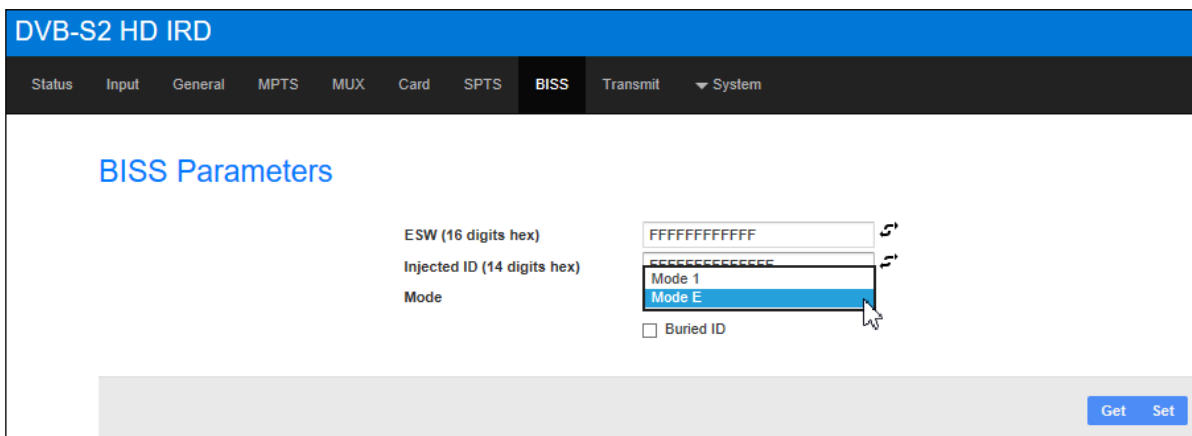
It's the muxed output as MPTS and we have PID 12hex as well as PID 12->130 (but this is unknown actually because standardised EIT PID x12 has been remapped to a free PID- so receivers of this EIT PID130hex cannot interpret this correctly.

## BISS Descrambling (Basic Interoperable Scrambling System)

The BISS descrambling function application needs to be matched with the BISS scrambler Method and keys usually used in the uplink of the SAT-TV Service. The BISS window is showed as follows:



The BISS descrambling only works for the one selected single TV Service to be decoded. This BLANKOM IRD-6100 HD IRD BISS descrambling supports two modes: “Mode 1” and “Mode E”. The User can select one of these two modes in the drop down list:



### Explanations regarding BISS scrambling/de-scrambling:

**BISS modes:** BISS Mode 0: unscrambled (clear), BISS Mode 1: Scrambled with a **session word (SW)**, BISS Mode E: scrambled with encrypted session word (ESW). The session word is the key that is used in the receiver (IRD) to descramble the transmitted data. Remark that BISS-E uses the same scrambling algorithm as BISS Mode 1 but that there is an additional encryption on the session word.

**BISS Mode 1** uses a 12-digit hexadecimal key as session word. The session word has to be announced to all parties that are allowed to descramble the received data. Example: 123456ABCDEF. The session word can easily be compromised, there is no protection when communicating it to the receive site(s).

**BISS Mode E:** Scrambled with encrypted session word (ESW). This mode uses the ID (identifier) of the receiver(s) and a session word to calculate an encrypted session word (16 digits hex). There are two possible IDs - **Buried ID** - **Injected ID**. By encrypting the session word there is an additional protection on the session word. The ESW can be communicated using a non-secure channel since in order to descramble the received signal both the ID and the ESW need to be known.

**Buried ID:** Each receiver (IRD) holds a unique ID (i.e., the embedded serial number) that can be used to identify that specific receiver: This is called the buried ID. If you want to do a transmission that is to be received by only one specific receiver, use the buried ID to calculate the encrypted session word (SW).

**Injected ID:** An identifier can be entered (injected) in a receiver (IRD), this injected ID can be entered in a single or a group of IRDs. This allows a **BISS-E** protected transmission to a group of IRDs.

**Operation BISS Mode 1:** Connect the scrambler between the encoder and modulator. Select the output interface rate (must be equal or higher than output interface rate of the encoder). Select BISS Mode 1. In case of BISS Mode 1 with clear session word, enter the 12-digit session word **SW**. Communicate the session word to the receive site(s).

**Operation BISS Mode E with Buried ID:** Connect the scrambler between the encoder and modulator. Select output interface rate (must be equal or higher than output interface rate of the encoder)- Select BISS mode. In case of BISS Mode E with Buried ID, get the Buried ID of the IRD and use this together with a session word to get calculated the **Encrypted Session Word** (using the DES3 algorithm). Communicate the ESW to the receiving site.




**Operation BISS mode E with injected ID:** Connect the scrambler between the encoder and modulator. Select output interface rate (must be equal or higher than output interface rate of the encoder). Select BISS mode. In case of BISS mode E with injected ID, get the injected ID of the IRD(s) and use this together with a session word to get calculated the encrypted session word (using the DES3 algorithm). Communicate the ESW to the receive site(s).

More details here: <https://tech.ebu.ch/docs/tech/tech3292.pdf>

**Mode 1**

Under Mode 1, the BISS scrambler applies scrambling by a fixed Control Word (CW), derived from a clear SW (Session Word). In Mode 1, a fixed 12-character SW is inserted into the scrambler. The 64-bit CW is derived from the SW according to DVB-CSA specifications. The User can select Mode 1 in the drop-down menu, and then input the descrambler key. The descrambler key consists of 12 characters based on the Hexadecimal system from 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, and F. The IRD-6100 descrambler key is equal the SW Data on the BISS scrambler side.

After inserting the descrambler key, the user should press “Set” to start descrambling. A few seconds later, the programs will be descrambled.

SW (12 digits hex)	FFFFFFFFFFFF	
Injected ID (14 digits hex)	FFFFFFFFFFFFFF	
Mode	Mode 1	
<input type="checkbox"/> Buried ID		

## Mode E

Using Mode E, the BISS scrambler completes scrambling through the **ESW** value and **ID Select**. The ESW value is equal to the Descrambler key on the IRD side, while the ID Select equals the Burned Key on IRD side. The BISS scrambler ID Select has two options: Device and Input. If Users choose Device, the Burned Key needs to be selected when descrambling, while if users choose Input and set Input data, on IRD side, users do not need to select Burned Key and input the Input data as SK.

Under Mode E, users can select Burned Key option or not. Under Mode E, the device will calculate a new date which works as descrambling key. The new data is created by Descrambling Key (refers **ESW** on scrambler side) and Burned Key (Input or **Device** mode on the scrambler side). If user is selecting Burned Key, it corresponds to the **Device** mode selected on scrambler side; while if Burned Key is unselected, it corresponds to **Input** mode on scrambler side. The **Input** data is SK on the IRD. User can input the SK in the column as showed:

ESW (16 digits hex)	FFFFFFFFFFFF0B20	↻
Injected ID (14 digits hex)	FFFFFFFFFFFF	↻
Mode	Mode E	▼
	<input type="checkbox"/> Buried ID	

### Mode E (Buried Key option unselected)

After selecting Mode E and Burned Key unselected, users should input the 16 figures Descrambler Key and 14 characters SK (the SK data refers to the **Input Data** on scrambler side). Users should choose the characters from 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, and F. Lastly users press “Set” to initial descrambling. A few seconds later, the programs will be descrambled.

**Note:** Under this mode, after inputting the Descrambler Key and SK, it will work out a new data, which can be

### Mode E (Buried Key option selected)

After selecting Mode E and Burned Key, users should input the 16 figures Descrambler Key (named ESW on scrambler side). The user should choose the characters from 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9, A, B, C, D, E, and F. Under this mode, SK cannot be input in the column, as the data which works with ESW has been embedded inside the device after users select Burned Key (which refers that user choose **Device** mode on the scrambler side). Lastly users press “Set” to initial descrambling. A few seconds later, the programs will be descrambled.

**Note:** The Buried Key is embedded in the device and it is solely controlled by the device supplier.

## Chapter 5 Troubleshooting

Our ISO9001 quality assurance system has been approved by CQC organization for guaranteeing the products' quality, reliability and stability. All our products have been passed the testing and inspection before shipping out of the factory. The testing and inspection scheme already covers all the Optical, Electronic and Mechanical criteria which have been published by our company. To prevent potential hazard, please strictly follow the operation conditions.

### Prevention Measure

- Installing the device at a place in which the environment temperature is between 0 to 45 °C
- Making sure good ventilation for the heat-sink on the rear panel and other heat-sink slots if necessary
- Checking the input AC voltage whether it is within the power supply working range and the connection is correct before switching on the 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 not recommended. The interval between every switching on/off should be longer 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
- Long-time idle.
- After switching on and restoring to factory setting, device still cannot work properly.
- Maintenance needed

## Chapter 6 Packing List

BLANKOM IRD-6100 HD IRD	1 piece
User Manual (optional download from Websites)	1 piece
Power Cord for AC Input IEC	1 piece
ASI BNC-cable	1 piece

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 work:

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

## 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 User 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 *user or registered ports*, and ports with numbers 49152–65535 are called *dynamic and/or private ports*.<sup>[2]</sup> Both system and user 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** – user 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	<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td style="padding: 0 5px;">Ethernet</td> <td style="padding: 0 5px;">Token Bus</td> <td style="padding: 0 5px;">Token Ring</td> <td style="padding: 0 5px;">FDDI</td> <td style="padding: 0 5px;">...</td> </tr> </table>	Ethernet	Token Bus	Token Ring	FDDI	...
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)

**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.

# ANNEX MPEG

## MPEG PSI/SI Information's:

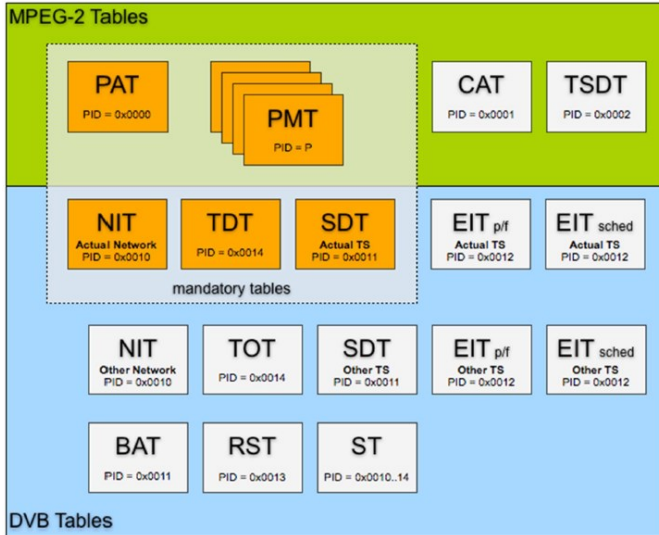


Table 1: PID allocation for SI

Table	PID value
PAT	0x0000
CAT	0x0001
TSDDT	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.

This user manual has been written to help people who have to use, to integrate and to install the product. Some chapters require some prerequisite knowledge in Network and streaming technology and protocols and might have knowledge about Microsoft Windows OS and components, electronics and especially in Satellite DVB-reception and broadcast/broadband CATV as well as IPTV Streaming technologies and standards.

## **ANNEX Channel Plan (CATV channel plan)**

# Appendix DB

Bereich	Kanal	Kanal-	Mitten-	Bild-	Ton-	Bereich	Kanal	Kanal-	Mitten-	Bild-	Ton-
Bands	Channel	frequenzen	frequenz	träger	träger	Bands	Channel	frequenzen	frequenz	träger	träger
		Channel	Middle	Picture	Sound			Channel	Middle	Picture	Sound
B I	2	47...54	50,50	48,25	53,75	B IV	21	470...478	474,00	471,25	476,75
	3	54...61	57,50	55,25	60,75		22	478...486	482,00	479,25	484,75
	4	61...68	64,50	62,25	67,75		23	486...494	490,00	487,25	492,75
USB Unterer Sonder- kanal- bereich Midband channels	S 02	111...118	114.50	112.25	117.75		24	494...502	498.00	495.25	500.75
	S 03	118...125	121.50	119.25	124.75		25	502...510	506.00	503.25	508.75
	S 04	125...132	128.50	126.25	131.75		26	510...518	514.00	511.25	516.75
	S 05	132...139	135.50	133.25	138.75		27	518...526	522.00	519.25	524.75
	S 06	139...146	142.50	140.25	145.75		28	526...534	530.00	527.25	532.75
	S 07	146...153	149.50	147.25	152.75		29	534...542	538.00	535.25	540.75
	S 08	153...160	156.50	154.25	159.75		30	542...550	546.00	543.25	548.75
	S 09	160...167	163.50	161.25	166.75		31	550...558	554.00	551.25	556.75
	S 10	167...174	170.50	168.25	173.75		32	558...566	562.00	559.25	564.75
	B III	5	174...181	177.50	175.25	180.75		33	566...574	570.00	567.25
6		181...188	184.50	182.25	187.75		34	574...582	578.00	575.25	580.75
7		188...195	191.50	189.25	194.75		35	582...590	586.00	583.25	588.75
8		195...202	198.50	196.25	201.75		36	590...598	594.00	591.25	596.75
9		202...209	205.50	203.25	208.75		37	598...606	602.00	599.25	604.75
10		209...216	212.50	210.25	215.75	B V	38	606...614	610.00	607.25	612.75
11		216...223	218.50	217.25	222.75		39	614...622	618.00	615.25	620.75
12	223...230	226.50	224.25	229.75	40		622...630	626.00	623.25	628.75	
OSB Oberer Sonder- kanal- bereich Superband channels	S 11	230...237	233.50	231.25	236.75		41	630...638	634.00	631.25	636.75
	S 12	237...244	240.50	238.25	243.75		42	638...646	642.00	639.25	644.75
	S 13	244...251	247.50	245.25	250.75		43	646...654	650.00	647.25	652.75
	S 14	251...258	254.50	252.25	257.75		44	654...662	658.00	655.25	660.75
	S 15	258...265	261.50	259.25	264.75		45	662...670	666.00	663.25	668.75
	S 16	265...272	268.50	266.25	271.75		46	670...678	674.00	671.25	676.75
	S 17	272...279	275.50	273.25	278.75		47	678...686	682.00	679.25	684.75
	S 18	279...286	282.50	280.25	285.75		48	686...694	690.00	687.25	692.75
	S 19	286...293	289.50	287.25	292.75		49	694...702	698.00	695.25	700.75
	S 20	293...300	296.50	294.25	299.75		50	702...710	706.00	703.25	708.75
ESB Erweiterter Sonder- kanal- bereich Hyperband channels	S 21	302...310	306.00	303.25	308.75		51	710...718	714.00	711.25	716.75
	S 22	310...318	314.00	311.25	316.75		52	718...726	722.00	719.25	724.75
	S 23	318...326	322.00	319.25	324.75		53	726...734	730.00	727.25	732.75
	S 24	326...334	330.00	327.25	332.75		54	734...742	738.00	735.25	740.75
	S 25	334...342	338.00	335.25	340.75		55	742...750	746.00	743.25	748.75
	S 26	342...350	346.00	343.25	348.75		56	750...758	754.00	751.25	756.75
	S 27	350...358	354.00	351.25	356.75		57	758...766	762.00	759.25	764.75
	S 28	358...366	362.00	359.25	364.75		58	766...774	770.00	767.25	772.75
	S 29	366...374	370.00	367.25	372.75		59	774...782	778.00	775.25	780.75
	S 30	374...382	378.00	375.25	380.75		60	782...790	786.00	783.25	788.75
	S 31	382...390	386.00	383.25	388.75		61	790...798	794.00	791.25	796.75
	S 32	390...398	394.00	391.25	396.75		62	798...806	802.00	799.25	804.75
	S 33	398...406	402.00	399.25	404.75		63	806...814	810.00	807.25	812.75
	S 34	406...414	410.00	407.25	412.75		64	814...822	818.00	815.25	820.75
	S 35	414...422	418.00	415.25	420.75		65	822...830	826.00	823.25	828.75
	S 36	422...430	426.00	423.25	428.75		66	830...838	834.00	831.25	836.75
	S 37	430...438	434.00	431.25	436.75		67	838...846	842.00	839.25	844.75
	S 38	438...446	442.00	439.25	444.75		68	846...854	850.00	847.25	852.75
	S 39	446...454	450.00	447.25	452.75		69	854...862	858.00	855.25	860.75
	S 40	454...462	458.00	455.25	460.75						
	S 41	462...470	466.00	463,25	468,75						

Conversions of Power @ 75Ω / Umrechnungstabelle dBμV <-> dBm

dBmV	dB $\mu$ V	dBm 75 $\Omega$	mV <sub>RMS</sub>	mW 75 $\Omega$
8	68	-40.75	2.51	8.4E-05
9	69	-39.75	2.82	1.1E-04
10	70	-38.75	3.16	1.3E-04
11	71	-37.75	3.55	1.7E-04
12	72	-36.75	3.98	2.1E-04
13	73	-35.75	4.47	2.7E-04
14	74	-34.75	5.01	3.3E-04
15	75	-33.75	5.62	4.2E-04
16	76	-32.75	6.31	5.3E-04
17	77	-31.75	7.08	6.7E-04
18	78	-30.75	7.94	8.4E-04
19	79	-29.75	8.91	1.1E-03
20	80	-28.75	10.00	1.3E-03
21	81	-27.75	11.22	1.7E-03
22	82	-26.75	12.59	2.1E-03
23	83	-25.75	14.13	2.7E-03
24	84	-24.75	15.85	3.3E-03
25	85	-23.75	17.78	4.2E-03
26	86	-22.75	19.95	5.3E-03
27	87	-21.75	22.39	6.7E-03
28	88	-20.75	25.12	8.4E-03
29	89	-19.75	28.18	0.011
30	90	-18.75	31.62	0.013
31	91	-17.75	35.48	0.017
32	92	-16.75	39.81	0.021
33	93	-15.75	44.67	0.027
34	94	-14.75	50.12	0.033
35	95	-13.75	56.23	0.042
36	96	-12.75	63.10	0.053
37	97	-11.75	70.79	0.067

dBmV	dB $\mu$ V	dBm 75 $\Omega$	mV <sub>RMS</sub>	mW 75 $\Omega$
38	98	-10.75	79.43	0.084
39	99	-9.75	89.13	0.106
40	100	-8.75	100.00	0.133
41	101	-7.75	112.20	0.168
42	102	-6.75	125.89	0.211
43	103	-5.75	141.25	0.266
44	104	-4.75	158.49	0.335
45	105	-3.75	177.83	0.422
46	106	-2.75	199.53	0.531
47	107	-1.75	223.87	0.668
48	108	-0.75	251.19	0.841
49	109	0.25	281.84	1.059
50	110	1.25	316.23	1.333
51	111	2.25	354.81	1.679
52	112	3.25	398.11	2.113
53	113	4.25	446.68	2.660
54	114	5.25	501.19	3.349
55	115	6.25	562.34	4.216
56	116	7.25	630.96	5.308
57	117	8.25	707.95	6.683
58	118	9.25	794.33	8.413
59	119	10.25	891.25	10.591
60	120	11.25	1000.00	13.333
61	121	12.25	1122.02	16.786
62	122	13.25	1258.93	21.132
63	123	14.25	1412.54	26.604
64	124	15.25	1584.89	33.492
65	125	16.25	1778.28	42.164
66	126	17.25	1995.26	53.081
67	127	18.25	2238.72	66.825

dBmV	dB $\mu$ V	dBm 75 $\Omega$	mV <sub>RMS</sub>	mW 75 $\Omega$
68	128	19.25	2511.89	84.128

## 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

**תאריך תפוגה**

**אזהרה!**

**תאריך תפוגה של מוצר זה חייב להיות בולט לראיית המשתמש המיועד.**

de l'environnement. Renseignez-vous auprès de l'organisme compétent.

**عند التخلص النهائي من هذا المنتج يتعين التعامل معه وفقاً لجميع القوانين واللوائح الوطنية**

**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.**

# Safety instructions

Read the safety instructions carefully before assembling or commissioning the device and ensure that you comply with them


## 1. Installation

- **Danger:** The device may **only** be installed and started up by competent people (see EN 60065) 
- **Danger:** The device and the peripheral distribution devices must be earthed properly (potential equalization) in accordance with EN 60728-11 **before Commissioning** and remain earthed even when the device is dismantled.
- **Danger:** The device may not be installed on a flammable base (**risk of fire**).
- **Danger:** Only connect the device to a socket that is installed correctly and connected to devices that has an earth conductor  
(Depending on Model and Usage).
- **Danger:** Plan the assembly or installation location to ensure that children cannot play with the device and its connections.  
There is a risk of electric shock (**Danger of death**).
- **Danger:** Select an assembly or installation location in which fluids or objects cannot get into the device under any circumstances (e.g. condensation, water for watering plants, etc.).
- **Danger:** Ventilation slots and refrigeration units are important function elements on the devices. If devices have refrigeration units or ventilation slots, you must ensure that they are never covered or built over. Also ensure that there is sufficient air circulation around the device. This prevents possible damage to the device and the **risk of fire due** to overheating. Ensure a minimum of **clearance of 20cm** between the device and other objects.
- **Danger:** The assembly or installation location must allow all connected cables to be laid safely. Cables and power supply cables must not be damaged or crushed by any objects. Furthermore, ensure that cables are not laid in the immediate vicinity of sources of heat (e.g. radiators, other electrical devices, fireplaces, etc.) (**Risk of fire**), (**risk of electric shock danger of death**)
- **Danger:** In order to prevent damage to the device, as well as possible subsequent damage (**risk of fire**), devices intended for installation on the wall are only permitted to be installed on a level surface and not **above head height**.
- **Warning:** (Only for optical transmitters and their peripheral distribution devices) Never look directly indirectly into the laser beam. Only connect the device to the power supply once all optical lines are connected securely. 
- **Warning:** The safety regulations in the relevant current standards EN 60728-11 and EN 60065 must be complied with.
- **Warning:** Comply with all applicable national safety regulations and standards.
- **Warning:** The device's mains plug must be easily accessible at all times.
- **Warning:** Follow all instructions in the device-specific operating manual



## 2. Operation

- **Danger:** The device is only permitted to be operated in dry rooms in a non-tropical climate. In damp rooms or outdoors, there is the risk of short circuits (**risk of fire**) or electric shock (**danger of death**).
- **Danger:** Do not insert any objects through the ventilation slot. Risk of electric shock (**danger of death**).




- **Danger:** Do not put any containers filled with liquid (e.g. vases) on the device. There is a risk of electric shock (**danger of death**) or (**risk of fire**). 
- **Danger:** No open sources of fire such as burning candles are permitted to be placed on the device (**risk of fire**).
- **Danger:** Ensure that there is a clearance of at least **20cm** around the device. The device ventilation is not permitted to be impaired by covering the
  - Ventilation openings with objects such as newspapers, tablecloths, curtains, etc. (**risk of fire**).
- **Warning:** Follow all instructions in the device-specific operating manual.

### 3. Maintenance

- **Danger:** Maintenance tasks must always be carried out by competent people (see EN 60065). 
- **Danger:** Do not carry out servicing work during thunderstorms. There is a risk of electric shock (**danger of death**).
- **Warning:** (Only for devices with batteries): **Risk of explosion if** the battery is replaced improperly. Only replace with the same type!
- **Warning:** Batteries must not be subjected to excessive heat such as sunlight, fire or similar (**risk of explosion**). 
- **Warning:** Only use the manufacturer's accessories or accessories with identical technical properties.
- **Warning:** (For optical transmitters and their peripheral distribution devices) unplug the mains plug before dismantling the device.

### 4. Repairs

- **Danger:** The device may only be opened by competent people (see EN 60065). Before opening the device, unplug the mains plug or disconnect the power supply; otherwise there is a danger of death! The device is only permitted to be connected to the power and operated when the mains adaptor cover is installed. This also applies when you clean the device or work on the connections. 
- **Danger:** Repairs on the device may only be carried out by a specialist (see EN 60065) observing the applicable VDE (German Association for Electrical, Electronic & Information Technologies) guidelines.
- **Danger:** Only use components of the same type and with identical technical properties for the repair. Otherwise, there is a risk of electric shock (**danger of death**) and **risk of fire**.
- **Warning:** (For optical transmitters and their peripheral distribution devices) unplug the mains plug before dismantling the device.

If you have any queries regarding repairs, please contact our company service: E-mail: [info@blankom.de](mailto:info@blankom.de), contact: [www.blankom.de](http://www.blankom.de)



### 5. Sale

- **Caution:** If the device is sold, these safety instructions and the operating manual for the relevant device must be handed over to the purchaser.



### 6. Disposal

- **Caution:** Dispose of the device in accordance with the applicable environmental regulations.
- **Caution:** Dispose of batteries (if present) in accordance with the applicable environmental regulations.
- Cartons and all pcs. of the packaging can be sent back to us for recycling for sustainable environment protection.



# Sicherheitshinweise



Sicherheitshinweise bitte vor Montage bzw. Inbetriebnahme des Gerätes sorgfältig lesen und befolgen.

## 1. Installation

**Gefahr:** Das Gerät darf ausschließlich von sachverständigen Personen (siehe EN 60065), installiert und in Betrieb genommen werden.

**Gefahr:** Das Gerät und/oder die Verteilperipherie muß vor Inbetriebnahme gemäß EN 60728-11 vorschriftsmäßig geerdet sein (Potentialausgleich) und bleiben, auch wenn das Gerät ausgebaut wird.

**Gefahr:** Das Gerät darf nicht auf brennbarem Untergrund montiert werden (Brandgefahr).

**Gefahr:** Schließen Sie das Gerät nur an eine vorschriftsmäßig installierte Steckdose mit Schutzleiter an.

**Gefahr:** Planen Sie den Montage - bzw. Aufstellungsort so, daß Kinder nicht am Gerät und dessen Anschlüssen spielen können.

Es droht Gefahr durch elektrischen Schlag (Lebensgefahr).

**Gefahr:** Wählen Sie einen Montage - bzw. Aufstellungsort, an dem unter keinen Umständen Flüssigkeiten oder Gegenstände in das Gerät gelangen können (z.B.

Kondenswasser, Gießwasser etc.).

**Gefahr:** Lüftungsschlitze und Kühlkörper sind wichtige Funktionselemente an den Geräten. Bei Geräten, die Kühlkörper oder Lüftungsschlitze haben, muß daher unbedingt darauf geachtet werden, daß diese keinesfalls abgedeckt oder zugebaut werden. Sorgen Sie außerdem für eine großzügig bemessene Luftzirkulation um das Gerät. Damit verhindern Sie mögliche Schäden am Gerät sowie Brandgefahr durch Überhitzung. Gewährleisten Sie einen Mindestabstand von 20cm um das Gerät zu anderen Gegenständen.

**Gefahr:** Der Montage- bzw. Aufstellort muß eine sichere Verlegung aller angeschlossenen Kabel zulassen. Stromversorgungskabel sowie Zuführungskabel dürfen nicht durch irgendwelche Gegenstände beschädigt oder gequetscht werden. Es ist darüber hinaus unbedingt darauf zu achten, daß Kabel nicht in die direkte Nähe von Wärmequellen verlegt werden (z.B. Heizkörper, andere Elektrogeräte, Kamin etc.) (Brandgefahr), (Gefahr durch elektrischen Schlag).

**Gefahr:** Um sowohl Beschädigungen am Gerät als auch mögliche Folgeschäden (Brandgefahr) zu vermeiden, dürfen für Wandmontage vorgesehene Geräte nur auf einer ebenen Grundfläche montiert werden und nicht über Kopf.

**Warnung:** (Nur für optische Sender sowie deren Verteilperipherie) Blicken Sie auf keinen Fall direkt oder indirekt in den Laserstrahl. Schließen Sie das Gerät erst an die Stromversorgung an, wenn alle elektrischen und optischen Leitungen sicher verbunden sind.

**Warnung:** Die Sicherheitsbestimmungen der jeweils aktuellen Normen EN 60728-11 und EN 60065 sind zwingend einzuhalten.

**Warnung:** Befolgen Sie auch alle anwendbaren nationalen Sicherheitsvorschriften und Normen.

**Warnung:** Der Netzstecker des Gerätes muß jederzeit leicht erreichbar sein.

**Warnung:** Befolgen Sie alle Instruktionen in den gerätespezifischen Bedienungsanleitungen

## 2. Betrieb

**Gefahr:** Das Gerät darf nur in trockenen Räumen bei nicht tropischem Klima betrieben werden. In feuchten Räumen oder im Freien besteht die Gefahr von Kurzschluß (Brandgefahr) oder elektrischen Schlag (Lebensgefahr).

**Gefahr:** Stecken Sie keine Gegenstände durch die Lüftungsschlitze. Gefahr durch elektrischen Schlag (Lebensgefahr).

**Gefahr:** Stellen Sie keine mit Flüssigkeit gefüllten Gefäße (wie z. B. Vasen) auf das Gerät. Es droht Gefahr durch elektrischen Schlag (Lebensgefahr) oder (Brandgefahr).

**Gefahr:** Es dürfen keine offenen Brandquellen, wie z. B. brennende Kerzen, auf das Gerät gestellt werden (Brandgefahr).

**Gefahr:** Sorgen Sie für einen Freiraum von mindestens 20cm um das Gerät. Die Belüftung des Gerätes darf nicht durch Abdecken der Belüftungsöffnungen mit Gegenständen wie z. B. Zeitungen, Tischdecken, Gardinen usw. behindert werden (Brandgefahr).

**Warnung:** Befolgen Sie alle Instruktionen in der gerätespezifischen Bedienungsanleitung.

#### 4. Wartung

**Gefahr:** Wartungsarbeiten sind stets von sachverständigen Personen (siehe EN 60065) vorzunehmen.

**Gefahr:** Keine Servicearbeiten bei Gewitter. Es droht Gefahr eines elektrischen Schlags (Lebensgefahr).

**Warnung:** (nur für Geräte mit Batterie): Explosionsgefahr bei unsachgemäßem Auswechseln der Batterie. Ersatz nur durch den gleichen Typ!

**Warnung:** Batterien dürfen nicht übermäßiger Wärme wie Sonnenschein, Feuer oder dergleichen ausgesetzt werden (Explosionsgefahr).

**Warnung:** Verwenden Sie nur das Zubehör des Herstellers oder Zubehör mit identischen technischen Eigenschaften.

**Warnung:** (Bei optischen Sendern sowie deren Verteilperipherie) ziehen Sie den Netzstecker bevor das Gerät ausgebaut wird.

#### 5. Reparatur

**Gefahr:** Das Gerät darf nur durch sachverständige Personen (siehe EN 60065) geöffnet werden. Vor Öffnen des Gerätes Netzstecker ziehen

bzw. Stromzuführung entfernen, andernfalls besteht Lebensgefahr! Das Gerät darf nur mit montierter Netzteilabdeckung an Spannung angeschlossen und betrieben werden. Dies gilt auch, wenn Sie das Gerät reinigen oder an den Anschlüssen arbeiten.

**Gefahr:** Reparaturen am Gerät sind ausschließlich vom Fachmann (siehe EN 60065) unter Beachtung der geltenden VDE-Richtlinien durchzuführen.

**Gefahr:** Verwenden Sie nur Bauteile des gleichen Typs und mit identischen technischen Eigenschaften für die Reparatur, andernfalls droht Gefahr eines elektrischen Schlags (Lebensgefahr) und Brandgefahr.

**Warnung:** (Bei optischen Sendern sowie deren Verteilperipherie) ziehen Sie den Netzstecker bevor das Gerät ausgebaut wird.

**Bei Fragen zur Reparatur wenden Sie sich an den IRENIS-Service:**

E-Mail: [info@blankom.de](mailto:info@blankom.de), Kontakt: [www.blankom.de](http://www.blankom.de)

#### 6. Verkauf

**Vorsicht:** Im Falle eines Verkaufs müssen diese Sicherheitshinweise und die Bedienungsanleitung des entsprechenden Geräts dem Käufer ausgehändigt werden.

7. Entsorgung

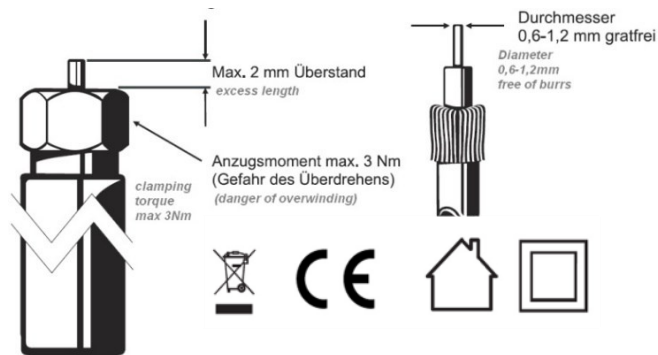
**Vorsicht:** Entsorgen Sie das Gerät entsprechend den geltenden umweltrechtlichen Bestimmungen. Elektrische und elektronische Geräte dürfen nicht in den Hausmüll!

**Vorsicht:** Entsorgen Sie Batterien (falls vorhanden), entsprechend den geltenden umweltrechtlichen Bestimmungen.

**Verpackungen** können an uns zurückgeschickt werden. Wir kümmern uns um Recycling und/oder fachgerechte Entsorgung.

## Installation guide for F-connectors:

/ Installationshinweis für den F-Anschluß:



**Die LNB-Anschlüsse sind meist entsprechend gekennzeichnet**

*The LNC –connectors are almost marked as:*

**HH=** Horizontal High-Band

**HL =** Horizontal Low-Band = LH

**VL =** Vertical Low-Band = LV

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*

# Installation and safety instructions / Montage und Sicherheitshinweise

- 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 75 Ohm 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 Geräteentwärmung 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*

## Important notes: / Zur Beachtung

- 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.*

Bitte installieren Sie die Anschlüsse gemäß dem Aufdruck auf den Geräten – falls vorhanden

*Please install according to the sticker on the devices if shown.*

Hinweis: Elektrische Installationen sollten nur durch geschultes Fachpersonal vorgenommen werden!

*Note: Electrical installations should only be done by well-educated and skilled technicians!*

## Document History:

Initial: 2023	First release	MO
12-23	improvements	RR

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*...Setting Signals*