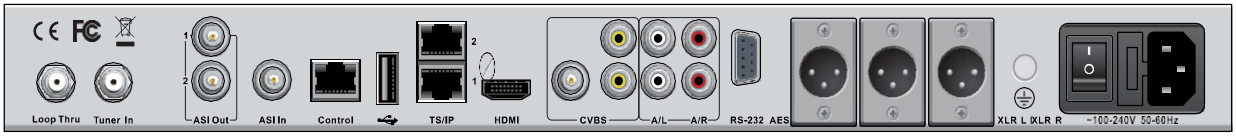
IRD-2000 series

Integrated Receiver Decoder (U)HD 4:2:0



FRONT



REAR



Rear- 2010C w/o ASI, TSoIP,DVB-C/T/T2 Tuner

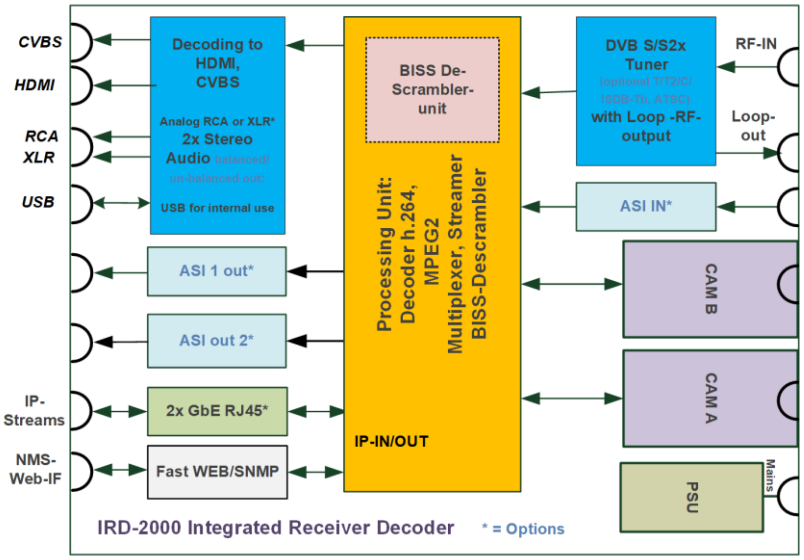
Inhalt/ToC

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Overview

The BLANKOM IRD-2000 series consist of 4 different cost effective professional integrated receiver decoders. It is widely used in the satellite, cable and terrestrial TV network with different tuner, as DVB-S2/S, DVB-C and DVB-T. It demodulates the RF signal to the transport stream with ASI and TSoIP output. With dual DVB common slots, IRD-2000works with most of the well-known CAS in the market and decrypts multiple services in a transport stream. The decoder can process a variety of digital video and audio formats in MPEG-4 AVC/H.264 and MPEG-2, AVS+ and H.265, in Standard Definition and in High Definition. The TV channel is decoded to digital and analog outputs, HDMI, YPbPr, CVBS, balanced and un-balanced audio. The powerful demodulation, decryption and decoding capabilities, combined with user friendly WEB GUI and SNMP based remote control makes this equipment one of the most competitive professional IRD in the market.

Block diagram:



Main Features – full equipped

(Depending on ordered options)

- Different input options available: DVB-S/S2/S2x or DVB-/C/T(2) or ATSC, ISDB-T; TS/IP and ASI
- Optional HW features can be selected when ordering
- Supports DVB-S2 Input Stream Identifier and DVB-T SFN MIP pass through
- SD/HD MPEG-2, MPEG-4 AVC/H.264, HEVC/H.265 video decoding
- Analogue and Digital Video Outputs, ASI, CVBS (Downscaling from HD), HDMI, TSoIP
- Built-in TS re-multiplexer receives from ASI, Tuner and TS/IP Inputs
- 2x DVB-CI Slots, support for all major CAS and CAM's, BISS-1 and BISS-E de- scrambling
- Dynamic PMT detection and automatic updating
- Supports VBI TELETEXT, EBU/DVB Subtitle, Closed Caption
- UDP/RTP, Unicast/Multicast, and double full duplex SPTS/MPTS over IP
- Remote Control and Supervision by SNMP, HTTP WEB and Trap
- One alarm Relay with D-sub 9 male connector
- On-Site software update through IP and USB
- RSSI, received Eb/No & BER monitoring
- Two digital Audio channels decoding of MPEG1 Layer II, AAC and AC3 Dolby Digital
- 2x (un-) balanced Audio out, 4x RCA and 2x XLR

Order Information:

Subject to technical changes: Might apply w/o any further notice

BLANKOM			IRD-2200			IRD-2012			IRD-2010			IRD-20xy		
Input	**Tuner**			**T/C/T2**		**S2X**	**T/C/T2**	**DTMB**	**S2X**	**T/C/T2**	**DTMB**	**S2X**	**T/C/T2**	**DTMB**
	DVB-S2X					●			●			●		
	DVB-T/C/T2			●			●			●			●	
	ASI In x1			●			●							
	CI			x2			x2			x2			x2	
Output	ASI Out x2			●			●							
	HDMI x1			●			●			●			●	
	CVBS	BNC + RCA		●			●			●			●	
	Audio	RCA(L&R) x1		●			●			●			●	
		XLR x1		●			●			●			●	
		AES*1		●			●							
IP	GbE	RJ45 x2		●						●				
USB	USB x1			●			●			●			●	
Control	RJ45 x1			●			●			●			●	

Available Frontends:

DVB-S/S2/S2X	
Input Frequency Range	950...2150MHz
Input Level	-65...-25dBm
Symbol Rate	1 ... 60MSps
Modulation Type	QPSK, 8PSK, 16APSK, 32APSK, 64APSK
LNB Polarity Selection Volt- age	0, 13V, 18V selectable
LNB Band Selection Tone	0/22KHz selectable, DiSEqC 1.0
PLS	0 ... 262141 -users configurable
ISI ID	1...255 -user configurable
DVB-C	
Input Frequency Range	42...1002MHz
Input Level	-60...-20dBm
Symbol Rate	1.8...7.2MS/s
Bandwidth	6/7/8MHz
Modulation Type	16QAM, 32QAM, 64QAM, 128QAM, 256QAM
DVB-T/T2	
Input Frequency Range	42...1002MHz
Input Level	-60...-20dBm
Modulation Type	QPSK, 16QAM, 64QAM
Bandwidth	6/7/8MHz
FFT Mode	2K, 8K
Guarding Interval	1/4, 1/8, 1/16, 1/32
Input Return Loss	7dB (typ.)

DTMB	
Input Frequency Range	44...1002MHz
Input Level	-60...-20dBm
Bandwidth	6/7/8MHz
Modulation Type	4QAM-NR, 4QAM, 16QAM, 32QAM, 64QAM

ISDB-T	
Input Frequency Range	42...1002MHz
Input Level	-60...-20dBm
Standard	ARIB STD-B31 v2.2
Bandwidth	6/7/8MHz
Modulation Type	QPSK, 16QAM, 64QAM
FFT Mode	2K, 4K, 8K

Specifications:

Tuner Input	
DVB-S/S2 Tuner Input (ISI Factory **Optional**)	
Connector Type	2× F type female 75Ω for Input and loop
Input Frequency Range	950 ... 2150MHz
Input Level	-25 ... -65dBm
Symbol Rate	1 ... 45Msps
Roll-off Factor	DVB-S: 0.35
	DVB-S2: 0.35, 0.25, 0.2
FEC Code Rate	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9,9/10
	DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection Voltage	0, 13V, 18V selectable
LNB Band Selection Tone	0/22KHz selectable
Satellite Selection Command	DiSEqC 1.0
ISI ID	1 ... 255 users configurable
DVB-S/S2/S2x Tuner Input (Standard)	
Connector Type	2×F type female 75Ω for Input, 1×F type female 75Ω for loop through output
Input Frequency Range	950 ... 2150MHz
Input Level	-25 ... -65dBm
Symbol Rate	QPSK/8PSK/16APSK: 2 ... 45Msps
	32APSK: 2 ... 37Msps
Roll-off Factor	DVB-S: 0.35
	DVB-S2: 0.35, 0.25, 0.2
FEC Code Rate	DVB-S: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-S2: 1/2, 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection	0, 13V, 18V selectable
LNB Band Selection Tone	0/22KHz selectable
Satellite Selection Command	DiSEqC 1.0
DVB-C Tuner Input (Multituner C/T/T2)	
Connector Type	2×F type female 75Ω for Input (single Tuner with Loop out)
Input Frequency Range	51 ... 1002MHz
Input Level	45 ... 75dBµV
Symbol Rate	1 ... 7MBaud (DVB-C ITU J.83 Annex A)
Constellation	16QAM, 32QAM, 64QAM, 128QAM, 256QAM
Bandwidth	6MHz, 7MHz, 8MHz
Input Return Loss	7dB (typ.)
DVB-T/T2 Tuner Input (special T2 Tuner w/o C-support)	
Connector Type	2×F type female 75Ω for Input (single Tuner with Loop out)
Input Frequency	104 ... 1002MHz (VHF/UHF)
Input Level	-20 ... -70dBm
Constellation	DVB-T: QPSK, 16QAM, 64QAM
	DVB-T2: QPSK, 16QAM, 64QAM, 256QAM

Bandwidth	6MHz, 7MHz, 8MHz
FFT Mode	DVB-T: 2K, 8K
	DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K
Guarding Interval	DVB-T: 1/4, 1/8, 1/16, 1/32
	DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128
FEC Code Rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8
	DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Input Return Loss	7dB (typ.)
ASI Input	
Connector Type	1×BNC female, 75Ω
Standard	DVB-ASI, EN50083-9
Input Bit Rate	≤ 200Mb/s
TS over IP	
Connector Type	2×RJ-45 independent, 100/1000 Base-T for TS/IP
Effective Bit Rate	350Mb/s, Full duplex, 32 output streams, 2 input streams
Protocols	UDP / RTP, Multicast / Unicast, IGMPv3, ARP
FEC	SMPTE 2022 (former ProMPEG) 1 Dimensional and 2 Dimensional, auto-adaptive settings for the inputting TS (Note: under full duplex mode only, max effective bit rate 150Mb/s for both input & output)
TS Processing	
TS Input Management	De-mux and Re-mux among Tuner, ASI and TS/IP Inputs
TS Output Management	De-mux and Re-mux for 2 independent ASI outputs
Service and PID Management	2 independent Re-mux (120Mx2), filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation, EIT P/F edition
Descrambler	DVB Common Scrambling Algorithm (CSA)
BISS Mode	BISS-1, BISS-E
Common Interface	Double PCMCIA slots, compatible with major CA CAMs in the market
ASI Output	
Connector Type	2 x BNC female, 75Ω, parallel
Standard	DVB-ASI, EN50083-9
Output Bit Rate	≤ 200Mb/s
HDMI Output	
Standard	1× HDMI 1.4 interface
Video Resolution and Frame Rate	1080p60, 1080i60, 1080i50 …25, 720p60, 720p50, 480p, 576p,576i25, 480i29.97
Audio Embedded	one digital audio pass through
Video Decode	
Video Profile/Level	MPEG-2(MP@ ML for SD, MP@HL for HD)
	MPEG-4/H.264 AVC Part 10 (MP@L3 for SD, HP@L4.1 for HD), HEVC (main and main 10 profile, main/ high tier up to level 4.1)
Audio Decode	
Audio Format	MPEG-1 Layer 2
	a. 2 stereo pairs (Stereo, Dual Mono, Left, Right)
	MPEG-2 AAC
	a. 5.1 down-mix to 2.0 (Stereo, Dual Mono, Left, Right)
	b. 2.0 (Stereo, Dual Mono)
	MPEG-4 HE-AAC v1/v2
	a. 5.1 down-mix to 2.0 (Stereo, Dual Mono, Left, Right)
	b. 2.0 (Stereo, Dual Mono, Left, Right)
Analog video Output	
CVBS Connector	1×BNC 1xRCA female 75Ω
CVBS Standard	NTSC, PAL, and SECAM, downscaling from HD supported
CVBS Resolution	576i×25, 480i×29.97
Nominal Output Level	1.0 Vp-p±5% (with standard test pattern)
Frequency Response	<±1 dB, at 5.5 MHz for PAL/SECAM, 4.2MHz for NTSC
Chroma-Luma Delay	<±30 ns
Field Time Distortion	<2%
Line Time Distortion	<1%
Short Time Distortion	<2%
Differential Gain	<3%
Differential Phase	<2°
Signal to Noise Ratio	>55dB (luminance weighted)
Analog Audio Output	

Connector Type	2×2 RCA female, 2x XLR
Output Impedance	75Ω
Output Mode	Left, Right, Dual Mono, Stereo
Number of Output	2 pairs of stereo audio outputs (2 Audio PIDs or 4 channels are decoded)
Cross Talk among Channels	>70dB
THD	<0.3% @ 400Hz, 1KHz test tone
Frequency Response	±0.5dB over 20Hz ... 18KHz
Output Level	0dBm in 600Ω (0dBu), adjustable range ±10dB
Control & Monitoring	
Connector Type	1×RJ-45, 10/100 Base-T, for equipment IP Control & Monitoring
Remote Control	SNMP 2.0, HTTP (Web GUI)
Local Control	Front control by 6-button keypad, LCD
Serial Port	1×RS-232 D-sub female, for debug use only
Equipment Upgrade	FTP loader or USB
Physical	
Dimension	1U 19" Full-rack size, 483mm (Length)x 255mm (Width) x 44mm (Height)
Weight	2.4Kg net, 4.4kg gross
Power Supply	AC 90V ... 250V, 50/60Hz
Power Consumption	24W (exclusive of LNB power)
Operating temperature	0 ... 45℃
Storage temperature	-10 ... 60℃
Operating Humidity	10 ... 90%, non-condensed

Notes:

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Not to be copied, used or translated in part or whole without IRENIS GmbH - BLANKOM prior consent in writing except approval of ownership of copyright and copyright law.

WARRANTY

This warranty does not cover parts which may become defective due to misuse of the information contained in this manual.

Read this manual carefully and make sure you understand the instructions provided. For your safety, be aware of the following precautions.

WARNING! IMPORTANT SAFETY INSTRUCTIONS

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING



- To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
- To avoid explosion danger, do not dispose of batteries in an open fire.

CE MARK FOR EUROPEAN HARMONISED STANDARDS

The CE mark which is attached to these products means it conforms to EMC Directive (89/336/EEC) and Low Voltage Directive (73/23/EEC).



IMPORTANT INFORMATION

Please retain the original packaging, should it be necessary at some stage to return the unit.

Disposal of Old Electrical and Electronic Equipment (Applicable in the European Union and other European countries with separate collection systems)

This symbol on the product or on its packaging indicates that this product shall not be treated as household waste. Instead, it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local Civic Office, your household waste disposal service, or the shop where you purchased the product.

IP RIGHTS

Television programs, movies, video tapes, discs, and other materials may be copyrighted. Unauthorized recording of copyrighted material may be against the copyright laws in your region. Also, use of this product with cable television transmissions may require authorization from the cable television operator or transmitter/owner.

VENTILATION

- Do not expose the product to high temperatures, such as placing it on top of other product that produce heat or in places exposed to direct sunlight or spot lights.
- The ventilation slots on top of the product must be left uncovered to allow proper airflow into the unit.
- Do not stand the product on soft furnishings or carpets.
- Do not stack electronic equipment on top of the product.
- Do not place the product in a location subject to extreme changes in temperature. The temperature gradient should be less than 10 degrees C/hour.
- Place the product in a location with adequate ventilation to prevent the build-up of heat inside the product. The minimum ventilation space around the unit should be 7 cm. The ventilation should not be impeded by covering the ventilation openings with items, such as newspapers, table cloth, curtains, etc.

POWER SOURCES

- The product is not disconnected from the AC power source (mains) as long as it is connected to the power outlet or wall socket, even if the product is turned off.
- If the product will not be used for a long period of time, disconnect it from the AC power outlet or wall socket.

Before Using the Device

Thank you for purchasing the IRD-2000 Professional Quad HDTV IRD. This User Manual is written for operators/users of the IRD-2000 to assist in installation and operation. Please read this user manual carefully before installation and use of the device.

FOR YOUR SAFETY

This equipment is provided with a protective earthing ground incorporated in the power cord. The main plug shall only be inserted in a socket outlet provided with a protective earth contact. Any interruption of the protective conductor, inside or outside the device, is likely to make the device dangerous. Do not remove the covers of this equipment. Hazardous voltages are present within this equipment and may be exposed if the covers are removed. Only IRENIS GmbH - BLANKOM trained and approved service engineers are permitted to service this equipment.

The supplied AC power cable must be used to power the device. If the power cord becomes damaged it must be replaced. No operator serviceable parts inside. Refer servicing to IRENIS GmbH - BLANKOM trained and approved service engineers. For the correct and safe use of the device, it is essential that both operating and servicing personnel follow generally accepted safety procedures in addition to the safety precautions specified in this manual. Whenever it is likely that safety protection is impaired, the device must be made in-operative and secured against unintended operation. The appropriate servicing authority must be informed. For example, safety is likely to be impaired if the device fails to perform the intended measurements or shows visible damage.

WARNINGS

- The mounting environment should be relatively dust free, free of excessive vibration and the ambient temperature between 0C° to 40C°. Relative humidity of 20% to 80% (non-condensed) is recommended.
- Avoid direct contact with water.
- Never place the equipment in direct sunlight.
- The outside of the equipment may be cleaned using a lightly dampened cloth. Do not use any cleaning liquids containing alcohol, methylated spirit or ammonia etc.
- For continued protection against fire hazard, replace line fused only with same type.
- Air intake for cooling is achieved via holes at the side of the device and the fans inside. The air flow should not be obstructed. Therefore, the device has to be placed on a flat surface, leaving some space at the sides of the device.

When in operation, the internal temperature should not exceed the limit of 70C°.

Front-LCD:



Initial IP address is shown @ the Front Display

Some Info's, Menus' parts and settings can be done at the front by using the buttons:

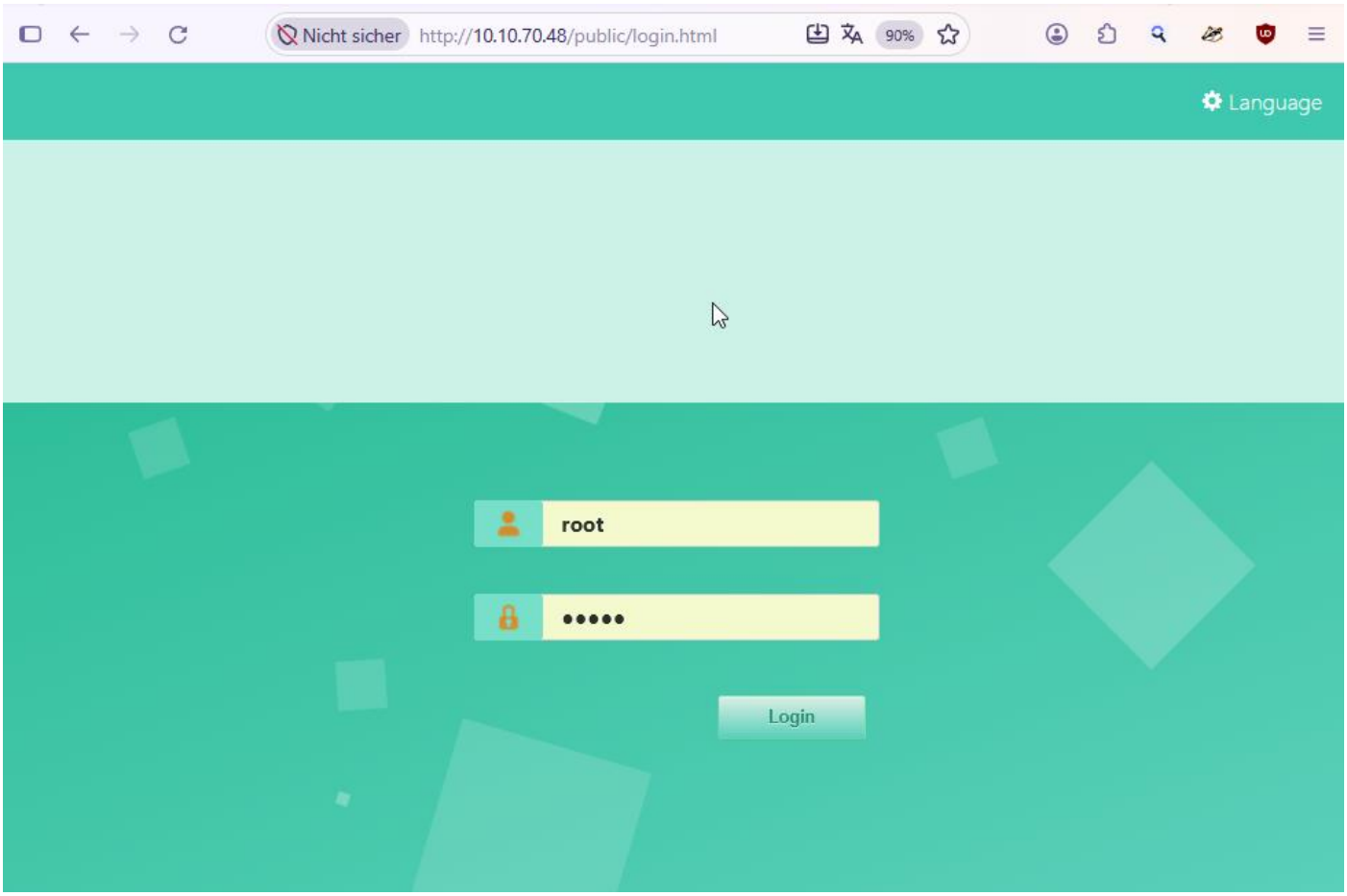


Please first connect all cables as well as the IEC- power connector, assure proper grounding before you finally power it ON by the power switch on the rear. Rem: The 19'' mounting angles are in the accessory box…

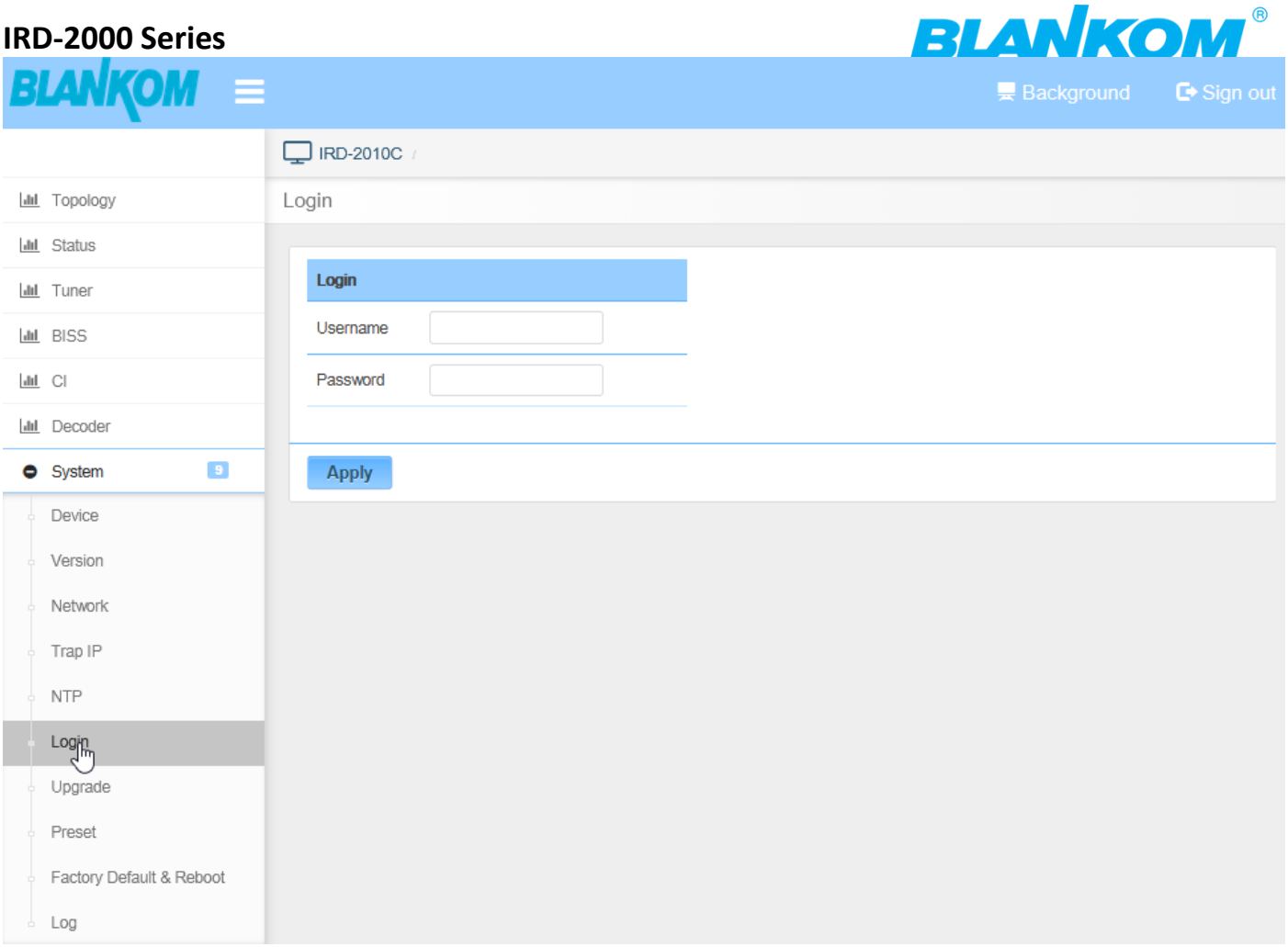
Connect to the Web-GUI:

Enter in your browser http://10.10.70.48 preferably via an autosensing FastEthernet or GbitEthernet switch.

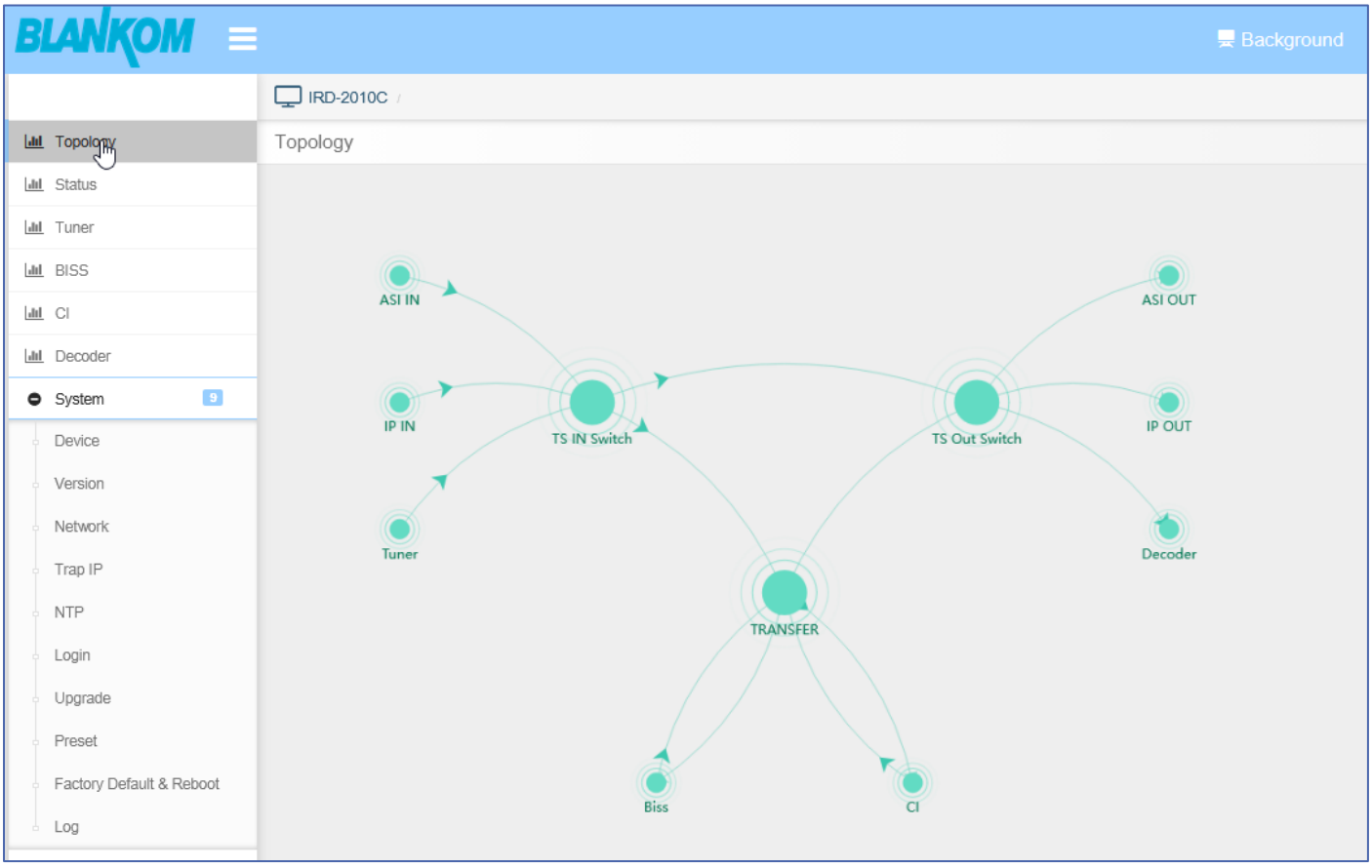
Asure your PC/Laptop browser using device has an IP address in the range of 10.10.70.XYZ (not the .48 please -> conflicts). Default **username is root**, **password is 12345** – which should be changed after your 1st login – and write these data down somewhere to be able to login for other technicians or your successor.



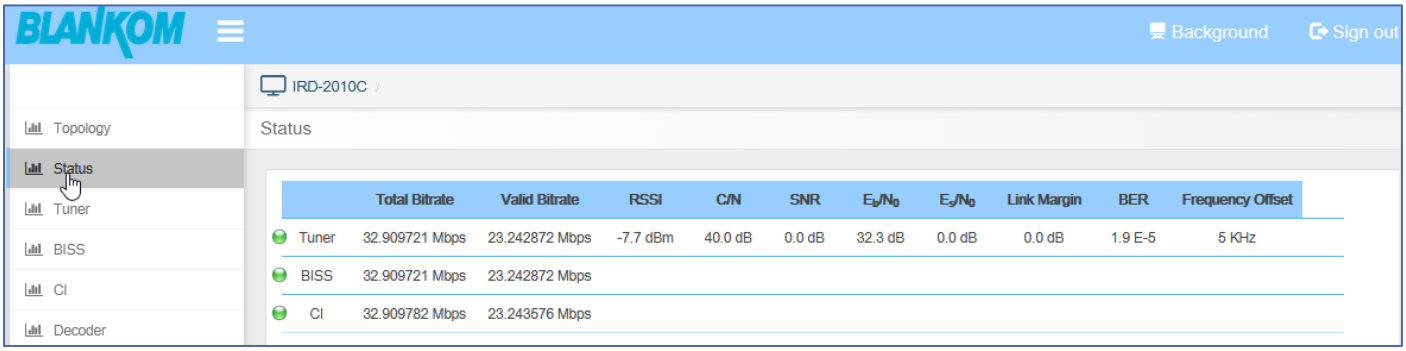
You can change the user/password here:



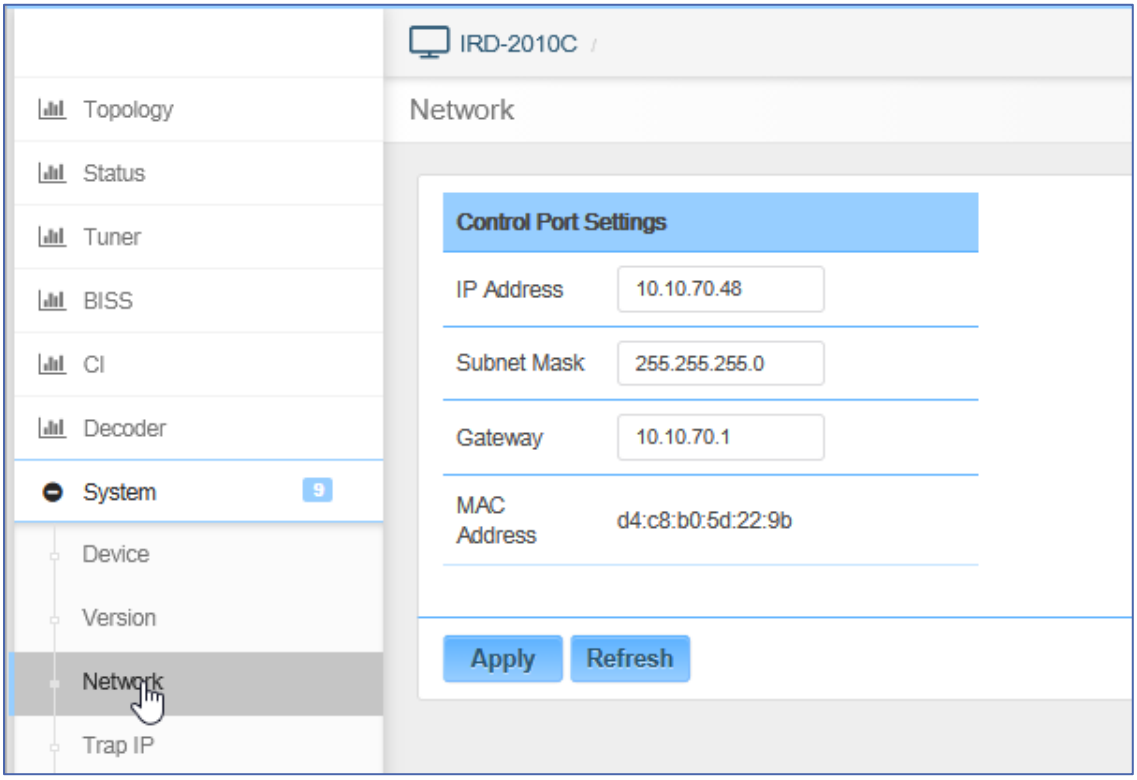
Start-Screen: Just an animated graphic in the Topology Window



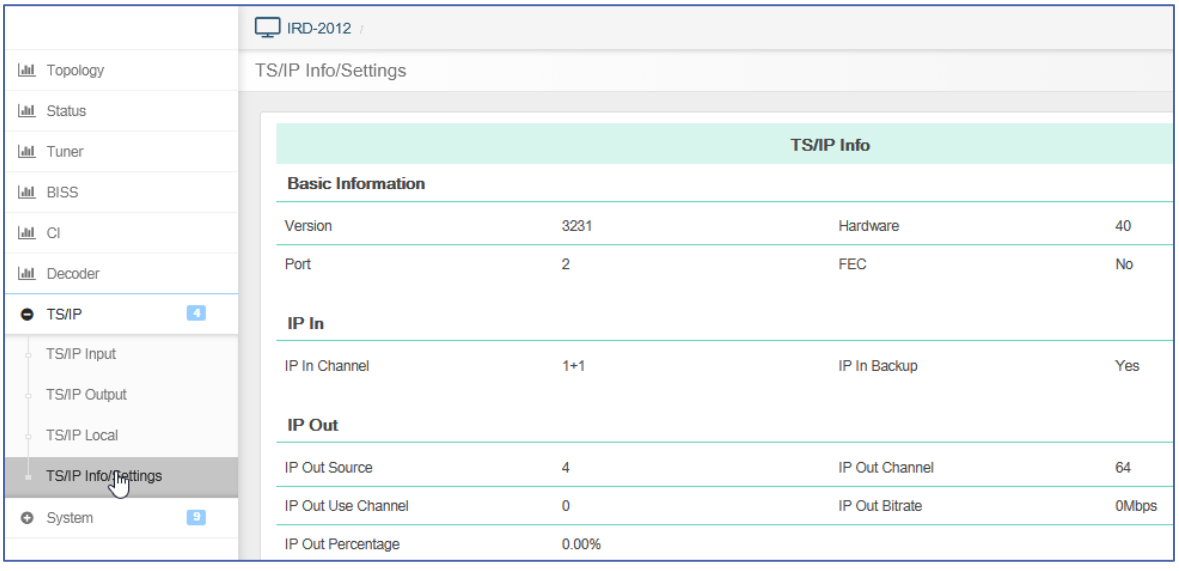
To get the status information open it:

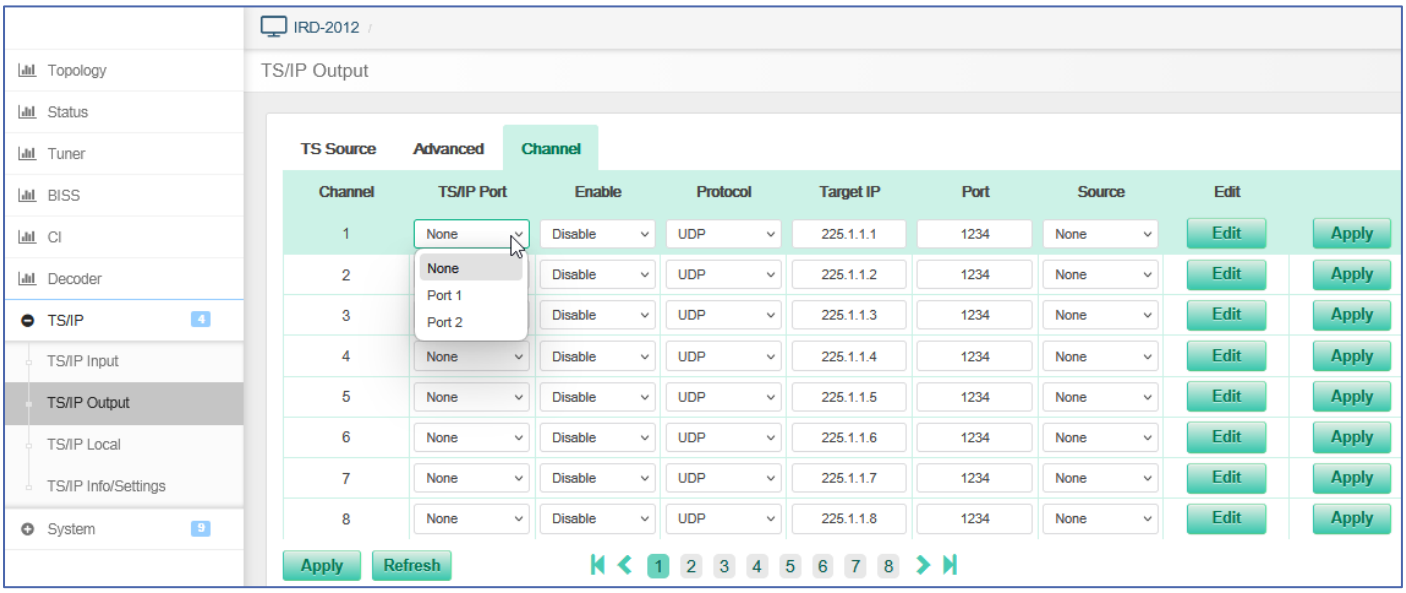


You should start with the SYSTEM settings to change it to your needs like modify your Ethernet settings:

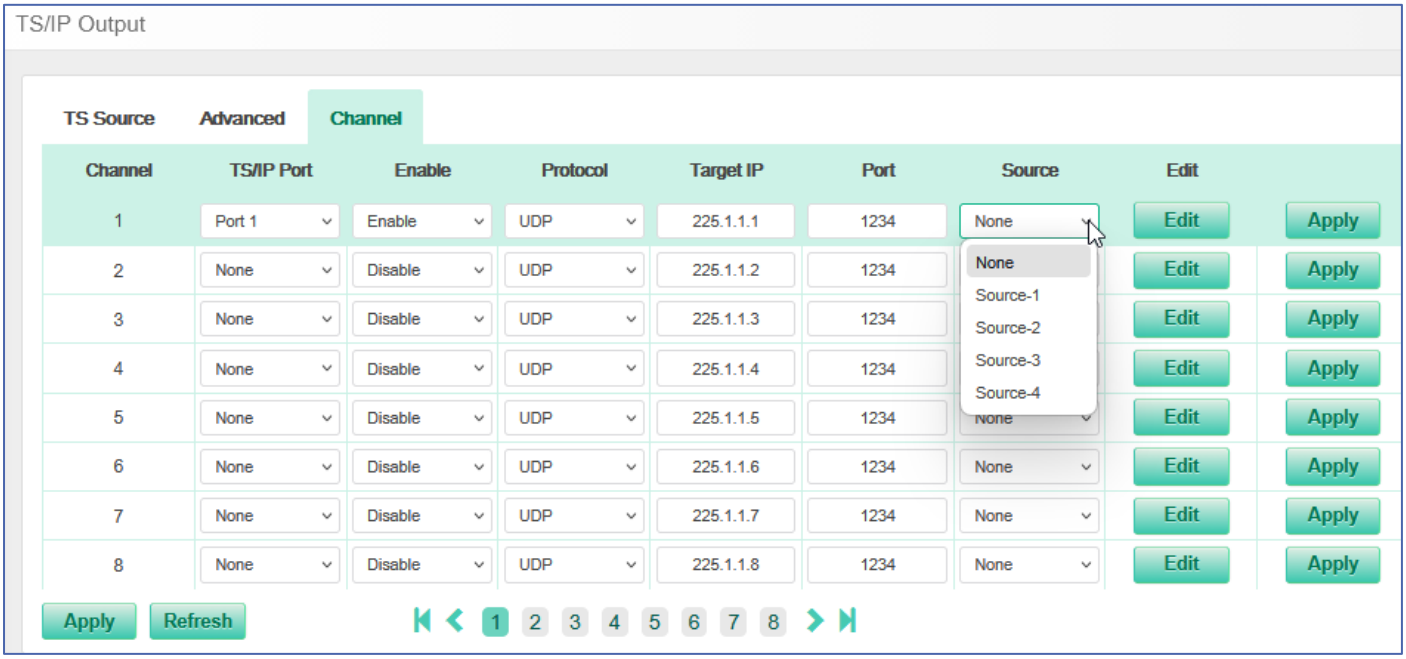


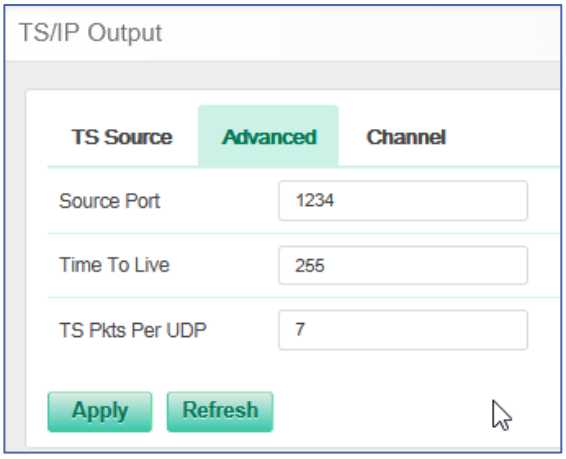
Here only the Management port is equipped in this model… The TSoIP port e.g. in IRD-2012:



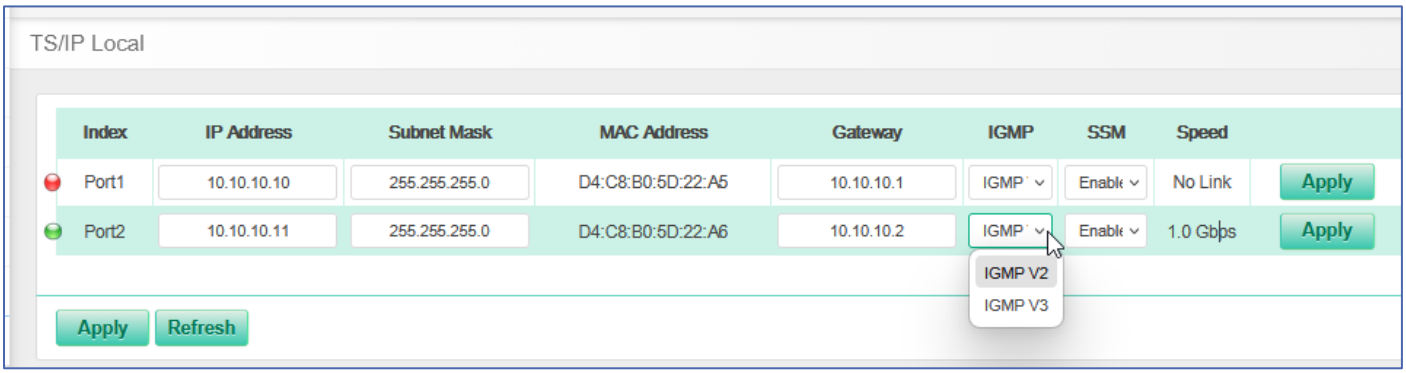


TSoIP output selection… up to 64 output streams can be used… for RTP or UDP multicasts:



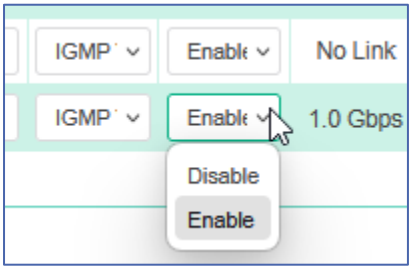


Port 1 and 2 can be configured:

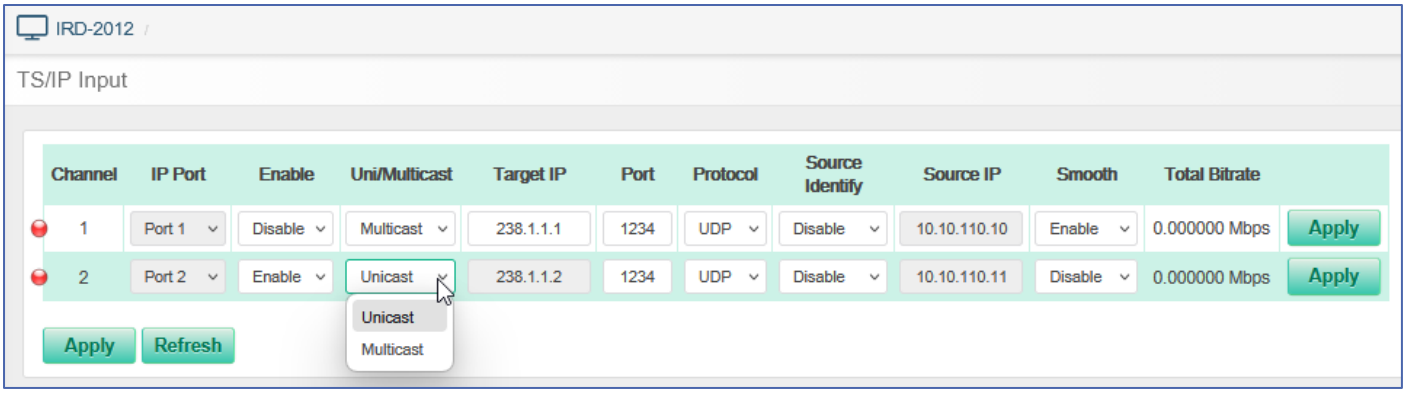


Note: The streaming Ip addresses should not be in the same range than the Management port.

Source Specific Multicast can be used if needed:

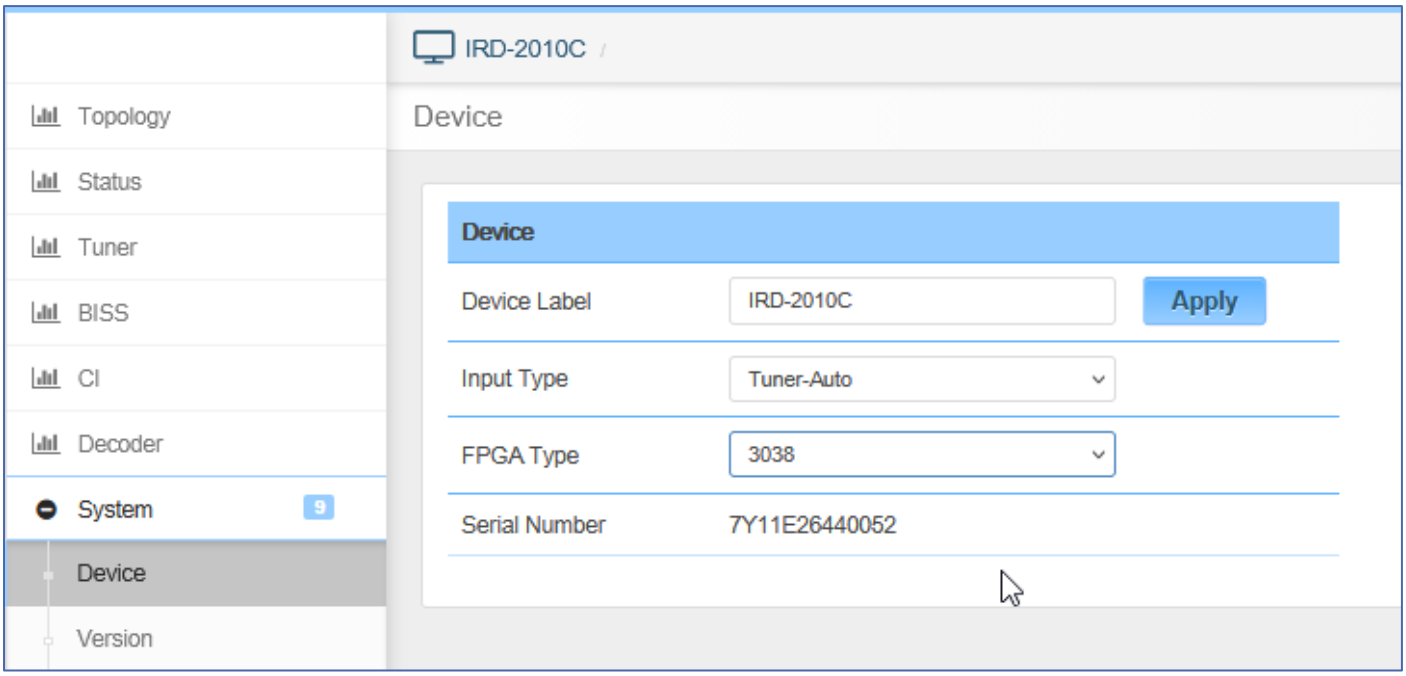


IP Input can be set:



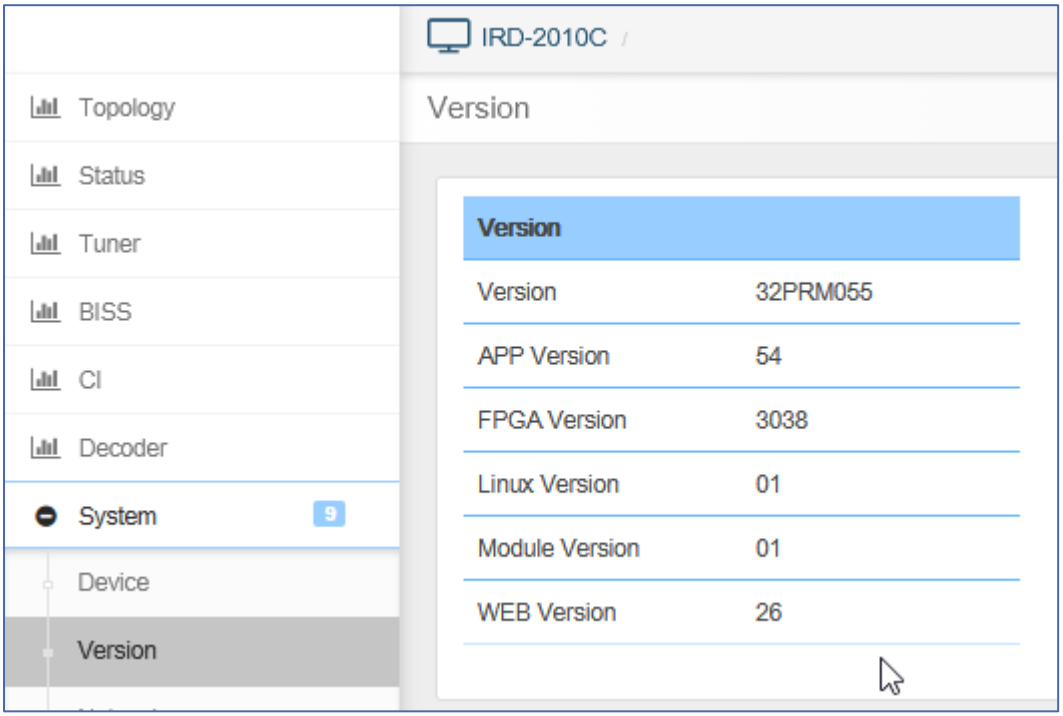
Most Menu-entries are self-explaining…

Device information:

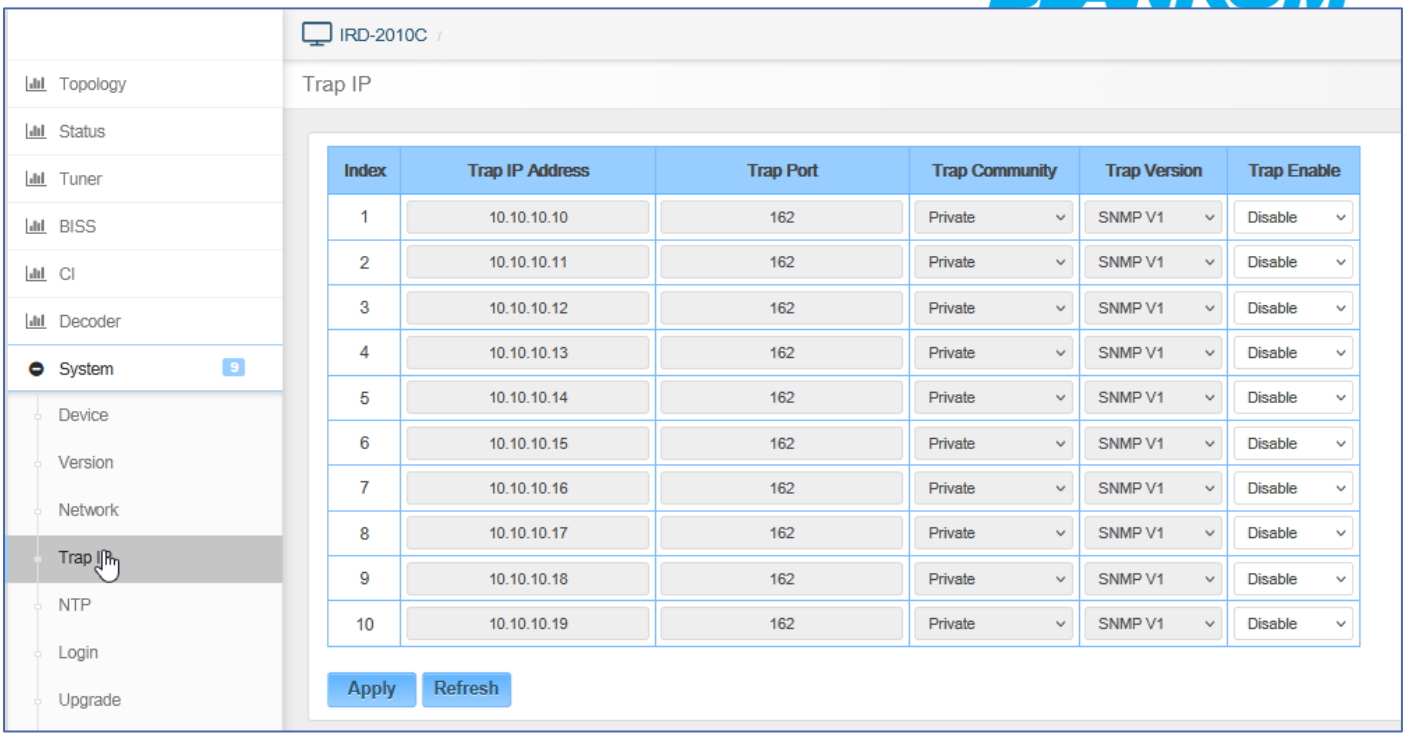


Please note: The 2nd FPGA entry is for debugging by our support engineers only. Please do not switch it in operation.

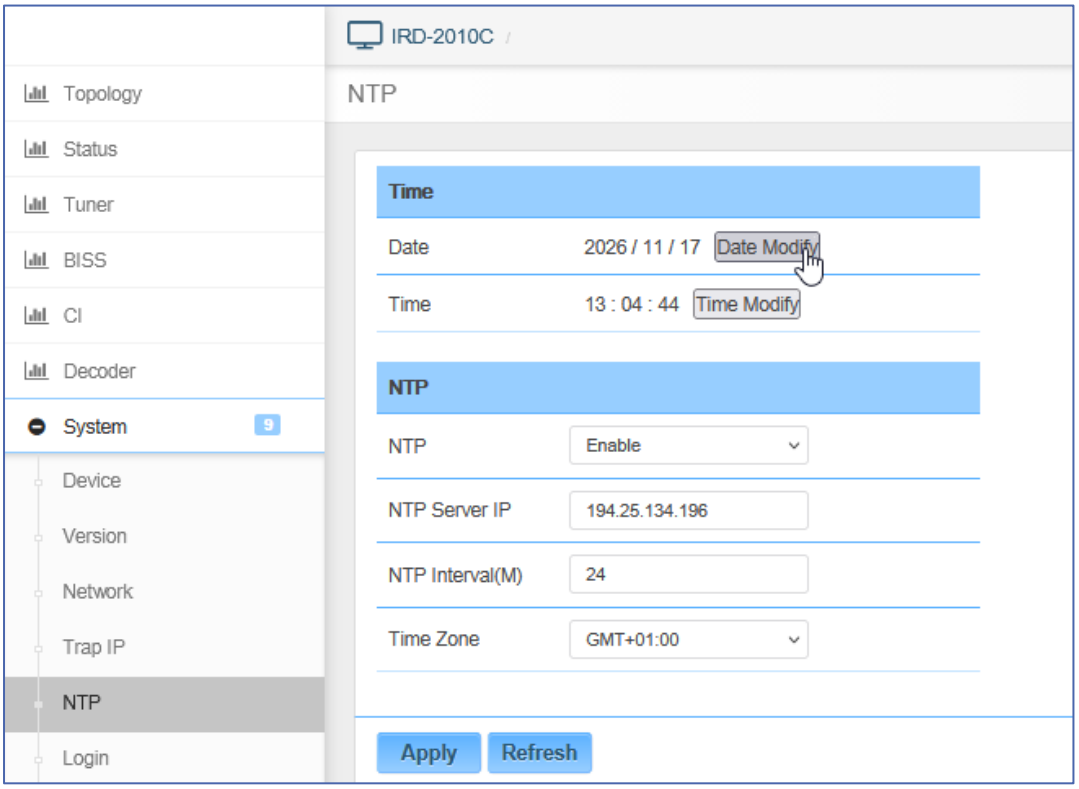
In case of support, please always send us this information:



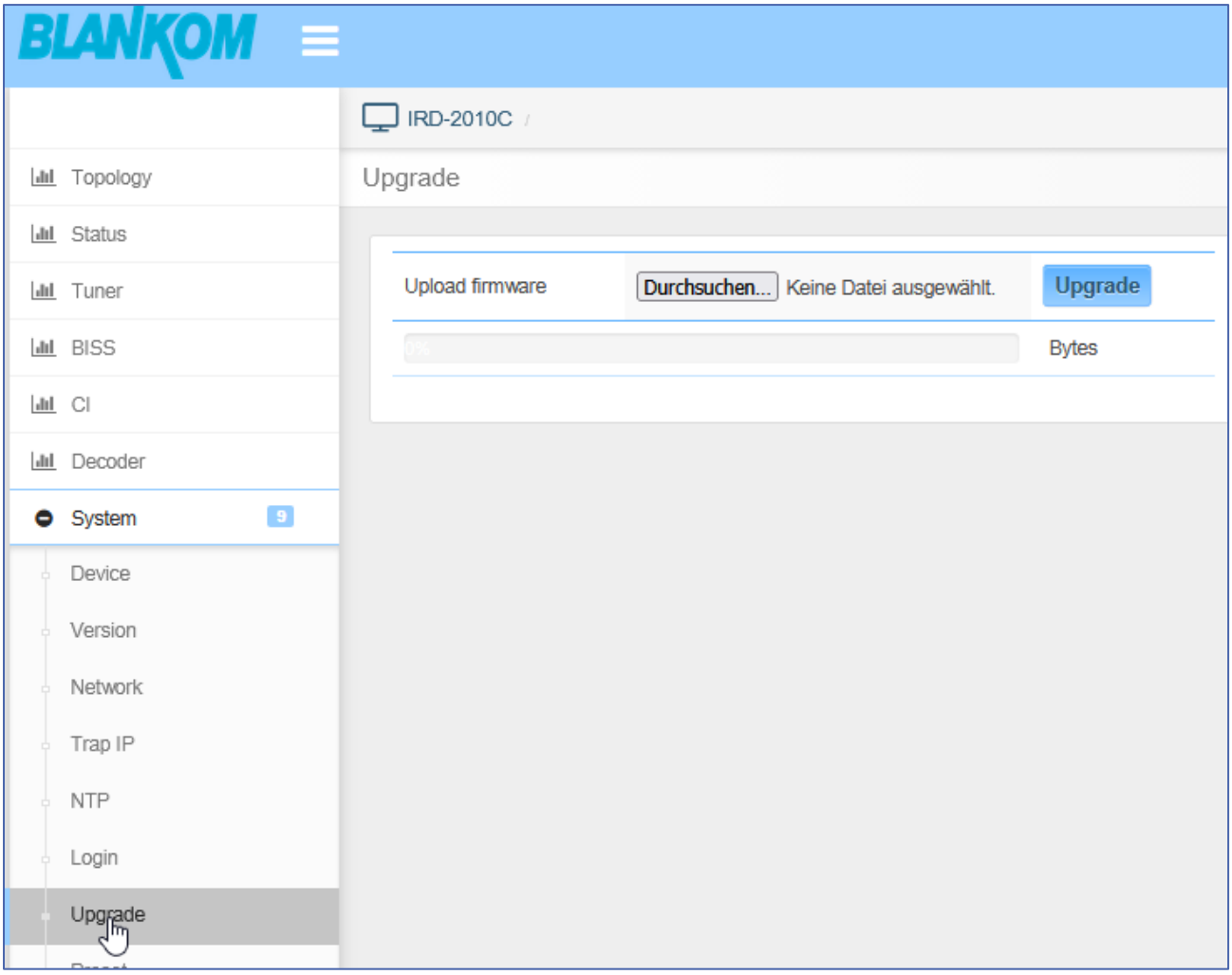
In case of using SNMP, please set this accordingly:



Time and Date settings:

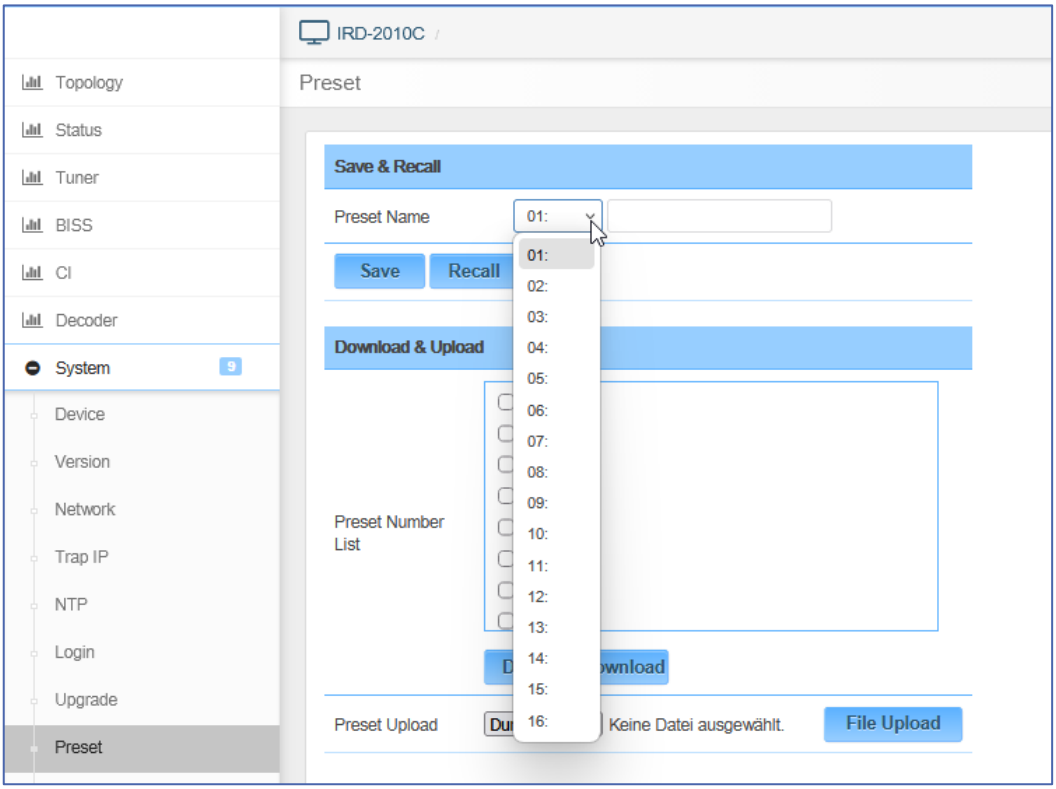


Upgrade-Menu:

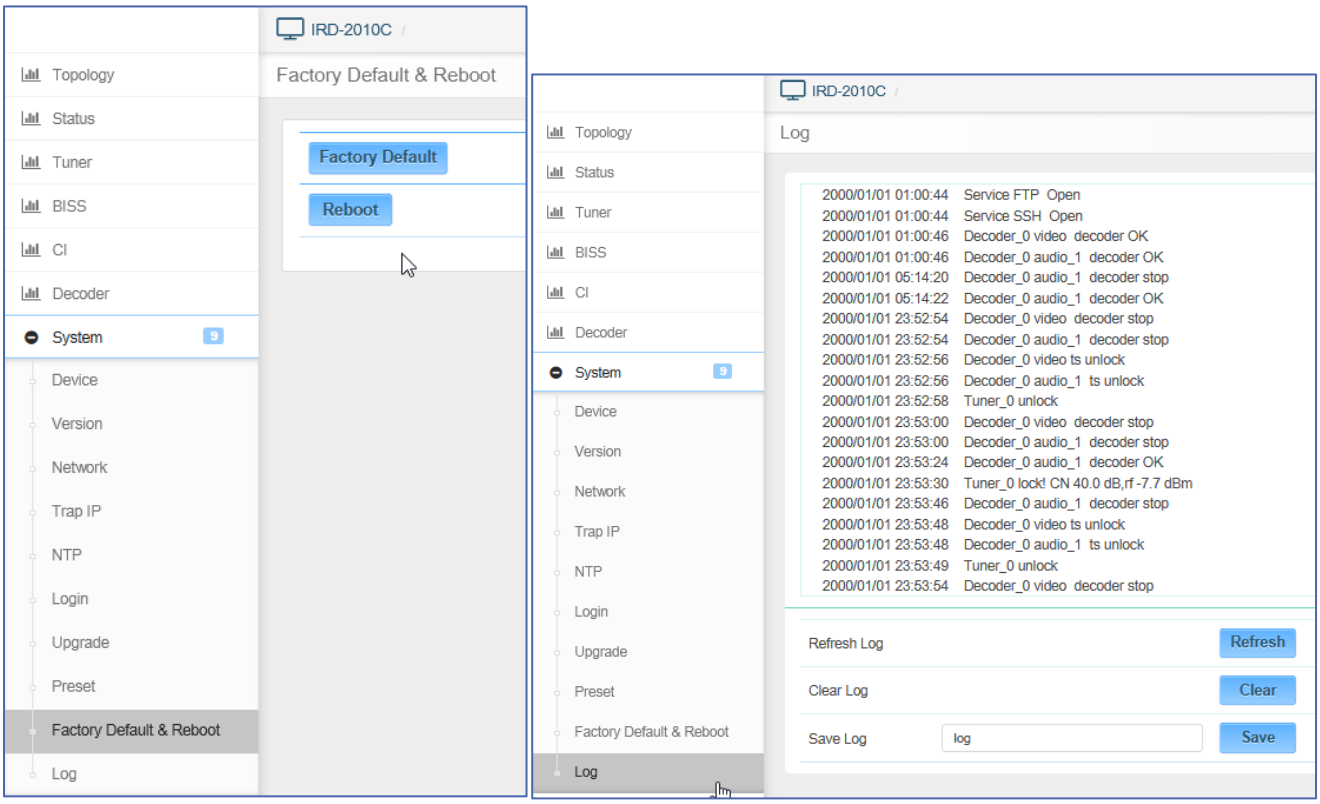


Self-explaining….

Presets can be stored:



Factory mode and reboot settings: and LOG-file viewing/saving:

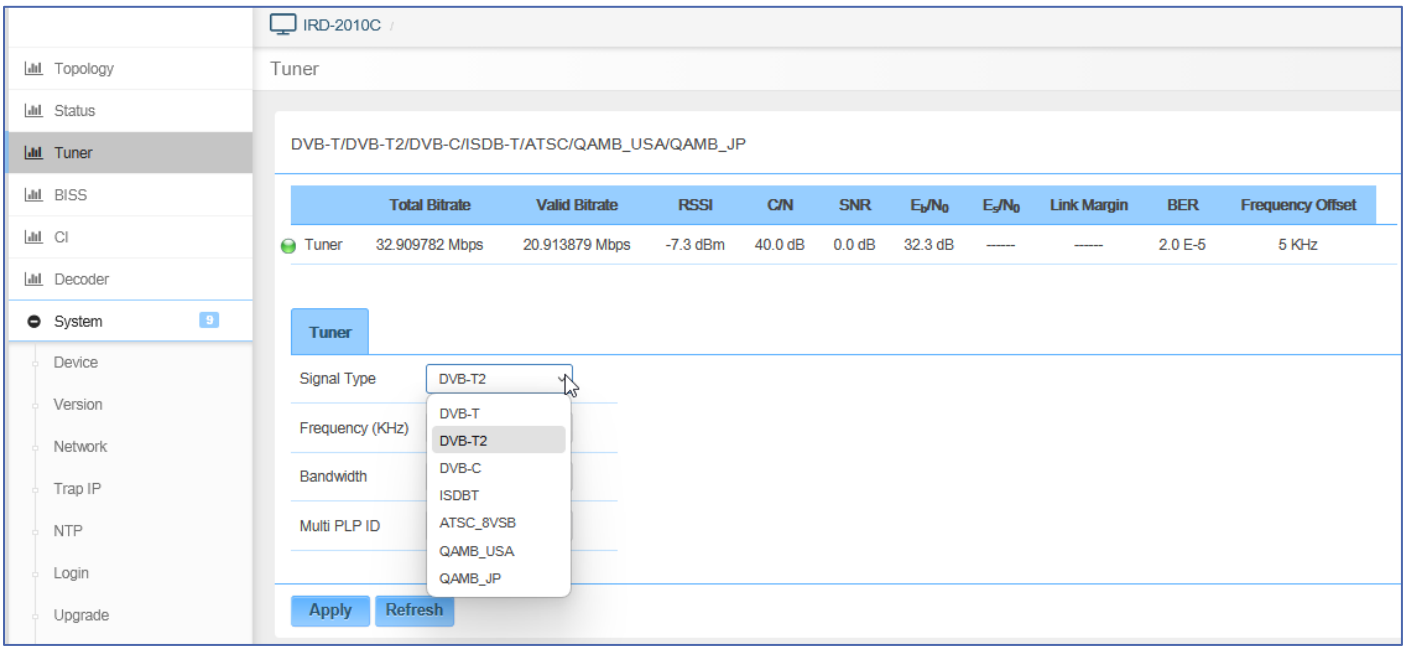


Now we are coming to the interesting part…

First a TV-Service should be received (or even only Radio …)

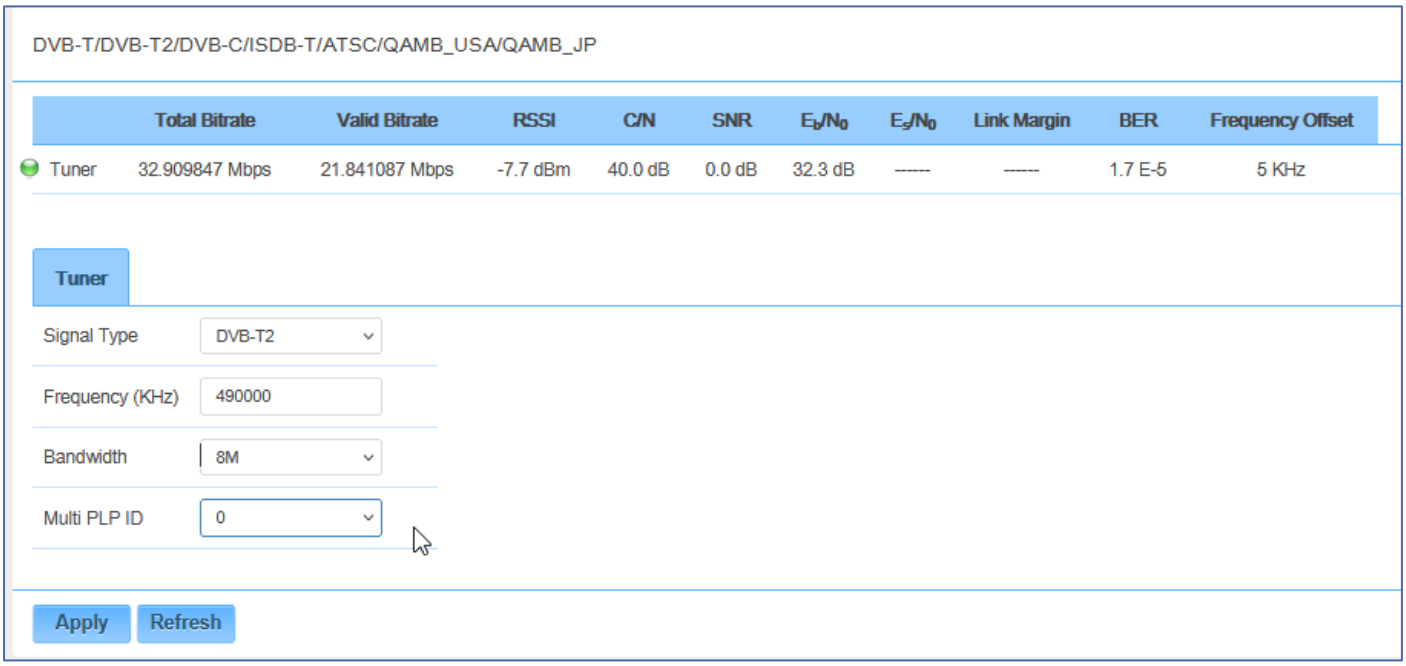
Tuning:

Multituner unit: Select the Tuner Mode, enter frequency and other needed values:



Above example tunes to a T2 Modulator with 1 UHD service inside.

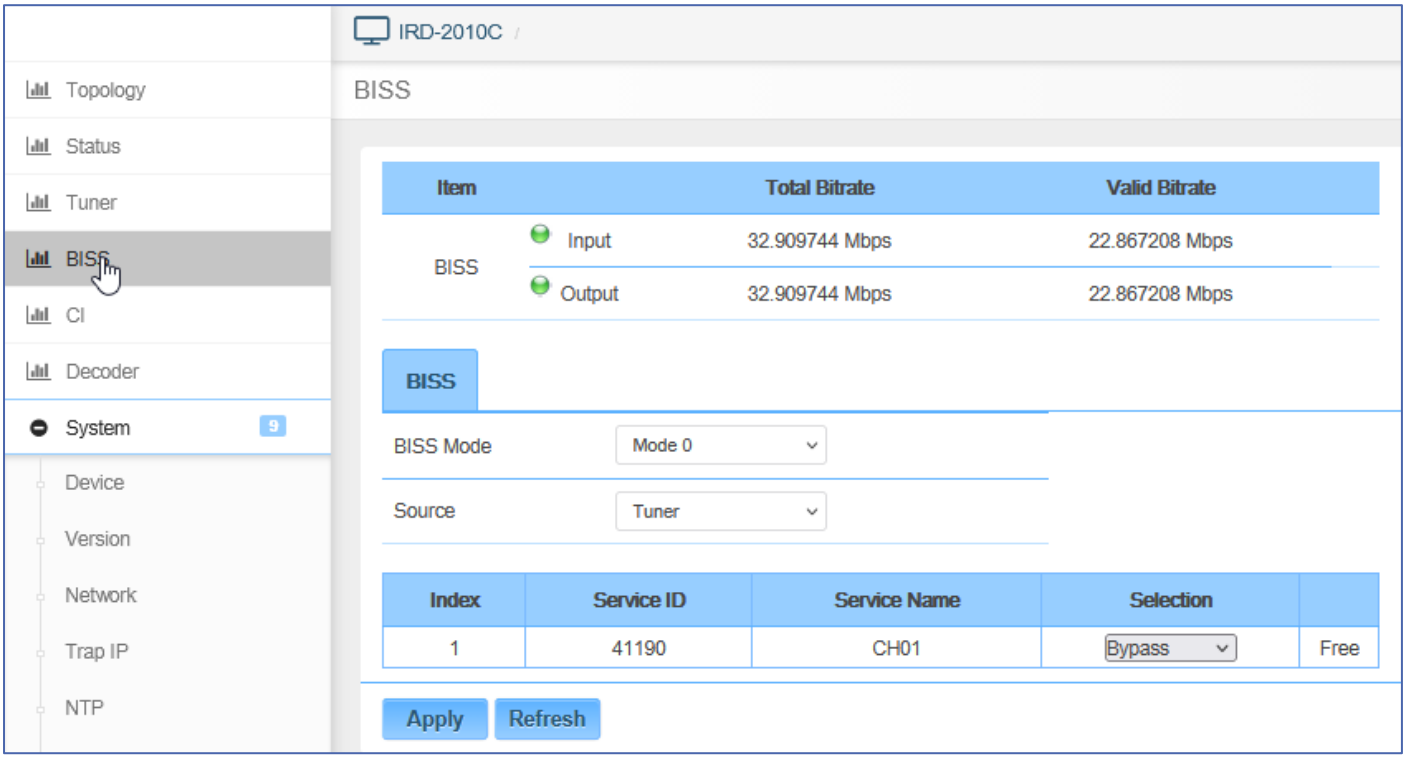
Please Note: DVB-C Annex C is the worldwide 'normal' DTV standard over Cable networks. QAMB_USA means: ITU J83 Annex B (also named DVB-C Annex B) or the Japanese one QAMB_JP version.



After the tuner locks, you'll see the green LED and the values of the reception. Bandwidth should be set accordingly: 6,7 or 8 MHz. MultiPLP is a T2 value for Multiple physical layer pipes if the T2 Service supports that… otherwise like above: Its just '0'.

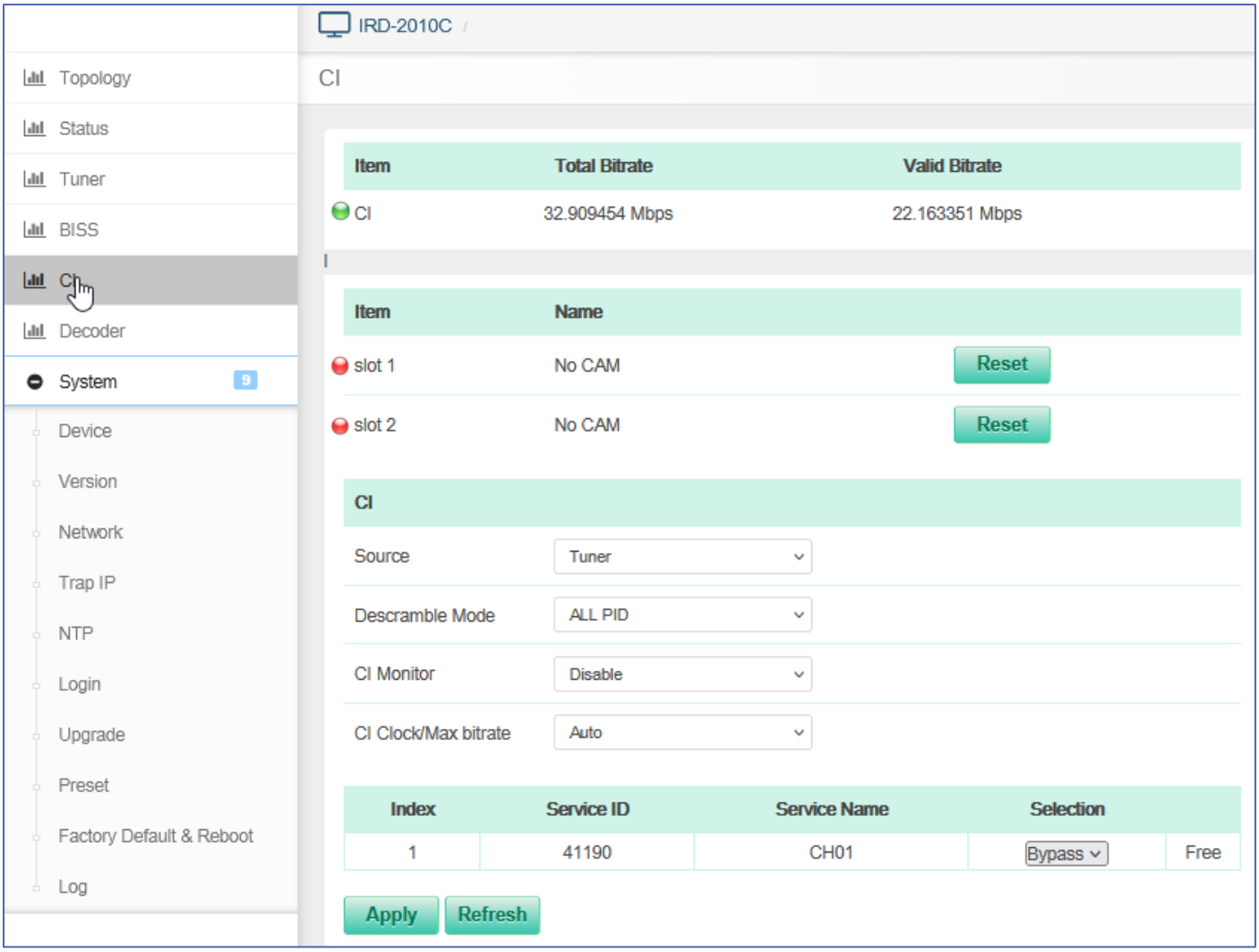
BTW: The settings will be automatically saved and come back after power lost …

If you need to decrypt the TV Service by BISS (mostly used in SAT-Transmissions by broadcasters OBVans):

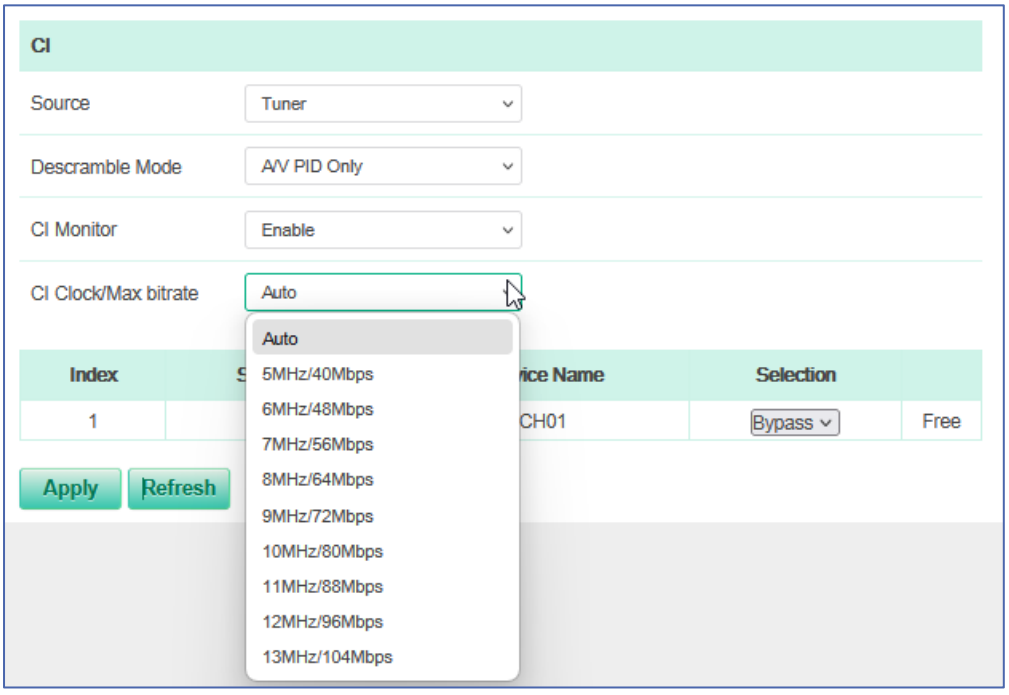


Enter the BISS key if you know it 😉 …

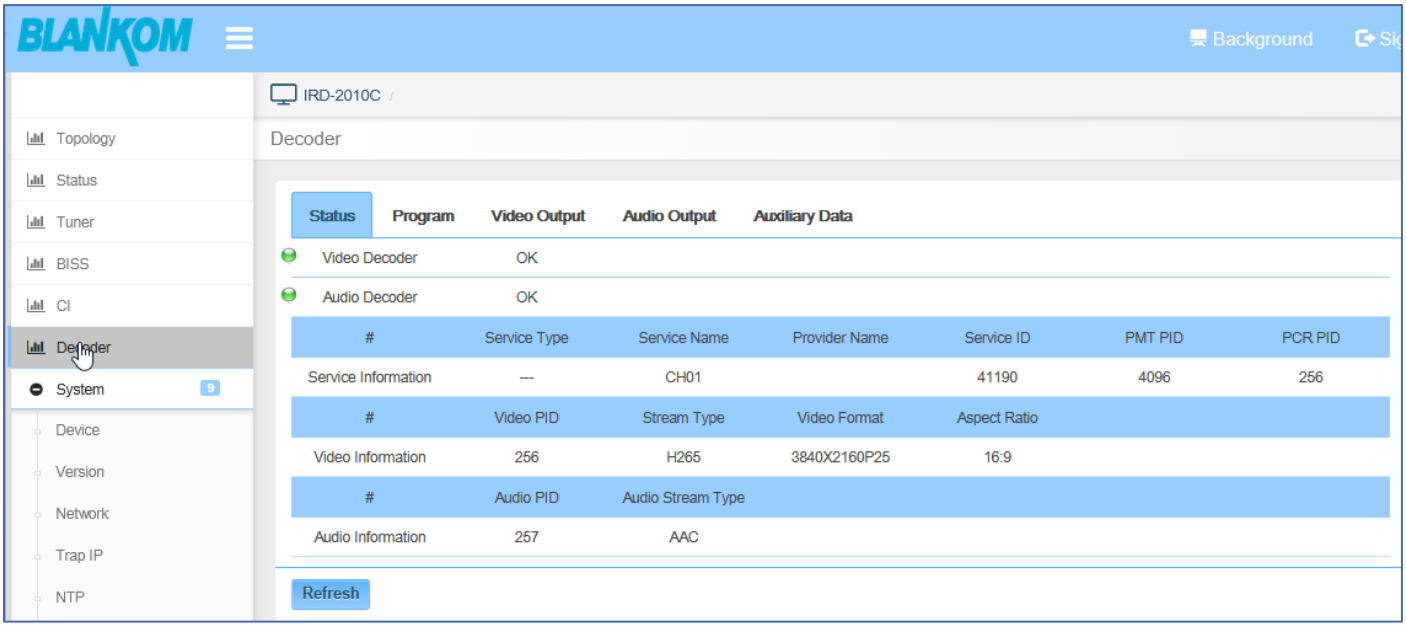
Using the CI-Modules:



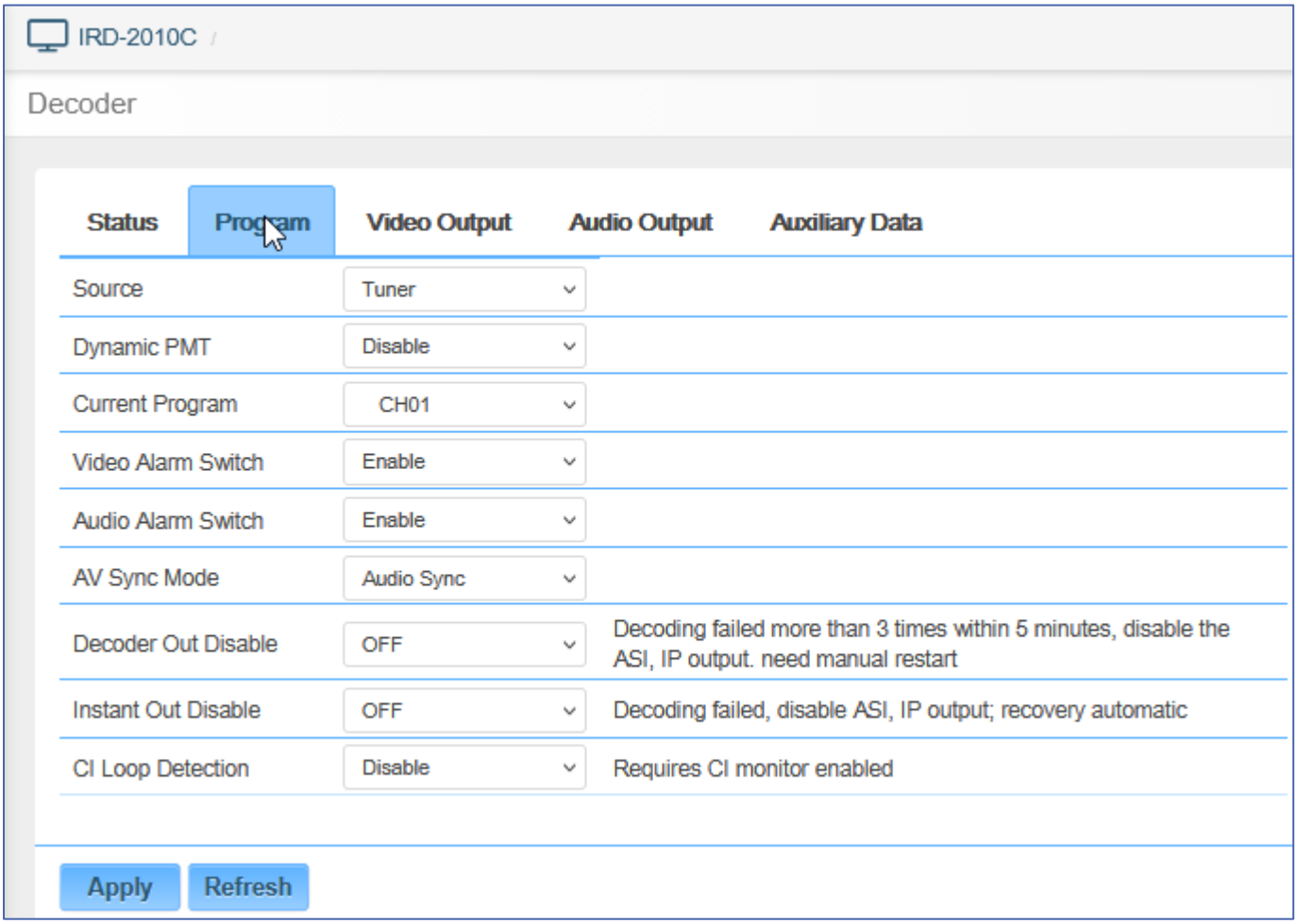
You can decrypt the receiving TV services by 2 professional CI CAMs with a valid Smartcard inserted and select the particular ones or all… CAMs have different clock frequencies/datarates and other values to be considered:



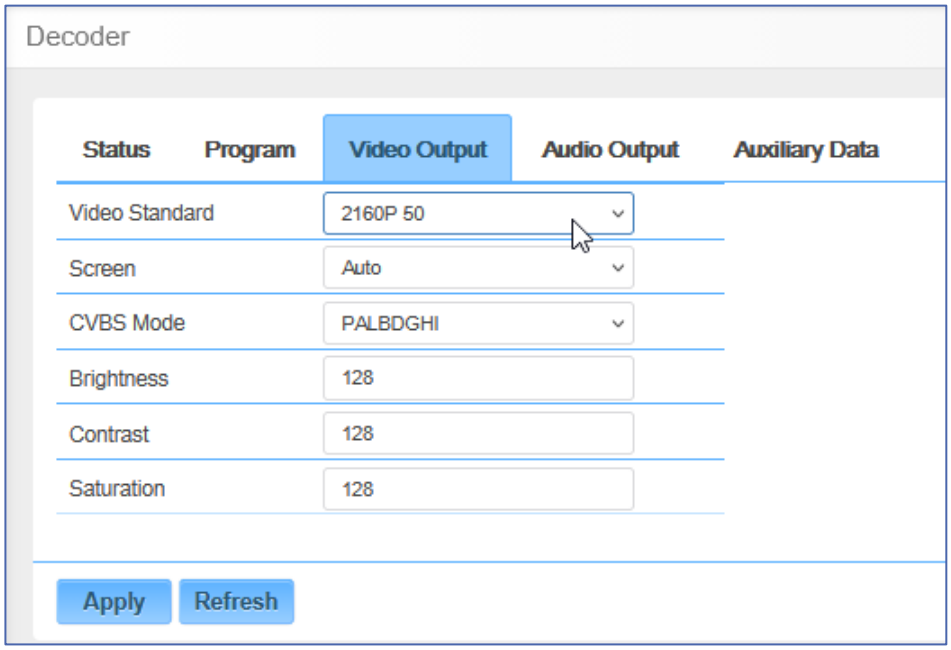
Assign the Decoding:

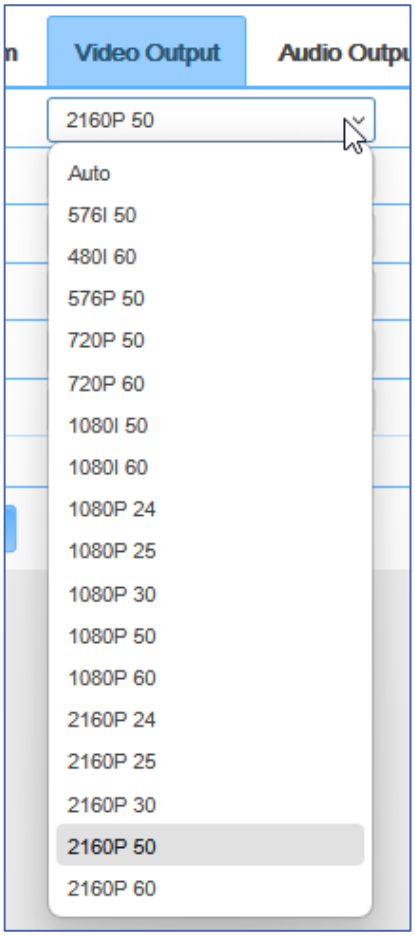


Checking HDMI out e.g. by a TV set: UHD decoding works…



Select you needed decoding values and enable/disable alarms (SNMP) and/or the Audio synchronisation method and the watchdogs what should be done if Decoder fails or output behaviours in this case.



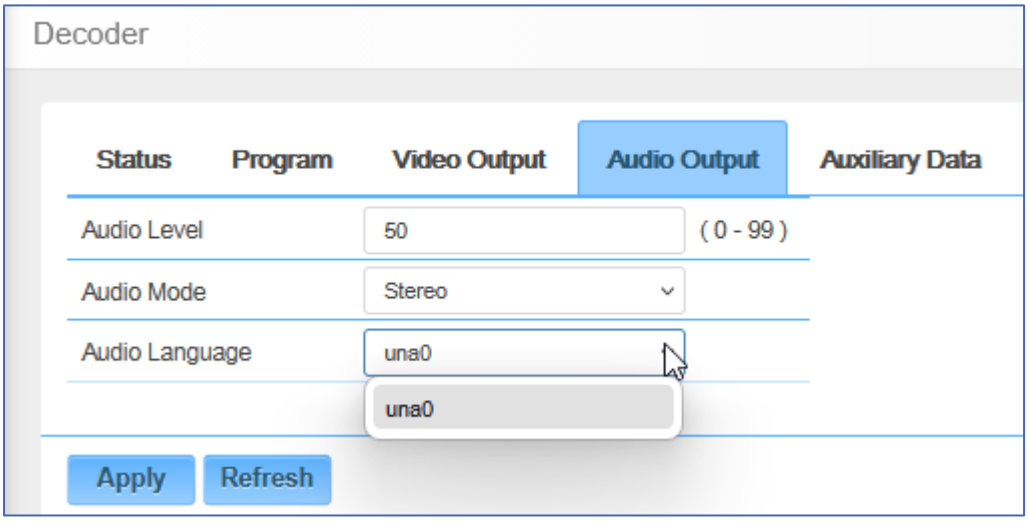


Select the modes your output needs, evtl. also, for CVBS output

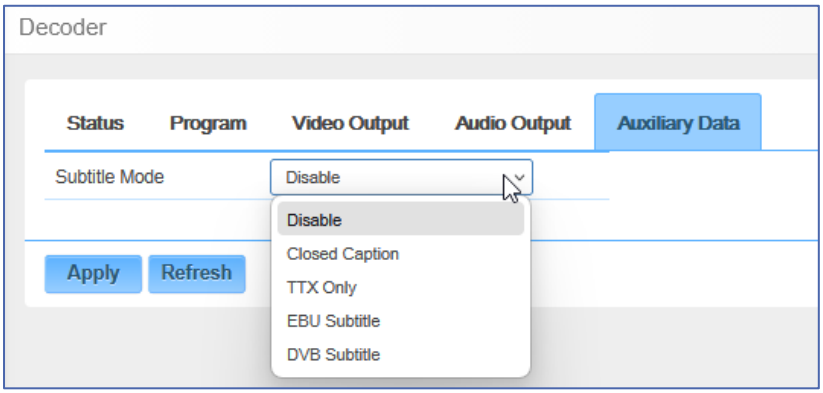
and adjust the picture values like Brightness etc…

If multiple language PIDs are received, you can select the one

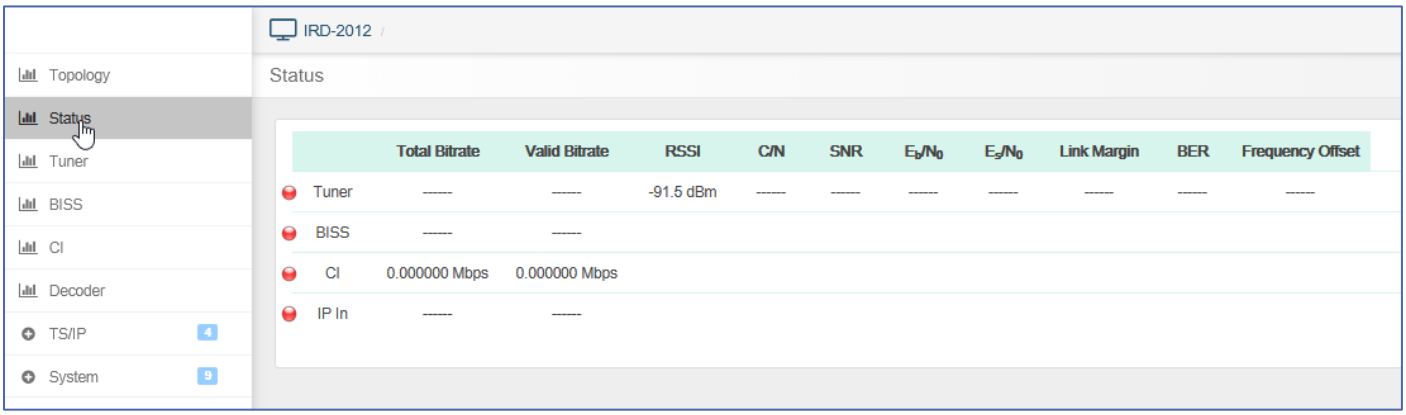
your Audio out should use for decoding:



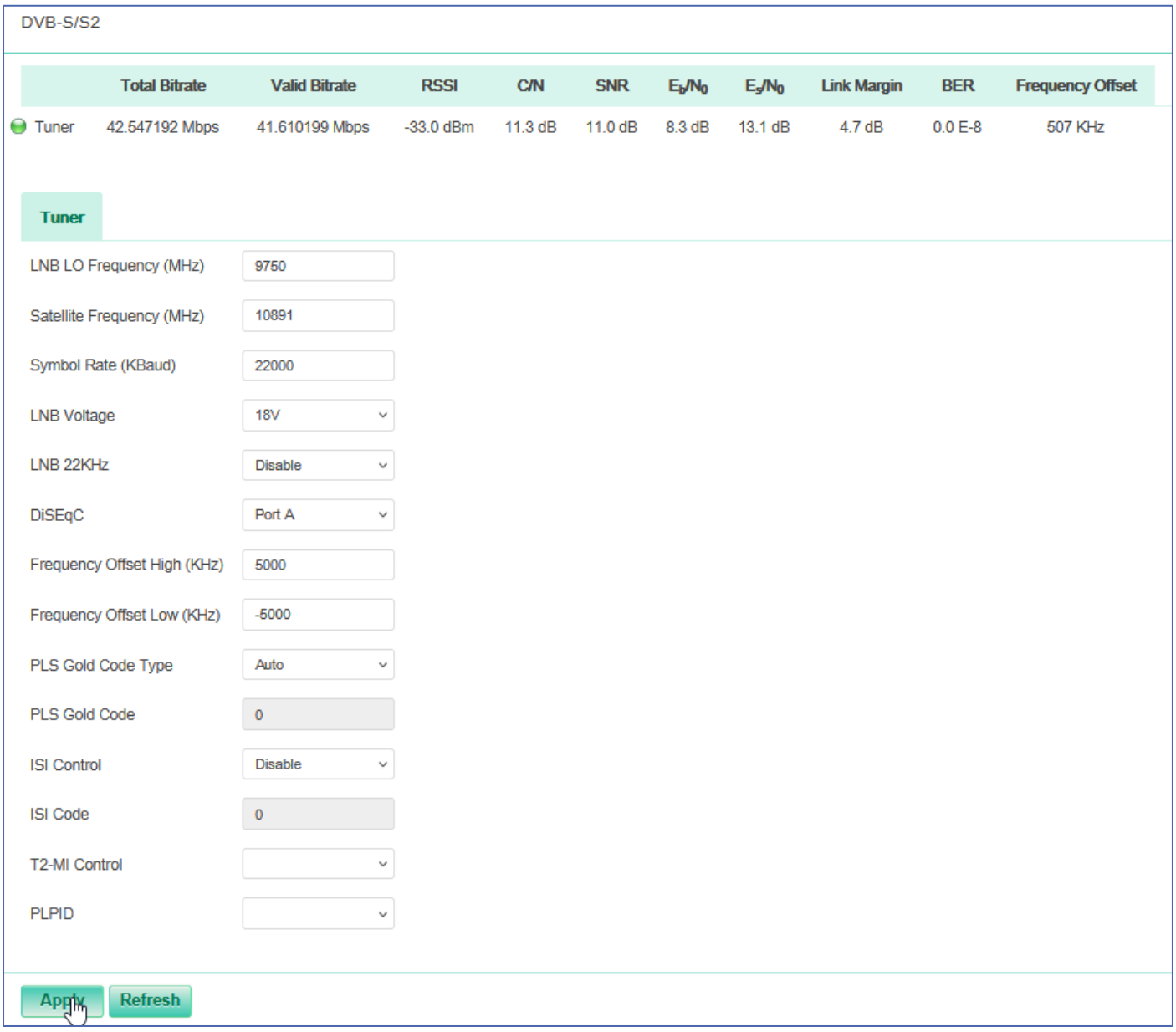
If Auxiliary data-PIDs are received, the corresponding decoding/injection to CVBS can be selected:



Tuning Satellite Transponders with the proper Frontend installed in the model:

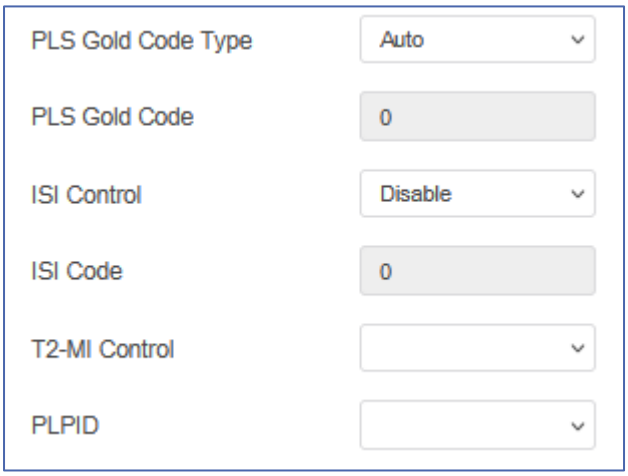


Enter the SAT-values:

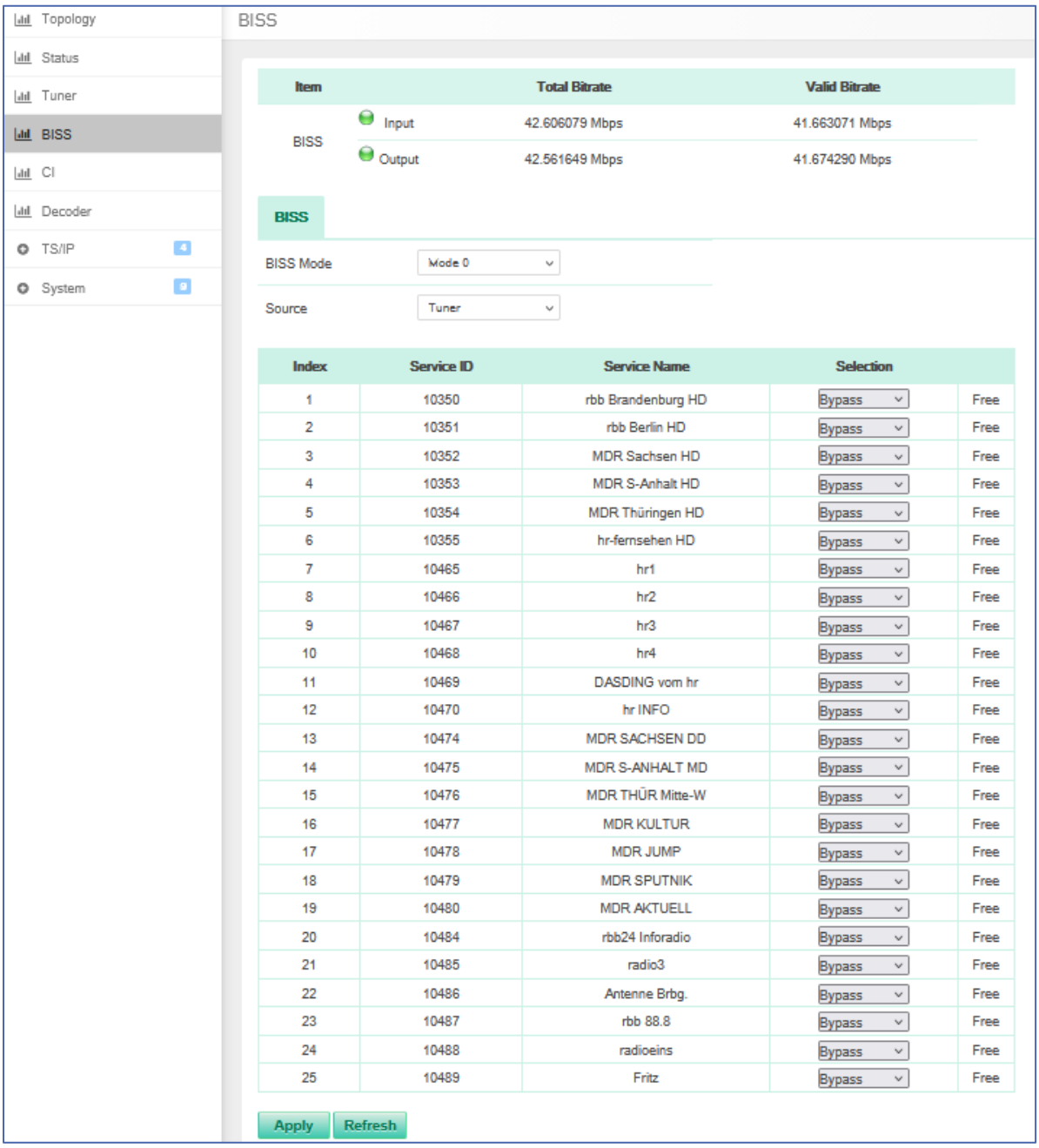


Multistreaming support:

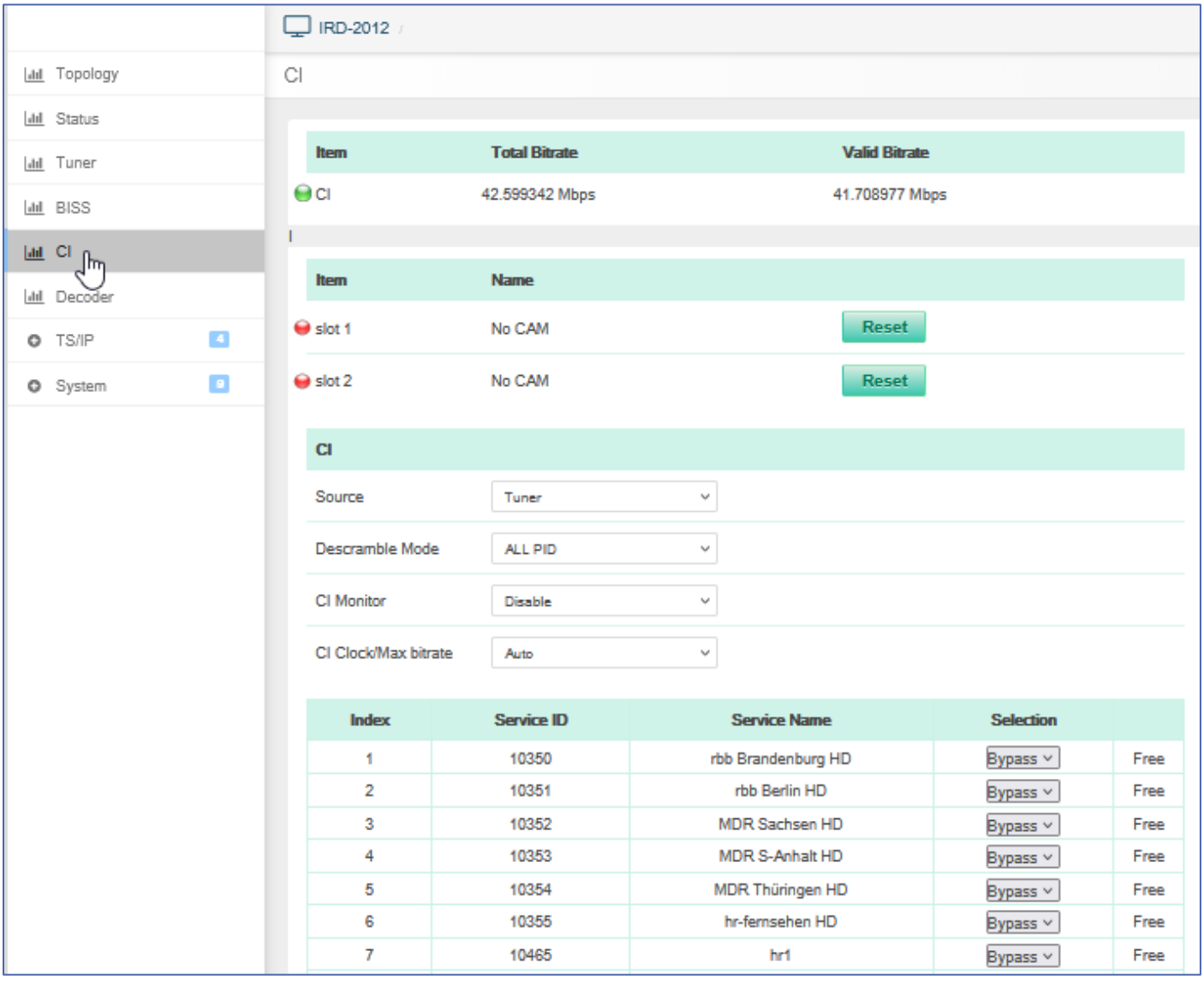
For receiving DVB-T/T2 multiple TS over SAT you need to know the values to set: PLS, ISI, T2-MI, PLPID:



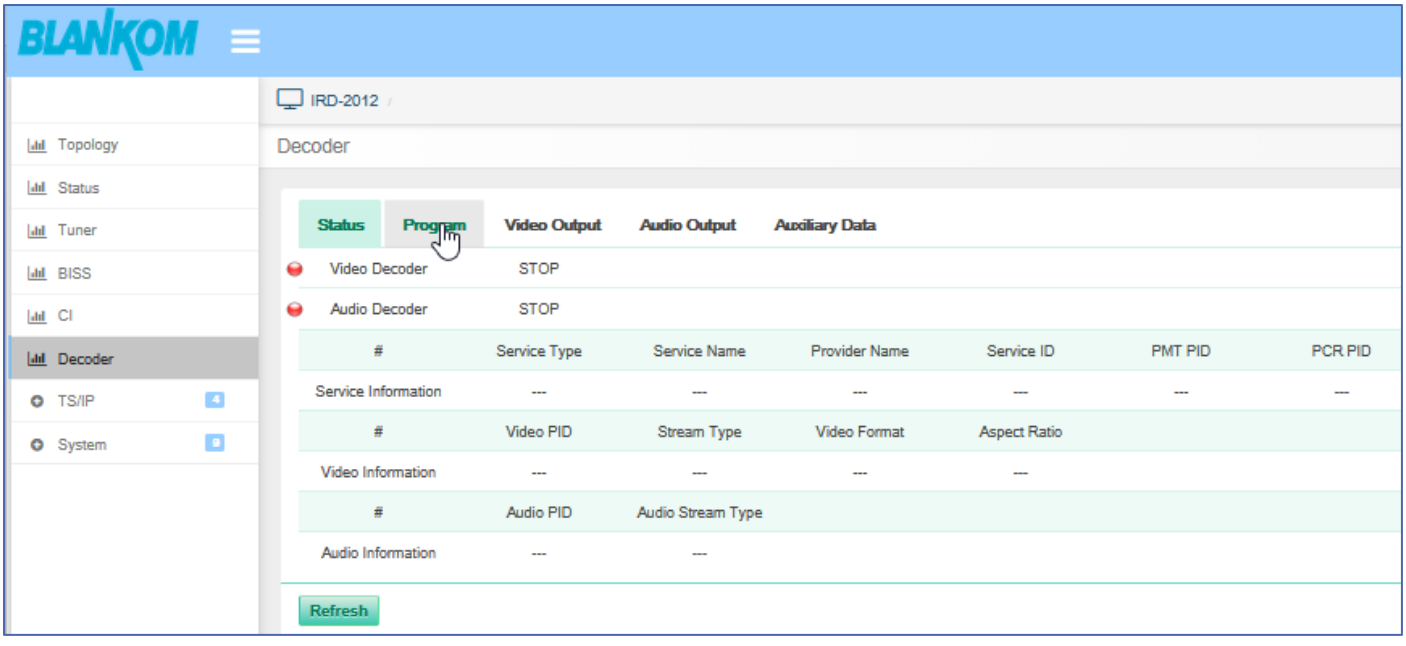
With the BISS section you can select your TV services for decryption by BISS keys:

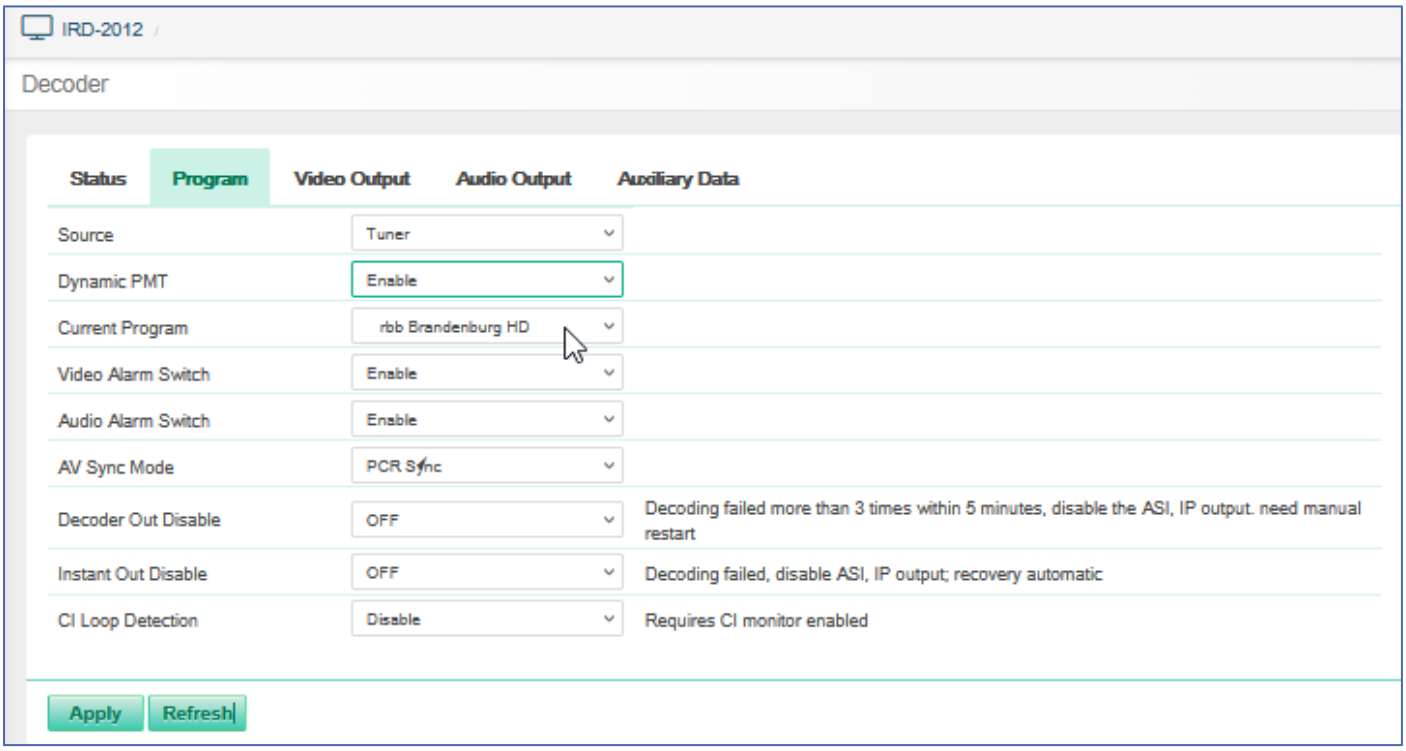


The same can be configured if you use 1 or 2 CAM's:



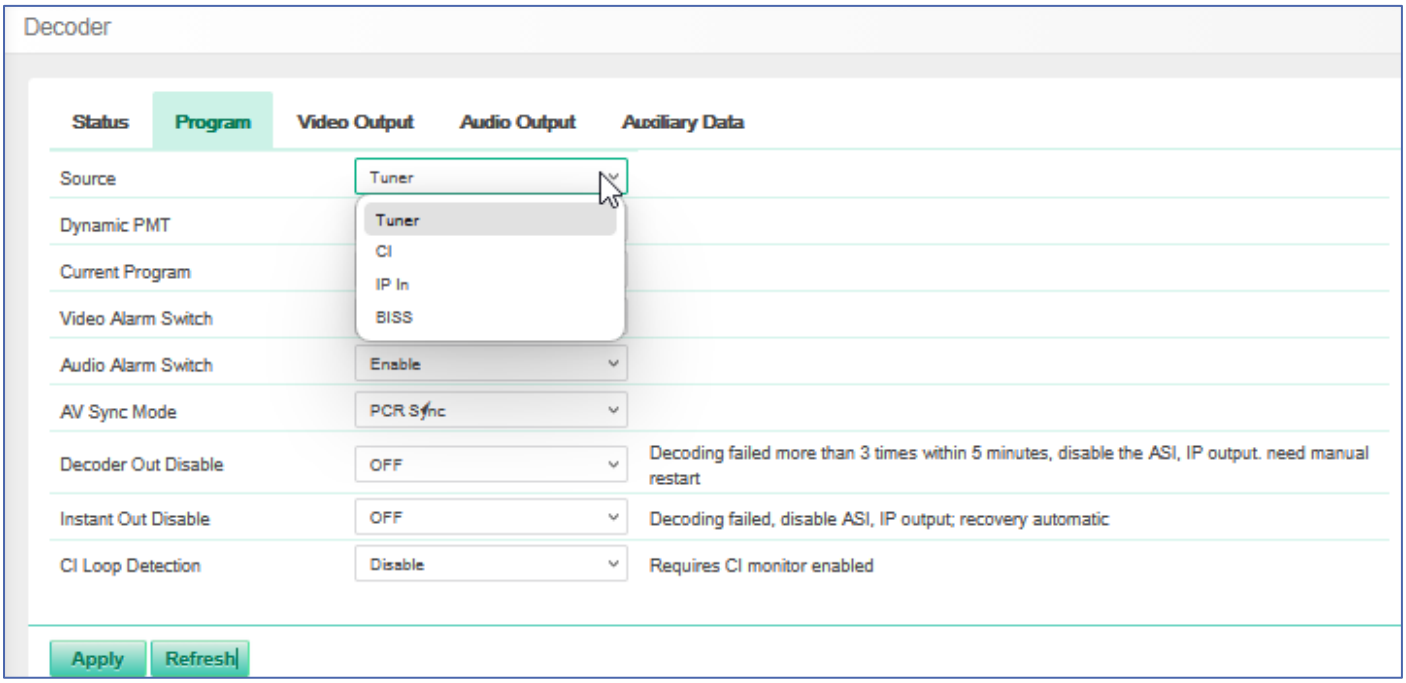
Select the Service to be decoded:





If the service is a part of a dynamic PMT combination, you should select this switch.

Source for decoding in this model – because it has IP in and out network:



Need assistance? Please contact us: contact@blankom.de

Or use our web-form: www.blankom.de or www.irenis-blankom.com