LANTV

Television on IP Networks

BNS-200 (Ref. 5105)

Double A/V → IP Streamer

Configuration and Settings

User Manual

IKUSI

EN

Configuration and Setting of the BNS-200 Streamer Module

User Manual

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Introduction

This Manual

This manual describes the configuration and settings programme for the BNS-200 Streamer Module. It is the second part of the user documentation for said module, the first part of which is the Installation and Access manual supplied in paper format.

Product Description

BNS-200 streamers are A/V to IP gateways designed to broadcast in multicast on an IP network the TV broadcasts issued from video and audio local sources. The IP streams can be viewed using an IPTV set-top box or a software video player.

BNS-200 modules have an IKUSI ClassA mechanical format. As such, they are fixed to BAS-700 / BAS-900 baseplates or to an SMR-601 rack frame, and are +12 VDC powered from a CFP module.

Characteristics

- Output: 1 or 2 IP-encapsulated TV broadcasts with individual multicast addresses.
- UDP & RTP transmission protocols.
- Web interface for configuration and setting.
- Alarm information SNMP agent.
- SAP & SDP protocols that facilitate automatic service selection on the user's STB and provide information to external servers.

ADVANCED
Configurable QoS marking
Configurable Time To Live

When the connection is established between the BNS-200 streamer and the control PC, the programme access screen appears:

Programme Access Screen

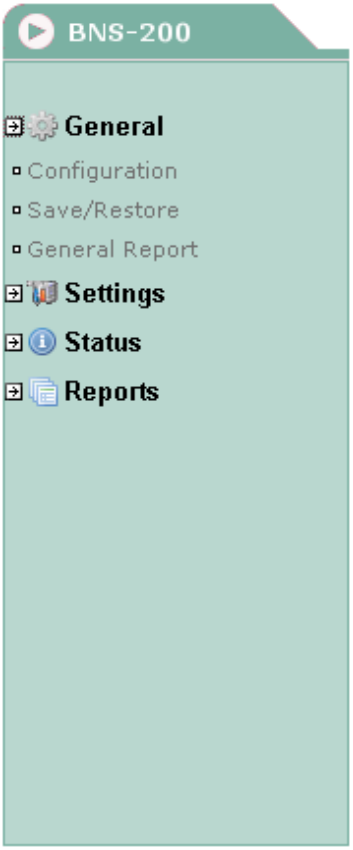
Once the desired programme language has been chosen [English (en), Spanish (es), French (fr)], enter the password and click on *OK.*

Note: The default password — admin — can (and must) be changed as explained on page 9.

Chapter One - Configuration of the BNS-200 Streamer

In this Chapter

- Configuration
- Save/Restore
- General Report



General Configuration

Initial program screen

The first screen that appears when the programme is accessed contains the "Output" window, which gives information on the IP streams that have been created on the module and which may or may not be incorporated into the output data stream.

On the left of this screen are the menus that access all of the programme's functionalities.

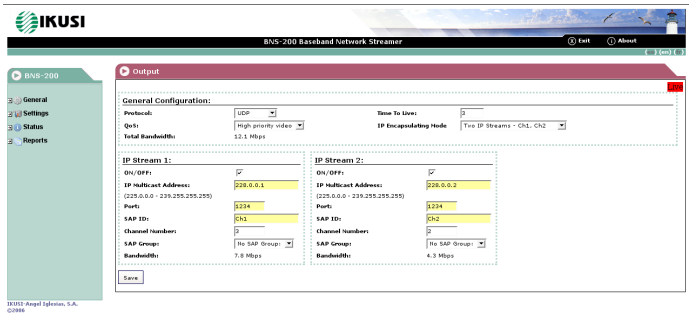


Figure 1.1 - Initial programme screen

Click on the **General** menu on the left of the screen to display a dropdown list containing the 3 options: *Configuration, Save/Restore* and *General Report*.

Click on *Configuration.* The Configuration window will appear :

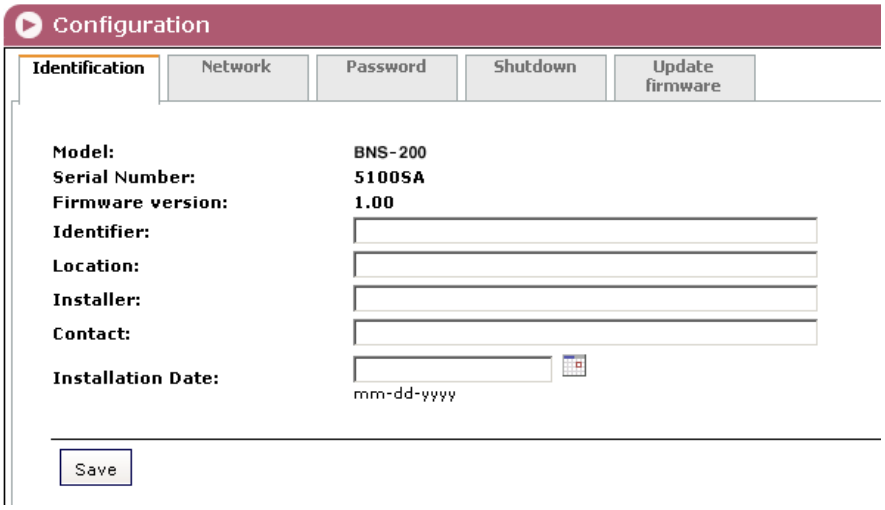


Figure 1.2 - Identification card of the Configuration window.

Identification

The identification card (Figure 1.2) provides basic data on the BNS-200 streamer. The different card fields are completed as follows:

"Model": BNS-200. This data cannot be changed.

"Serial Number": Informational data which cannot be changed.

"Firmware Version": As above.

"Identifier": Any name that the installer or operator wishes to assign to the streamer module can be entered here.

"Location": Enter the postcode of the installation site if required.

"Installer": The installer's identification details can be entered here.

"Contact": Then enter their contact details (telephone number, email).

"Installation date": The date on which the streamer module was installed can be entered here.

Click on the *Save* button at the bottom of the window to store the information on the streamer module, this information is then shown each time the module is accessed.

Network

Click on the Network tab to configure the streamer's ethernet connection parameters. The following card is displayed:

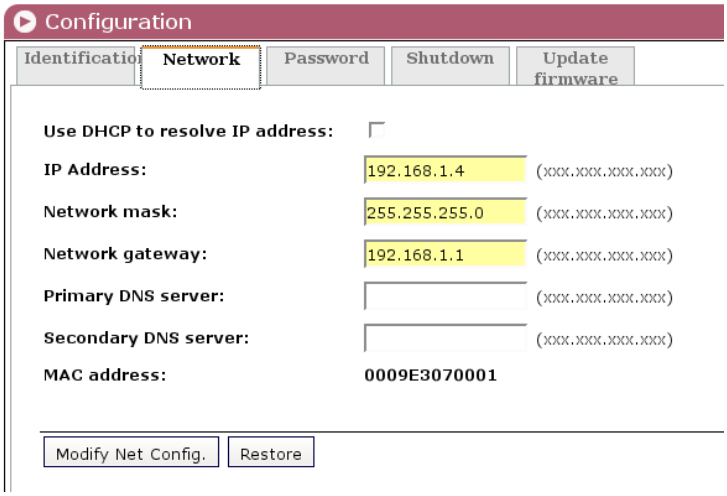


Figure 1.3 - Network card of the Configuration window.

"Use DHCP to get IP address": If this box is checked, the BNS-200 module will use the DHCP protocol for assigning dynamic IP addresses. Consequently, no data needs to be entered in the next five fields on the tab.
If the administrator of the network on which the BNS headend is installed assigns static IP addresses, the box will not be checked and the following fields will need to be filled in.
WARNING: If this option is activated, the IP address assigned to the streamer can only be known by consulting the DHCP server management system.

"IP Address": Enter the IP address that you wish to assign to the streamer. This address must fall within the range of local network addresses.

"Network mask": Enter the local network mask.

"Default gateway": Enter the IP address of this gateway. This information is only required if you want the streamer to access Internet.

"Primary DNS server": Enter the primary server's IP address. Equally, this information is only required if you want the streamer to access Internet.

"Secondary DNS server": Enter the same information for the secondary server.

"MAC Address": The physical address of the streamer's ethernet network card is displayed automatically.

Once you have filled in all of the required information, click on *Modify Network Configuration.* If, at the last moment, you decide to keep the current settings, click on *Restore*.

Password

If you want to change the current access password, click on the Password tab. The following card is displayed:

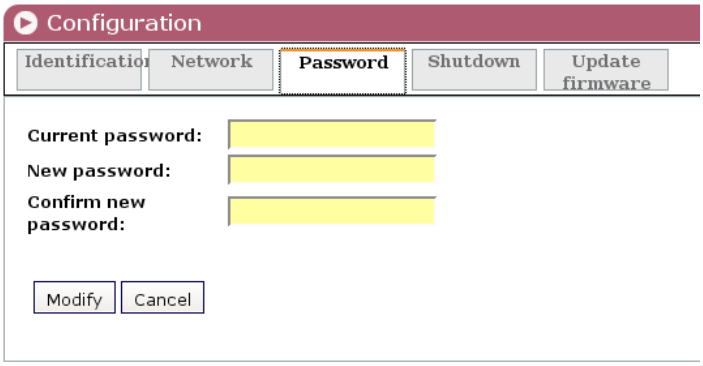


Figure 1.4 - Password card of the Configuration window.

"Current password": Enter the current password.

"New password": Enter the new password which will be required to access the program the next time.

"Confirm new password": Re-enter the new password.

Once you have entered the required information, click on *Modify* so that the streamer adopts the new access password. If, at the last moment, you decide to keep the previous password, click on *Cancel*.

Note

If you do not know the old password, i.e. the password used to access the current configuration session, you must perform a Password Reset as explained in the Installation and Access manual. Following this reset, the program password will be the default password: admin.

IMPORTANT: When you perform a password reset, the IP address assigned to the streamer on the Network card (previous page) automatically changes to the default setting: http:// 92.168.1.4.

Shutdown

If you need to reboot the streamer for any reason, click on the Shutdown tab. The following card is displayed:

Figure 1.5 - Shutdown card of the Configuration window.

Click on *Reboot*. A reset is then performed after which the Output Streams screen will appear, this is the presentation screen of the programme.

Update Firmware

If you wish to update the streamer's firmware, click on the Update Firmware tab. The card displayed (Figure 1.6) shows the firmware version that the streamer has at the present time.

(The firmware is software stored in the module which is responsible for its basic operation).

Figure 1.6 - Update Firmware card of the Configuration window.

WARNING: The firmware update file will have been previously stored on the PC hard drive. (You can download it from http://www.ikusi.com).

Click on *Browse...* and select the firmware update file from the hard drive. When the file name is in the box, click on *Start*. The new firmware will be installed on the streamer and then its name will appear in the card replacing the one of the file before.

Save/Restore System Settings

All of the data established on the streamer module through the various Configuration window tabs can be saved onto a backup file. Inversely, the configuration data saved on an appropriate file can be restored on streamer module.

Click on the **General** menu on the left of the general programme screen and click again on the *Save/Restore* option. The Save/Restore window will appear:

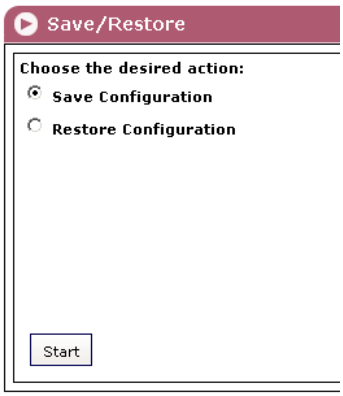


Figure 1.7 - Save/Restore window

Save/Restore Configuration

"Save configuration": Select the option in the window and click on *Start*. A window is displayed which allows you to select the destination folder for the data file for the current streamer configuration.

"Restore Configuration": Select this option in the Save/Restore window (Figure 1.7) and click on *Start.* The Restore Configuration window is displayed (Fig. 1.8) Click on *Browse...* and select the file containing the configuration data that you wish to restore on the streamer module. Once you have selected the file, click on the *Upload File button* at the bottom of the screen. The upload confirmation window will be displayed.

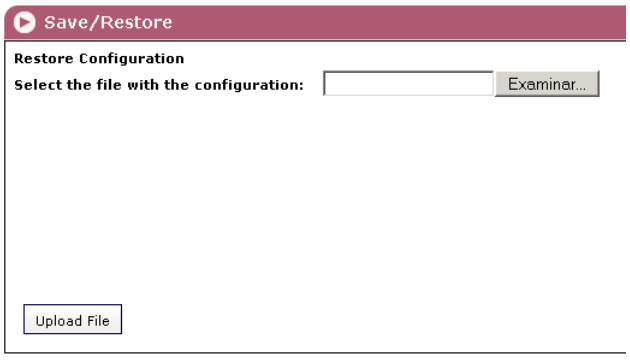


Figure 1.8 - Restore Configuration Window

General Report

Click on the **General** menu on the left of the general programme screen and click again on the *General Report* option. The General Report window is displayed:

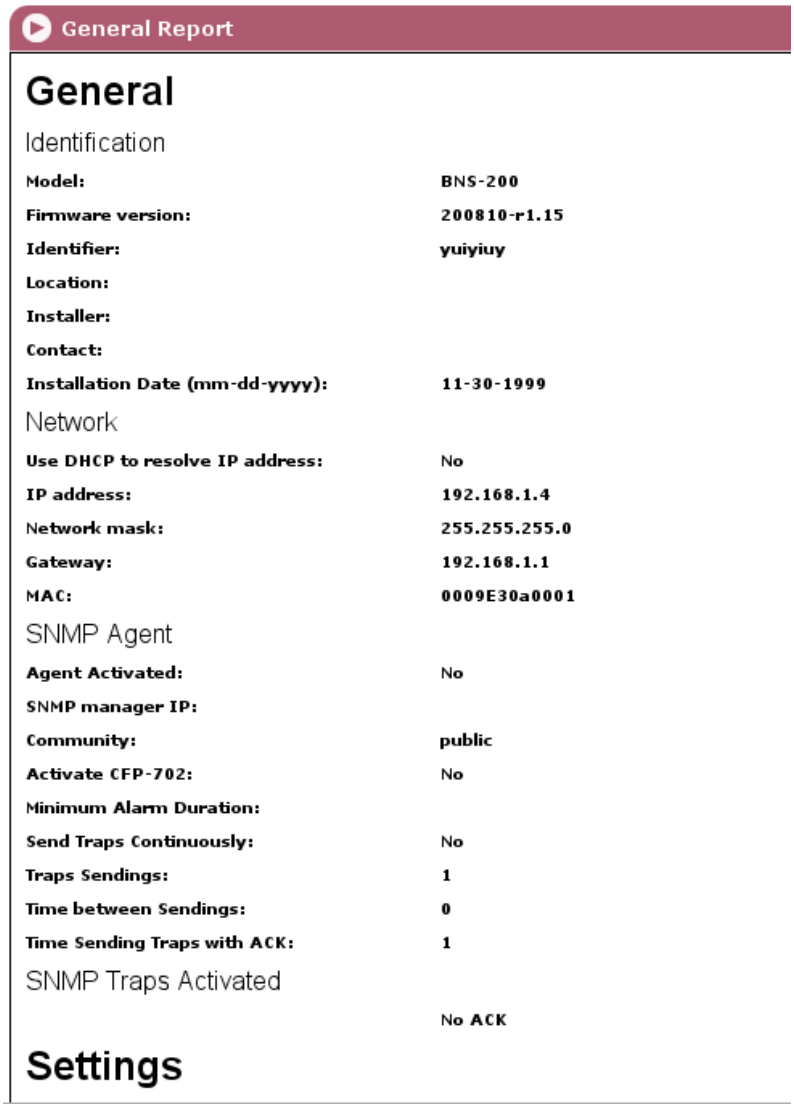


Figure 1.9 - General Report window

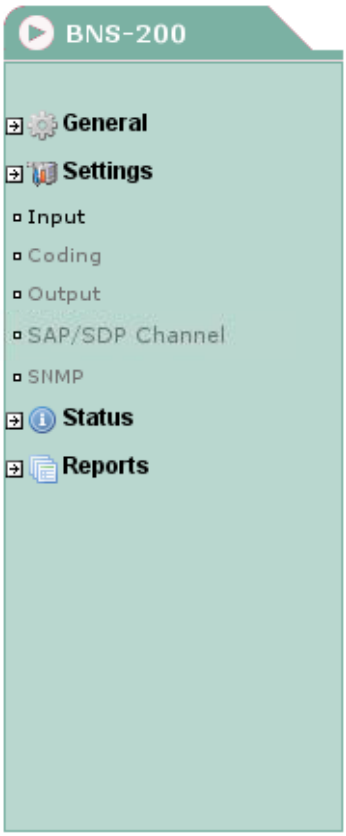
This window provides complete information on the BNS-200 module, not only regarding the configuration described in the previous pages, but also in relation to the current settings parameter values and operational status.

The information contained in this window can be printed by clicking on the *Print page* button at the bottom of the screen.

Chapter Two - BNS-200 Streamer Settings

In this Chapter

- Input Section Settings
- Coding Section Settings
- Output Section Settings
- SAP/SDP Channel Settings
- SNMP Configuration



Input Section Settings

The BNS-200 module settings are grouped into five sections or categories: Input, Coding, Output, SAP/SDP Channel and SNMP. Click on the **Settings** menu on the left side of the general programme screen. A drop down list is displayed offering four options: *Input, Coding, Output, SAP/SDP Channel* and *SNMP*.

Click on *Input*. The Input window will appear:

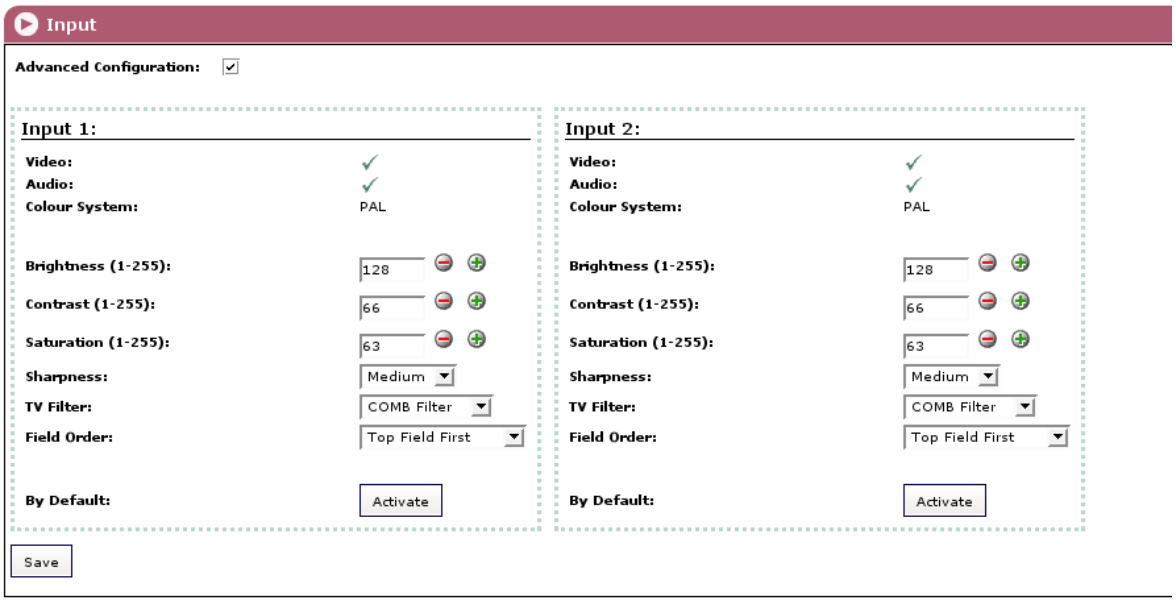


Figure 2.1 - Input window

This window presents two identical sections related to each one of the two input sections of the BNS-200. The window informs first about existence of A/V input signals:

"Video" : Indicates whether there is or not video signal (CVBS — composite video). A ✓ mark indicates existence of signal, and a cross ✖ does absence.

"Audio" : Idem audio signal (analogue).

"Colour System" : Informates about the colour system of the video signal (PAL, SECAM or NTSC).

The window presents below different setting fields related to the digitalisation of the video signal. The two last ones (TV Filter and Field Order) only appear if the Advanced Configuration box at the upper part of the window is checked.

"Brightness" : Increment buttons for setting the brightness you want to confer to the digitalized video signal. The box at right shows a reference figure whose by default value is 128.

"Contrast" : Idem for setting the contrast. By default figure: 66.

"Saturation" : Idem for setting the colour saturation. By default figure : 63.

"Sharpness" : Select from the drop down list the sharpness you want to confer to the digitalized video signal: None, Low, Medium or High.

"TV Filter" : Idem the type of video filtering in the digitalisation processing: Deactivated, Spatial NR (noise reduction), Temporal NR, Noise Filter, Comb Filter.

"Field Order" : Idem the field of the input video signal that will be the first (dominant) in the output stream. The Top Field First option selects as first field the one that includes the first line of the screen, and the Bottom Field First option selects as first field the other.

The *By Default* button at the lower part of the window allows to restore all the settings and selections to the by default values.

Once you have done all the settings and selections in the two sections of the window, click on the *Save* button to conclude the Input settings of the BNS-200.

Coding Settings

Click on the **Settings** menu on the left of the general programme screen and then click on *Coding*. The Coding window will appear :

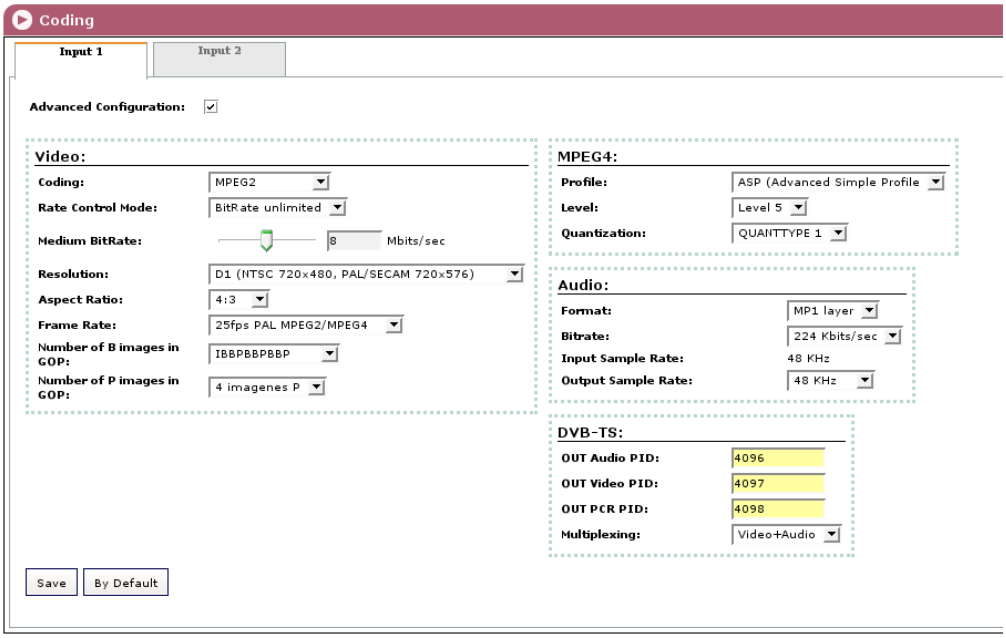


Figure 2.2 - Coding window

This window has two identical cards, Input 1 and input 2, related to the two input sections of the BNS-200. Each card has 4 sections —Video, MPEG4, Audio and DVB-TS—, where one can configure the MPEG coding of the input video/audio signals and the related DVB transport stream.

Video Section :

"Coding" : Select from the drop down list the coding standard: MPEG2 or MPEG4 ASP.

"Rate Control Mode" : Idem the control mode of the stream bitrate: Unlimited BitRate or Limited BitRate. When selecting "unlimited", the Average BitRate field appears below. Idem "limited", the Max BitRate field.

"Average BitRate" : Slide icon for setting the average output bitrate of the MPEG coder. The highest and lowest values of the operating bitrate will be able to amount to +50% and -50% respectively of the entered value.

"Max BitRate" : The entered value will not be surpassed at any time.

"Resolution" : Select from the drop down list the resolution for the digitalized video signal. The available options are the following:

- CIF 176x144
- 2CIF 352x288
- HalfD1 NTSC 352x480 ó PAL/SECAM 352x576
- 4CIF NTSC 704x480 ó PAL/SECAM 704x576
- D1 NTSC 720x480 ó PAL/SECAM 720x576

"Aspect Ratio" : Select from the drop down list the aspect ratio for the digitalized video signal: 1:1, 4:3 or 16:9.

"Frame Rate" : Idem the frame rate. The options are the following:

- 12fps PAL MPEG4 only
- 15fps NTSC MPEG4 only
- 25fps PAL MPEG2/MPEG4
- 30fps NTSC MPEG2/MPEG4
- 50fps PAL MPEG2 only
- 60fps NTSC MPEG2 only

"Number of B images in GOP" : Select from the drop down list the number of B ("Bi-directional") images within the GOP ("group of pictures").

"Number of P images in GOP" : Idem the number of P ("Predicted") images.

MPEG4 Section :

"Profile" : Two options : SP (Simple Profile) or ASP (Advanced Simple Profile). Select the desired one from the drop down list.

"Level" : Six options : Level 0 to Level 5.

"Quantization" : 2 options: QUANTTYPE 0 and QUANTTYPE 1.

Audio Section :

"Format" : Select from the drop down list the standard of the audio signal coding : MP1 Layer, MP3, AC3 or AAC.

"BitRate" : Idem the bitrate in kbit/s of the audio signal : 32, 48, 56, 64, 80, 96, 112, 128, 160, 192, 224, 256, 320 or 384.

"Input Sample Rate" : Informs about the input sample rate: 48 kHz.

"Output Sample Rate" : Select from the drop down list the sample rate at the output of the sample converter : 8, 24, 32, 44.1 or 48 kHz.

DVB-TS Section :

The BNS-200 organizes the MPEG multiplex for creating a DVB Transport Stream. In this section you enter the PIDs related to the TV broadcast that you are generating from the video/audio signals at Input 1 of the BNS-200 :

"OUT Audio PID" : Enter the audio PID number.

"OUT Video PID" : Enter the video PID number.

"OUT PCR PID" : Enter the PID number of the program clock reference.

"Multiplexing" : Three options: Video+Audio, Only Video or Only Audio.

Note

The three PID numbers must have 4 figures and be different. At the same time they must be different from those you will enter in the Input 2 card for the other TV broadcast that will be generated in a similar way. The values by default are 4096, 4097 and 4098 for the "TV broadcast 1", and 4111, 4113 and 4114 for the "TV broadcast 2".

The *By Default* button at the lower part of the window allows to restore all the settings and selections to the by default values.

Once you have done all the settings and selections of the Input 1 section, click on the *Save* button. Next fill in the Input 2 card and click on its *Save* button to conclude the Coding settings.

Output Section Settings

Click on the **Settings** menu on the left of the general programme screen and then click on *Output*. The Output window will appear :

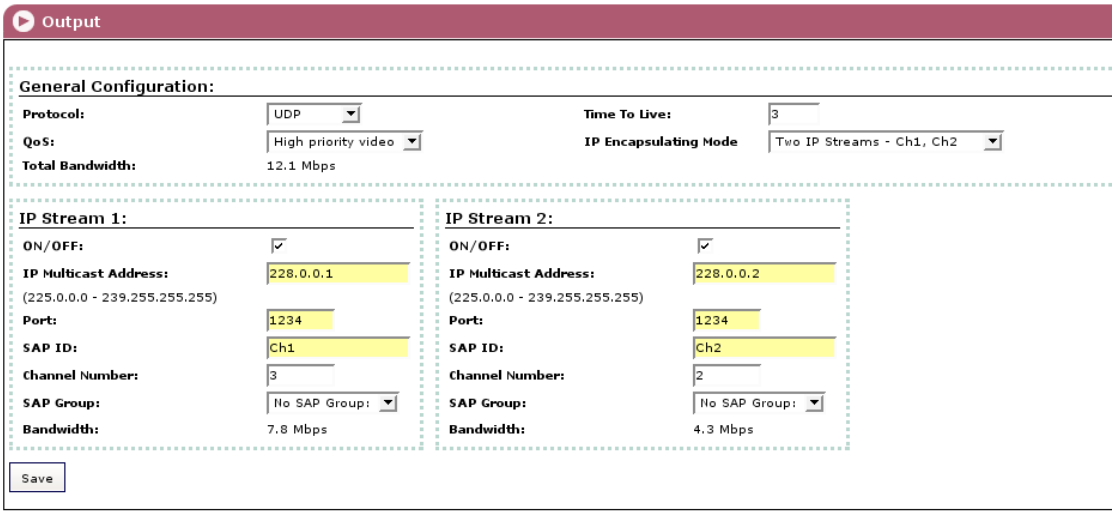


Figure 2.3 - Output window

In this window you configure as IP streams the two TV broadcasts (or only one, if the BNS-200 operates with a unique A/V signal source) included in the DVB transport stream that you have created through the Input and Coding options of the **Settings** menu.

The window presents 3 sections for general and particular configurations of the two sections of the BNS-200.

General Configuration Section :

"Protocol": The drop down menu offers two options : UDP and UDP/RTP. UDP is a transport protocol which is not connection oriented and is particularly useful for streaming. UDP/RTP adds extra data fields so that the data flow is served at the correct speed for its projection in real time.

"Time To Live": Is a parameter used to restrict the stream multicasting range. A number between 1 and 255 is entered in this box. Each time that an IP stream passes through a router, the TTL is reduced by one unit. The stream will be rejected by any router when the TTL value is reduced to zero.

"QoS": Quality of Service. The drop down list offers five differentiated service options or *Diffserv.* These options relate to the priority that you wish to assign to the streaming packets on their routes through switches or routers that are QoS management capable:

1. Maximum priority
2. High priority video
3. Low priority video
4. Video and voice
5. Best effort (best effort made to correctly deliver the video data and the associated audio data)

"IP Encapsulating Mode" : 2 options: Two Streams (one for each TV broadcast) or One Stream (the two broadcasts are combined in a unique IP stream 1).

An additional field informs about the total bandwidth of the output IP transport stream.

IP Stream 1 Section :

"ON / OFF" : Check the box for incorporating the stream 1 into the output IP transport stream. Leave it blank for no incorporation.

"IP Multicast Address": Enter the multicast address desired for the stream 1. The available range is from 224.0.0.0 to 239.255.255.255, but it is recommended to reduce it from 224.0.1.0 to 238.255.255.255. See NOTE below.

"Port": The default value is 1234.

"SAP ID": Is the name given to the TV broadcast corresponding to the stream 1 on the subscriber's set-top box or reproducer, if the device supports SAP/SDP.

"Channel Number" : Enter the order number you want to assign to the broadcast in the list of the services provided by the set-top box.

"SAP Group" : Select from the drop down menu the SAP group to which you want to link the TV broadcast of the stream 1. The group will have been previously created through the SAP/SDP Channel window (see next page).

"Bandwidth" : It is the one of the stream 1, in Mbps.

IP Stream 2 Section : Fill in as described for the stream 1.

Once you have done all the settings and selections in the three sections of the window, click on the *Save* button to conclude the Output settings of the BNS-200.

NOTE : Range 224.0.0.0 through 224.0.0.255 is reserved for local purposes (as administrative and maintenance tasks). Datagrams destined to this use are never forwarded by multicast routers.

Similarly, the range 239.0.0.0 to 239.255.255.255 has been reserved for "administrative scoping" (administratively defined topological regions).

SAP/SDP Channel Settings

Click on the **Settings** menu on the left of the general programme screen and click again on the *SAP/SDP Channel* option. The SAP/SDP Channel window will appear:

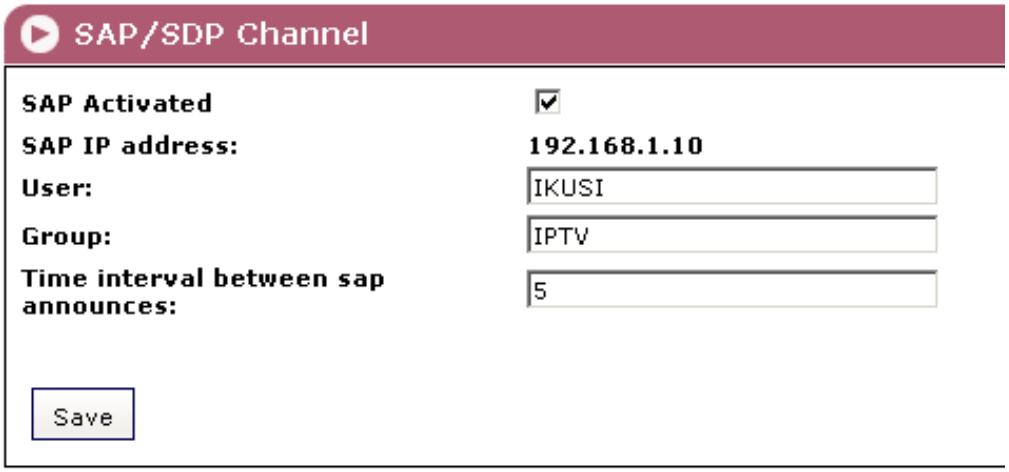


Figure 2.4 - SAP/SDP Channel window

This menu option is used to configure the announcement and service description SAP/SDP channel. SAP and SDP are two protocols for creating an EPG type program guide.

"SAP Activated": Check the box if you wish to transmit the program guide.

"SAP IP address": This data cannot be changed. It is the IP address assigned to the streamer module on the Network tab in the Configuration window (page 8).

"Username": The name entered will be transmitted on the SAP/SDP channel.

"Group": As above.

"Time interval between SAP announcements": Introduce the time interval, in seconds, at which the transmitted programmes guide will refresh.

Click on *Save* to save the SAP/SDP channel configuration data.

SNMP Configuration

Click on the **Settings** menu on the left of the general programme screen and click again on the *SNMP* option. The SNMP Agent window will appear:

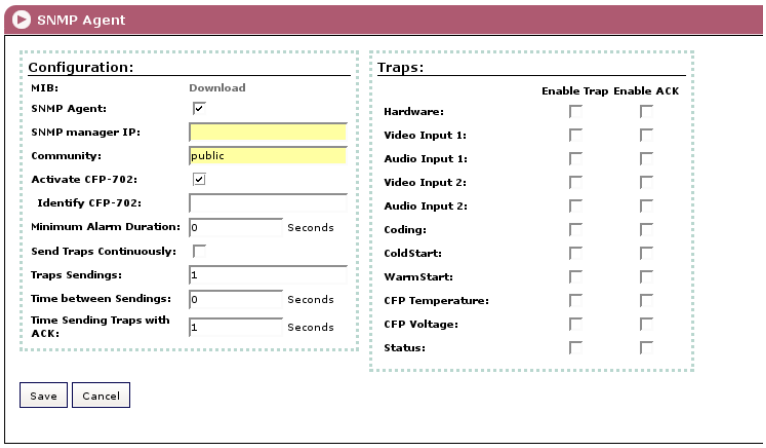


Figure 2.5 - SNMP Agent window

This window is used to configure the notification of determined traps the SNMP manager (management station). It has two sections: **Configuration** and **Traps**.

Configuration Section :

"MIB" : Click on *Download* to download the MIB of the BNS-200 streamer.

"SNMP Agent" : Tick the box if you want to activate the SNMP agent implemented in the streamer module.

"SNMP Manager IP" : Enter the IP address of the manager.

"Community" : Enter the desired name for the group formed by the streamers and power supplies of the present BNS headend, and by the manager.

"Activate CFP-702" : Tick the box in the case the streamer module is linked to a CFP-702 power supply and you want to integrate this into the management system. (See Fig. 2.6 on next page).

"Identify CFP-702" : Enter a name for the CFP-702 linked to the present streamer module.

"Minimum Alarm Duration" : Enter the minimum duration in seconds of an alarm event so that it be considered as such by the SNMP manager.

"Send Traps Continuously" : Tick the box if you want that to an alarm event the related trap be sent repeatedly to the manager. If this box is ticked, the two next ones are disabled.

"Trap Sendings" : Enter the times to an alarm event you want to send the corresponding trap to the manager.

"Time between Sendings" : It is related to the box before. Enter the time in seconds between the trap sendings.

"Time Sending Traps with ACK" : It is applicable to traps with ACK enabled. Enter the maximum time in seconds to an alarm event the trap will be being sent continuously until having an acknowledgement from the manager.

Traps Section :

You select here the BNS-200's parameters whose alarm status generate traps, either with or without acknowledgement.

"Hardware" : Tick the box for sending an alarm trap when there be an anomaly in the streamer's circuitry. If you want to receive an acknowledgement from the SNMP manager, tick also the Enable ACK box at right.

"Video at Input 1" : Idem when video signal at input 1 disappears, or when it return being off.

"Audio at Input 1" : Idem audio signal at input 1.

"Video at Input 2" : Idem video signal at input 2.

"Audio at Input 2" : Idem audio signal at input 1.

"Coding" : Tick the box for sending an alarm trap when the MPEG coding processing is not correct.

"ColdStart" : Idem when there be a Cold Start (the power is turned off then back on).

"WarmStart" : Idem when the module is rebooted (through the Shutdown card of the Configuration window, see page 9).

"CFP Temperature" : It is applicable only if the streamer module is linked to a CFP-702 power supply, with the object of incorporating this to the SNMP system. It is related to the internal temperature of the power supply. Tick the box so that the alarm trap be transmitted when this temperature exceedes the established limits.

"CFP Voltage" : Idem in relation to the +12V output voltage of the power supply.

"Status" : Tick the box for sending a "summary" trap with the current status of the most outstanding parameters.

"Time between Sendings" : This box is enabled only if you ticked the previous one. Enter the desired time in seconds to pass between "summary" trap sendings.

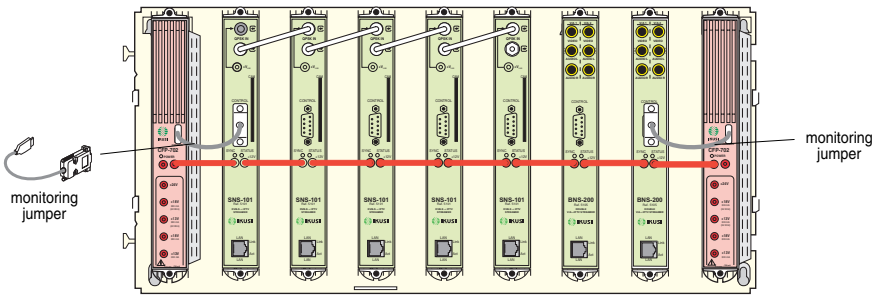
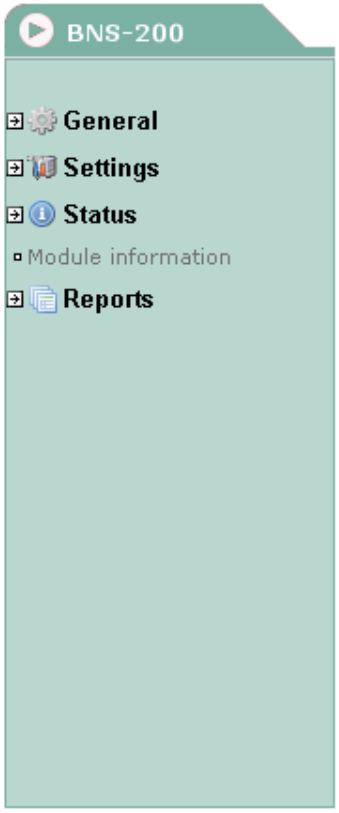


Figure 2.6 - Example of mixed BNS/SNS Headend with monitor redundant power system. Contains 2 BNS-200 streamers, 5 SNS-101 and 2 CFP-702 power supplies.

Chapter Three - BNS-200 Streamer Status Information

In this Chapter

- Status Information



Status Information

Click on the **Status** menu on the left of the general programme screen and click again on the *Status Information* option. The Status Information window appears:

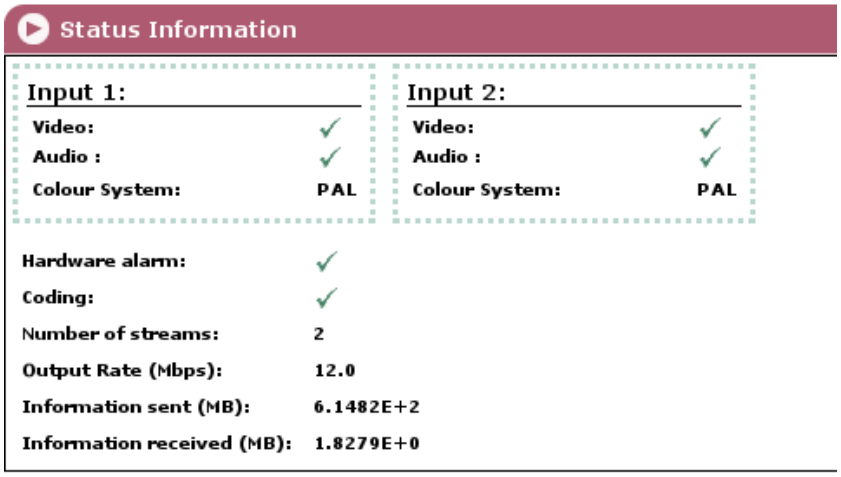


Figure 3.1 - Status Information window

This window informs about existence of video and audio input signals in each one of the two sections of the BNS-200, as well as about important operation data.

Input 1 / Input 2 :

"Video" : Indicates whether there is (✓) connected video signal or not (✖).

"Audio" : Idem audio signal.

"Colour system" : Informs about the detected colour system in the corresponding input video signal.

General :

"Hardware Alarm" : Indicates whether there is an anomaly in the module's circuitry. A ✓ mark indicates correct status or operations and a cross ✖ warns of an alarm situation.

"Coding" : Indicates whether the MPEG coding processing takes place appropriately (✓) or not (✖).

"Number of Streams": Number of IP streams currently transmitted by the BNS-200 module.

"Output Rate": Value in Mbps.

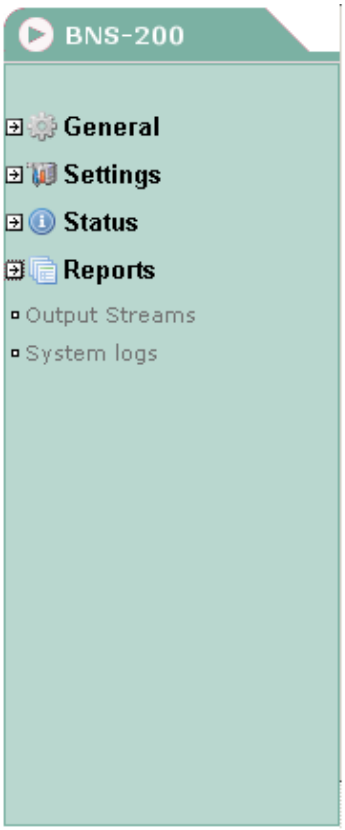
"Information Sent (MB)": Expresses in scientific notation, the amount of information (in megabytes) which has been transmitted by the internal web server since the last module reset.

"Information Received (MB)": The same for information received.

Chapter Four - BNS-200 Streamer Reports

In this Chapter

- Output Streams
- System Logs



Output Streams

Click on the **Reports** menu on the left of the general programme screen and then click on the *Output Streams* option. The Output Streams window will appear:

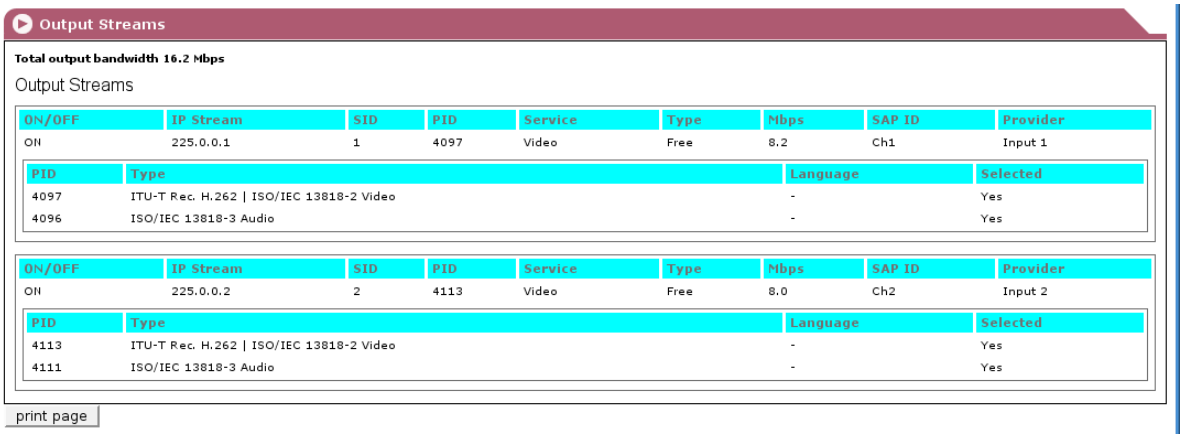


Figure 4.1 - Output Streams window

The Output Streams window shows the IP streams (1 or 2) that have been created for this module. These streams may or may not be incorporated in the output data stream.

For each IP it shows the following details:

- ON/OFF (whether the stream is incorporated or not in the output data stream)
- IP Stream (multicast address)
- SID (order number of the stream in the services list of the set-top box)
- Video PID
- Name of the service: Video
- Type (FTA or encrypted)
- Bandwidth in Mbps
- SAP ID (name with which the TV broadcast is announced on the subscriber's receiver)
- Service Provider (Input 1 or Input 2 of the streamer)
- PID, Type and Language of the two elemental streams (video and audio) associated with the main stream, indicating whether they are incorporated into the IP output transport stream or not.

The information contained in this window can be printed by clicking on the *Print page* button at the bottom of the screen.

System Logs

Click on the **Reports** menu on the left of the general programme screen and then click on the *System Logs* option. The System Logs window will appear:

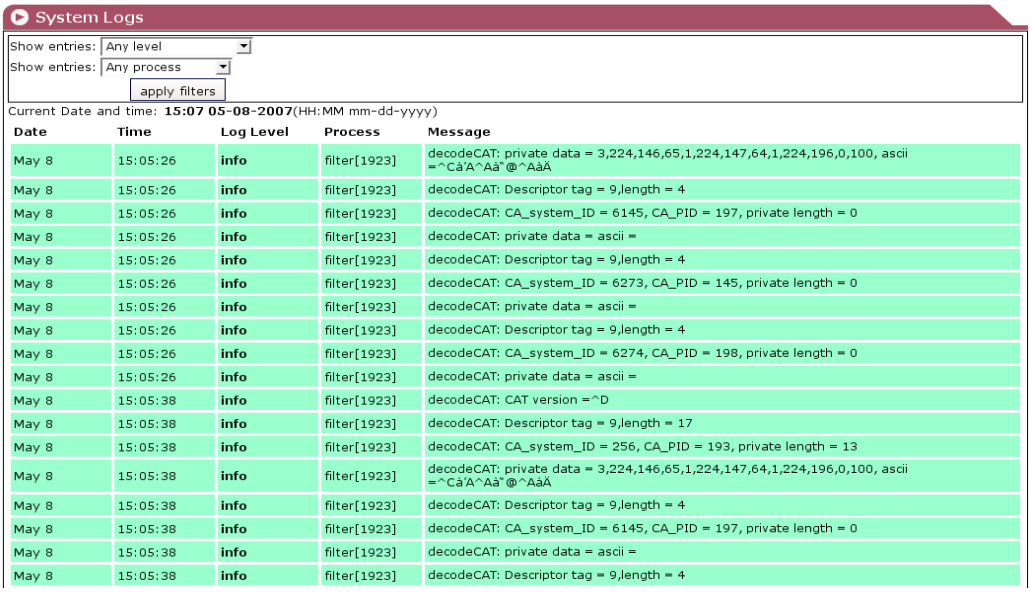


Figure 4.2 - System Logs window

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