



G 2414

USER'S MANUAL



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1. Safety Rules

Please read the manual carefully before using the device. You will receive a lot of information to use this product correctly and you will prevent incidents. Please keep the manual on a safe place.

- 1.- Never place the equipment next to hot sources.
- 2.- Never undergo the equipment to temperatures that exceed the level of operation of the device.
- 3.- Do not expose the equipment to dripping or splashing.
- 4.- Do not place objects filled with liquids on the equipment.
- 5.- Respect ventilation slots of this equipment. Avoid covering them with any object.
- 6.- Keep clean and without obstacles a minimum radius of 40 cm around this equipment.
- 7.- Avoid locations with possibilities of spilling liquids on the inside of the device, and with important changes of temperature.
- 8.- Use the equipment only in moderate climates (not in tropical climates).
- 9.- Never open the equipment yourself due to electric risk. In case of problems, go always to qualified technicians.
- 10.- Never, under no circumstances, open the equipment connected to the electrical net.
- 11.- During the handling it is better to disconnect the equipment of the electrical net.
- 12.- Respect the electricity security rules during the assembling. Use materials that obey the current law.
- 13.- The connecting plug must be accessible in a fast and simple way to have a fast disconnection.
- 14.- Never touch the plug with wet hands. Also, disconnect always the device before handling the connections.
- 15.- Never put any heavy object over the device, as it could get damaged.
- 16.- If the equipment is going to remain some time without use, it is recommendable to disconnect it from the electrical net.
- 17.- Within the warranty time all the repairing processes should be done by Fte Maximal technical staff. Otherwise, the warranty voids.

2. Package contents

When open the package the first time, you can find the following context:

- Compact headend Transmodulator G 2414
- Power supply 12Vdc-2.5A
- Quick installation Guide

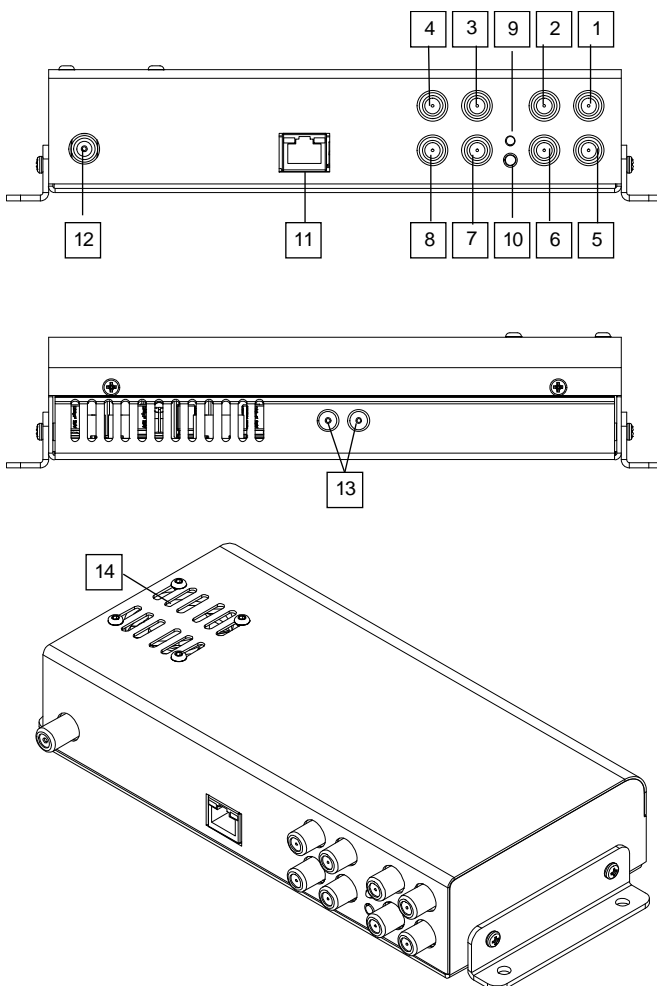
3. Description and connections

3.1. Description

The compact headend G 2414, allows to receive up to 4 transponder of satellite signals (DVB-S /S2/ S2X), through its tuners. Each output mux can combine free services, coming from several tuners. The services of the 4 mux can be modulated according to the DVB-T or DVB-C standard in their RF output. The equipment has the following additional functions:

- Allow add new channels in the coaxial RF network.
- It is possible combine several headend G 2414 to do a complete headend.
- Support LNB and DiSeqC multiswitch in the input
- Support LNC and PID filtering
- Easy configuration using the Web interface.

3.2. Connections



- LNB IN 1:** RF 1 input signal DVB-S/S2/S2X. Allow supply LNB.
- LNB IN 2:** RF 2 input signal DVB-S/S2/S2X. Allow supply LNB.
- LNB IN 3:** RF 3 input signal DVB-S/S2/S2X. Allow supply LNB.
- LNB IN 4:** RF 4 input signal DVB-S/S2/S2X. Allow supply LNB.
- LOOP OUT 1:** It is the loop output connector of the tuner 1.
- LOOP OUT 2:** It is the loop output connector of the tuner 2.
- LOOP OUT 3:** It is the loop output connector of the tuner 3.
- LOOP OUT 4:** It is the loop output connector of the tuner 4.
- LED STATUS:** Light Status depend of the current process the headend change the light.
 - It is green when is tuned and work.
 - Blink changed the light from red to green when the headend is booting.

- 10 **RESET:** It is the reset button. It is needed enter a tool to press the buttons for example a clip for paper. If hold the button reset 3 seconds the headend will be rebooting and the led *status* blinking alternated the light from red to green color.
- 11 **LAN:** Allow programming the device using the web interface.
- 12 **RF OUT:** This connector is the RF output of the 4 mux modulated in DVB-T or DVB-C.
- 13 **DC INPUT:** The equipment has 2 jack used to connect the external power supply to the headend. Connecting the power supply in one jack is enough to supply the headend. Optionally connecting a second power supply (not supplied with the headend), in case of a power supply failure the equipment could continue to operate.
- 14 **FAN:** This is the air input for the fan. For proper ventilation avoid cover this area.

4. Installation

When the device is installed in a wall, keep clean and without obstacles for proper ventilation. Connect the cables, from the LNB or DiSEqC multiswitch to the input RF IN 1 to RF IN 4. If not connect the tuner Loop Out we recommended connect a 75 Ω F type loads isolated. The loads are no supplied with the headend. The output signals in the RF output can be mixing with the output terrestrial signals of other headend equipments before to distribute in the building. To programming the headend connect a patch cord between the LAN connector and the computer or connect the both device using a switch or router. Connect the jack of the power supply to the headend.


5. Configuring the compact headend G 2414

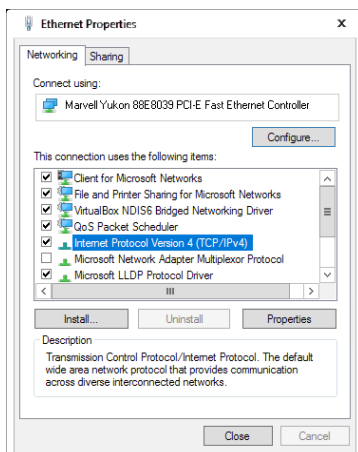
5.1. First steps

After finish the installation of the headend G 2414 is ready to connect the power supply to the plug. Wait around 2 minutes until the Compact Headend finish the boot process. To configure the transmodulator is necessary a computer or a mobile device with a web browser. For example: Google Chrome, Firefox, Opera or Microsoft Edge. In this guide is explaining the steps to configure the G 2414 from one computer with Windows operative system using the network interface Ethernet.

Connect the LAN port of the LAN and the interface Ethernet of the computer directly using a patch cord or use a switch or router between the both devices connecting with 2 patch cords. By default the G 2414 is configured with a static IP address 192.168.1.205.

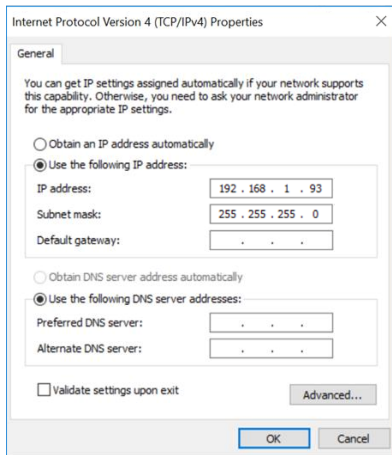
Windows 10

Click in the Windows start button →  Settings → Network and Internet → Ethernet → Change Adapter Settings. Right click on “Local Area Connection” and then select “Properties” in the contextual menu.



Configuring the protocol TCP/IPV4 to with a fixed address

Set the IP address of the computer in the same IP range and subnet of the headend. In the example, the computer will be configuring in the IP address 192.168.1.77. Remember copy the current configuration before to do any change, if need restore the current configuration of the Ethernet interface.



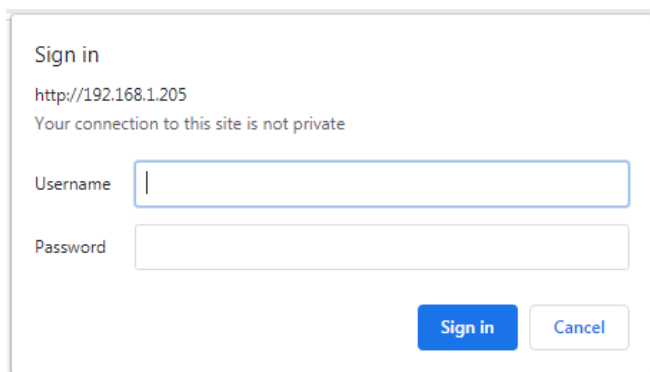
Check the radio button “Use the following IP address” and enter an IP and subnet mask. You can leave the Default gateway and DNS settings empty.

Press OK and close the windows.

6. Web interface

The device has an embedded webserver you can access using a web browser. Open the web browser and type **http://192.168.1.205** in the address bar.

The Web interface will be show a dialog to begin the session. You need type the user and password.



The default values of username and password are:

Username: **admin**

Password: **12345**

Type the username and password press the button **Sign In** to access to all settings of the headend.

6.1. Menu Status

6.1.1 General

This menu selection show a summary of the status of the inputs, output and system information. In the right side you can see a list of the languages for the OSD. The languages available are: English (language by default), Spanish and French. In the right of that list of Language you can see the button **Logout**, press with the left click of the mouse, to close the current session.

The list of the language and the button Logout are visible in all options of the menu.

Fte
maximal

Geminis G2414

EN ▾ Logout

Inputs

Input	Status	Mode	TS status	Frequency (MHz)	Symbol rate (Ksps)	Band	Polarity	DISEqC	Stream ID
Input 1	Locked	DVB-S/S2	●	11052 / 1302	22000	Low	H	OFF	
Input 2	Locked	DVB-S/S2	●	12303 / 1703	27500	high	V	OFF	
Input 3	Disabled								
Input 4	Disabled								

Outputs

Output	Status	Frequency (MHz)	Constellation	Code rate	Guard interval	Channel bandwidth	Modulation
Output 1	Running	474.00	64-QAM	7/8	1/32	8 MHz	8K
Output 2	Running	452.00	64-QAM	7/8	1/32	8 MHz	8K
Output 3	Running	490.00	64-QAM	7/8	1/32	8 MHz	8K
Output 4	Running	490.00	64-QAM	7/8	1/32	8 MHz	8K

System

System	Status
Multiplexer	OK
Modulator mode	DVB-T
CPU temperature	32.50 °C
Status code 1	00 00 00 00
Status code 2	00 00 00 00
System date & time	2021-02-18, 15:25:37
System uptime	04 7h 11m 27s

6.1.2 Program List

Show the list of the program of the input assigned to each output.

Program list

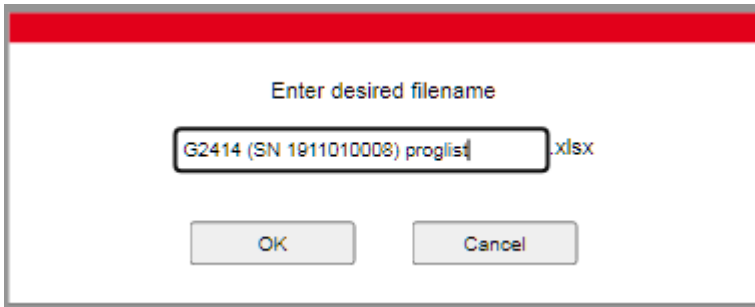
Output 1 | Output 2 | Output 3 | Output 4

Program title	Service ID	LCN	From input
lagesschau24 HD	10375	12	1
TVE internacional	3501	1	2
24H	3502	24	2

To export all program lists click on an icon.

CSV XLS

In the bottom of the screen have two icons to Export the information to CSV or XLS format. To export select with the mouse the icon and do click. After that appears the next dialog to select the filename.

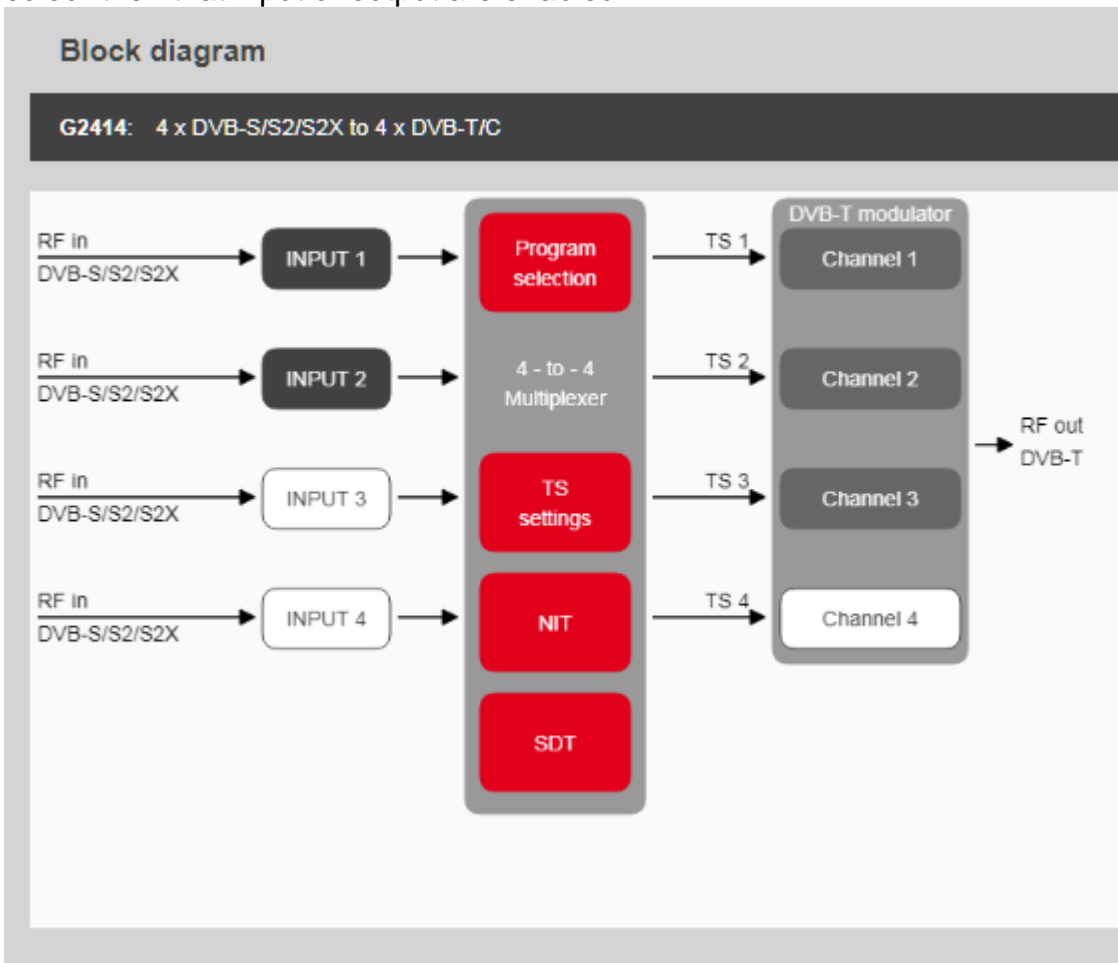


Type the new filename and press OK to download the file or press cancel to abort the operation.

6.1.3 Block diagram

Show a graphic with the state of different sections of the headend. Pressing an active area you can jump directly to the configuration page of this section. For example, if you do a click in the Channel 1 the web browser open the section RF output.

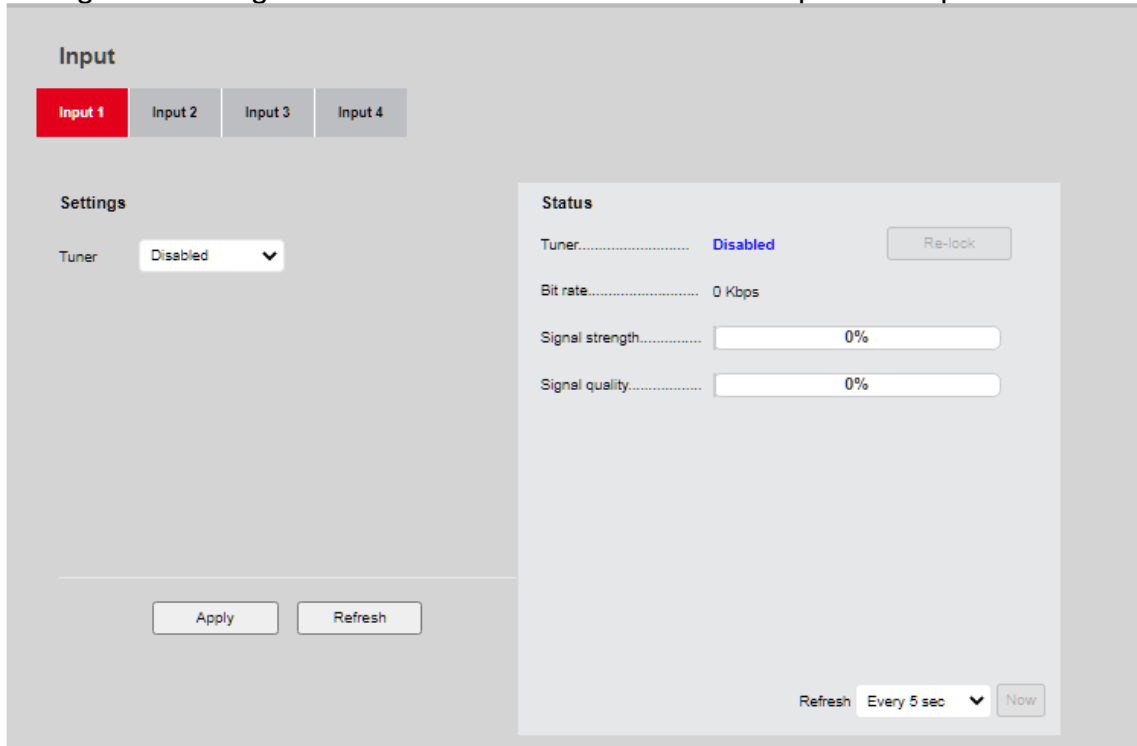
The next example screen you see the input and output (channels) inside of a round rectangle. If the background is white means the input or the output is disabled. If the background has a dark colour then that input or output are enabled.



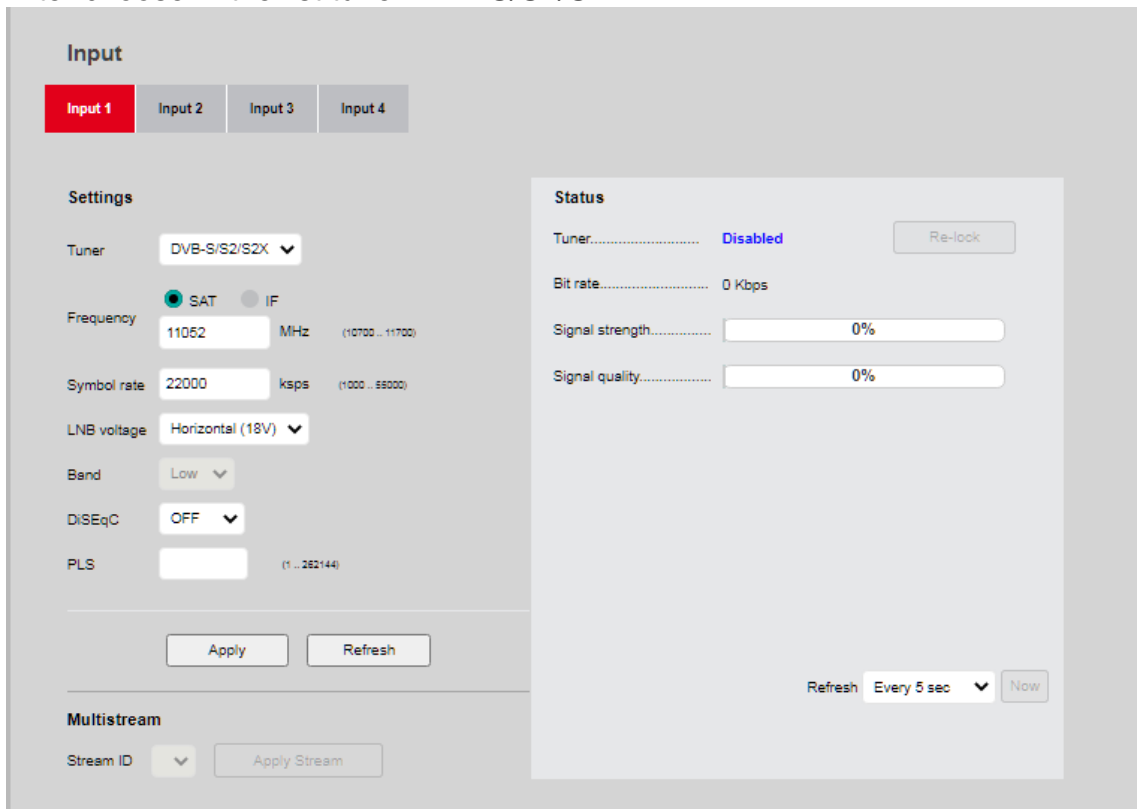
6.2. Menu Setup

6.2.1 Input

Allow change the settings of the tuners and the power of the four inputs. First select the input to change the settings. Do click in the tab with the name Input 1 to Input 4.



After choose in the list tuner DVB-S/S2/S2X.



Settings:

SAT: If check this element allow modify the frequency in the band of the satellite. The frequency range depends of the region in the regional settings. The range of frequency is:

- Europe: From 10700 MHz to 12750 MHz.
- Australia: From 11700 MHz to 12750 MHz.
- New Zeland: From 11700 MHz to 12750 MHz.

IF: Select this element to set the frequency of the tuner in the intermediate band of satellite. The frequency range is from 950 to 2150 MHz.

Frequency: Type here the centre frequency of the transponder in MHz. The value depend of the settings SAT or IF

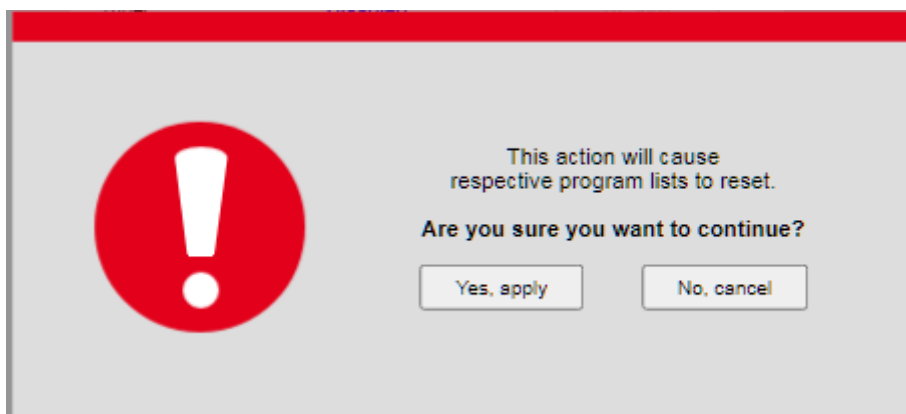
Symbol rate: In this field type the symbol rate of the signal. The values are allowed are between 1 and 55 Ksps.

Band: Select between high and low band. This list only is enable when the regional settings>Region is Europe and IF is selected. IF SAT is selected then the value is automatic.

DiSEqC: If the tuner is connected to a DiSEqC multiswitch or a monoblock LNB you can select the satellite DiSEqC command. The values are: OFF, A, B, C, D.

PLS: (Physical Layer Scrambling): If it is needed use this parameter in a multistream signal type the value between 1 and 262144.

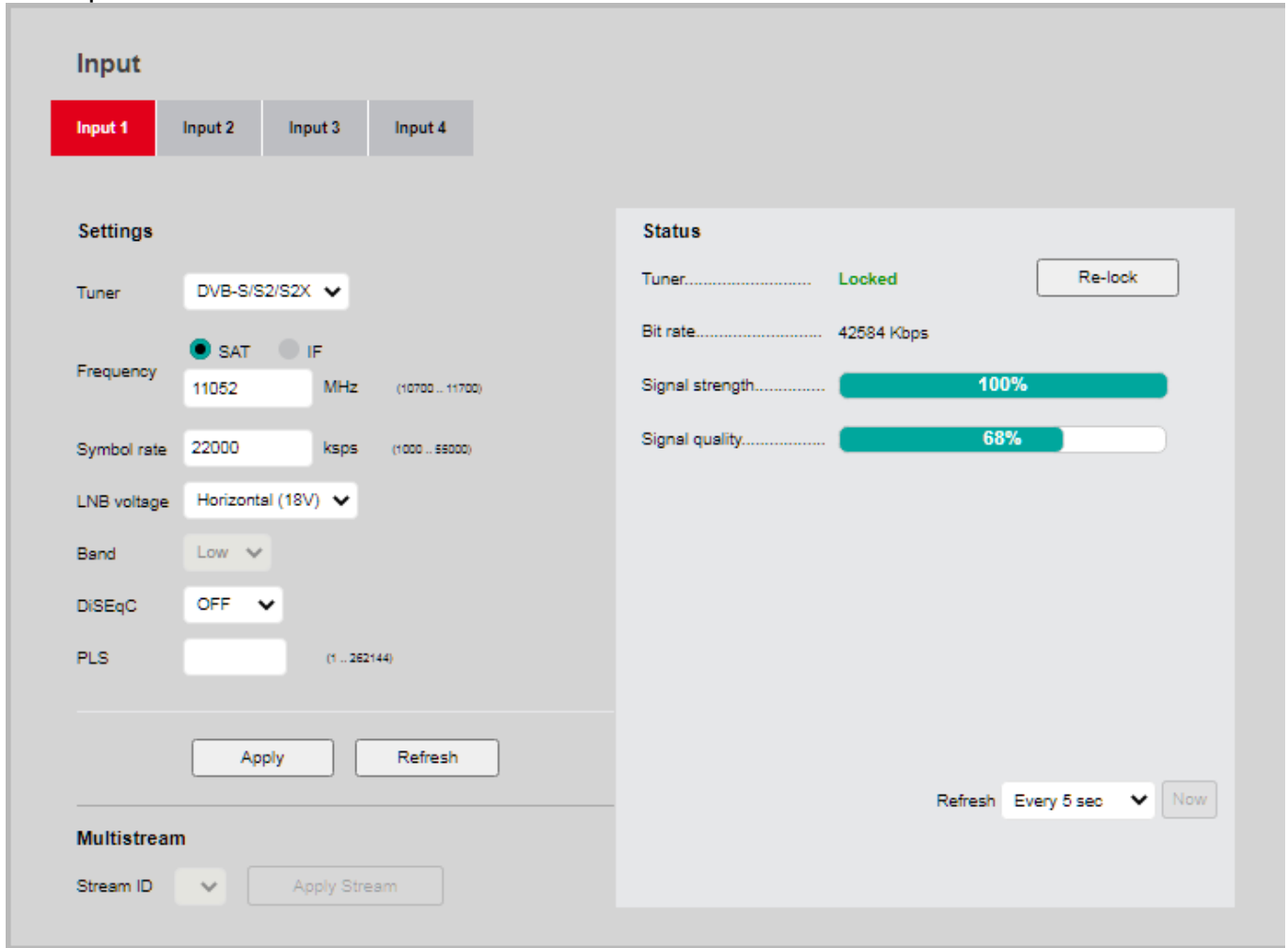
Press the button “Apply” to tune the transponder. The next windows will be show to confirm update the change. Pulse “Yes Apply” to send the new parameter to the headend or **No cancel** to avoid send the new parameter and keep the previous settings.

**Multisteam**

Stream ID: After the tuner is locked, if the transponder has several stream (multistream) is needed select the index of the Stream to receive from the headend. In this list must be select one the possible Stream ID and press the button Apply Stream. This option and the button **Apply Stream** will be disable is the emission is not a multistream.

Status

When the tuner is locked, you will see the current bit rate, the signal stream and the quality of the signal received. Press the button “Re-lock” to try to lock again the transponder with the same parameter.



In the list **Refresh** select the time to check the values of the signal quality and if the tuner is locked. The values available are: Manual, 2, 3, 4, 5 seconds. If select the option manual the operator must be press the button **Now** to update the values of this area status.

6.2.2 Configuración TS

Show the current configuration of the routing of transport Stream. In this screen, it is possible send all services from one input to one output. Please, don't use this option if the output has less bitrate than the input or you see an overflow in the output. In the next example we mark all the services of the input 1 go to the multiplexor and output 1. Press Apply to update the changes Press refresh to reload the current settings in the headend.

TS configuration

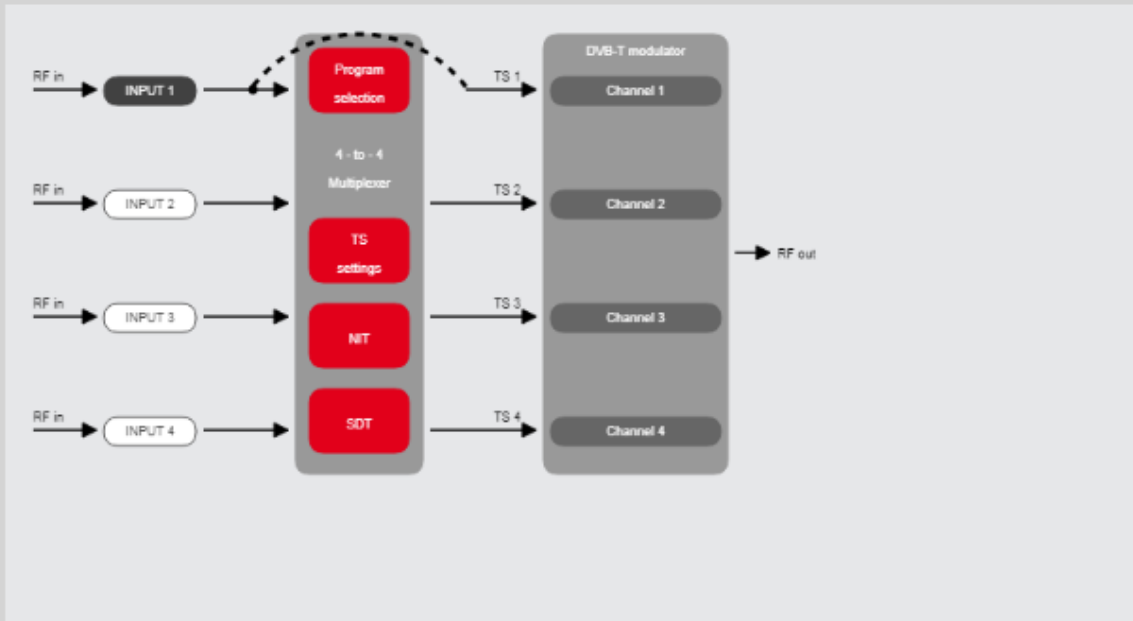
Transport stream distribution

Input 1 : Always connected to Multiplexer and optionally to Output 1, unconditionally passing all its programs through this output.

Input 2 : Always connected to Multiplexer and optionally to Output 2, unconditionally passing all its programs through this output.

Input 3 : Always connected to Multiplexer and optionally to Output 3, unconditionally passing all its programs through this output.

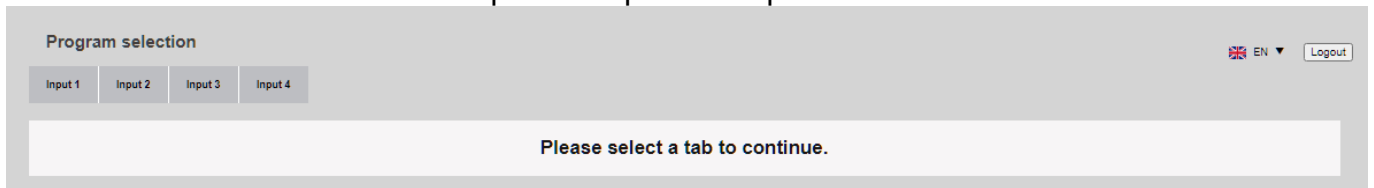
Input 4 : Always connected to Multiplexer and optionally to Output 4, unconditionally passing all its programs through this output.



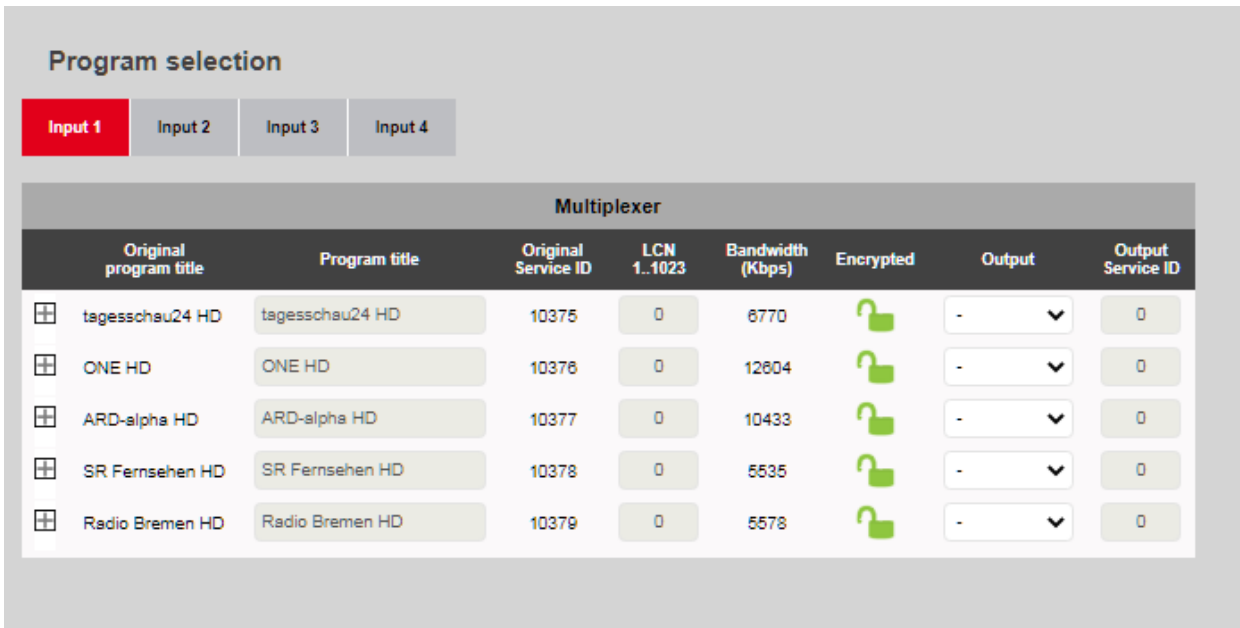
Apply Refresh

6.2.3 Program selection

Select one of tab with the name Input1 to Input 4 and press the left click of the mouse.



Please, wait some second to see the list of service from the input select. In our example, we do all the programming steps in the input 1 but follow the same steps for the other inputs tuned.

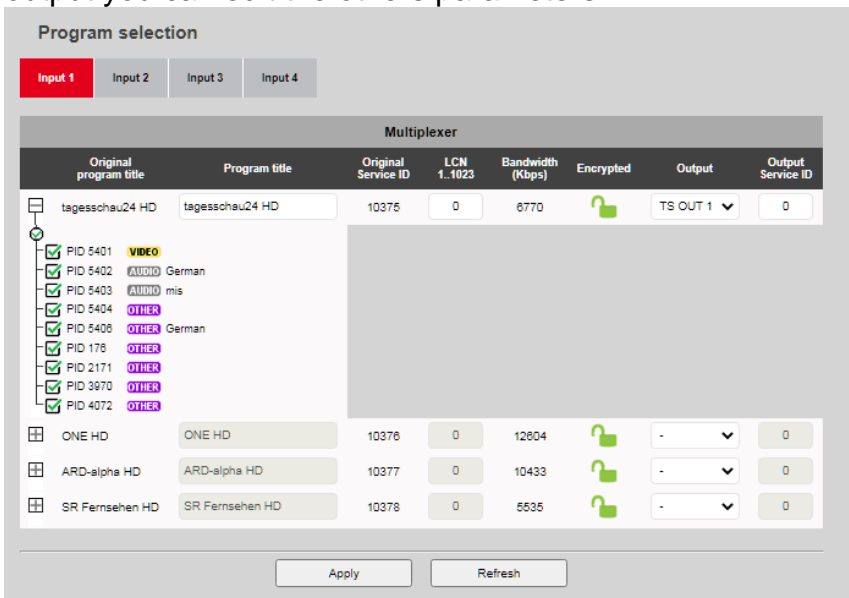


Choose a service and select the field **Output** to add the service to any output or remove.

The options available in the list are:

- - : The service is not assigned to any output.
- TS OUT 1: The service will be assigned to the output 1.
- TS OUT 2: The service will be assigned to the output 2.
- TS OUT 3: The service will be assigned to the output 3.
- TS OUT 4: The service will be assigned to the output 4.

It is needed select a one output TS OUT 1 to TS OUT4 to send to one output. After set the output you can edit the others parameters.



In the left side you can see the next picture if we select with the mouse and do click over this image, show all PIDs of the service. By default is marked all PIDs. All PID marked will be send to the output. If it is needed free some bitrate remove the marks of the data pids of the services and keep the PID video and audio needed. If you do click over the image the tree will be collapsed again.

Program Title: Edit this field to rename the service name. The default value is the same name receive in the input.

Original service ID. Show the service ID in the input. This field is read only.

LCN (Logical Channel Number): This field allow change the logical channel number of the service. Type a value from 1 to 1023. Each service in the output needs a different value.

Bandwidth: Show the current estimated value of the bitrate used by the service. This value is read only and can help to calculate the bitrate used by the services added in the output.

Encrypted: Show if the service is encrypted or not. The possible values are:



The service is encrypted.



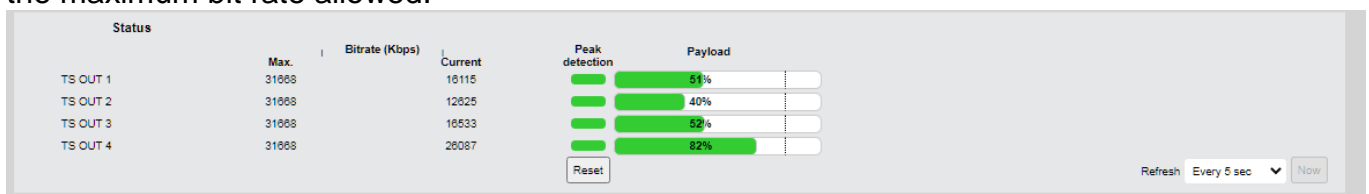
The service is free.

Service ID: Typing a value between 1 and 65535. This value must be different to other service. If we left this value to 0, after we press the button **Apply** the service ID will be the value read in the input.

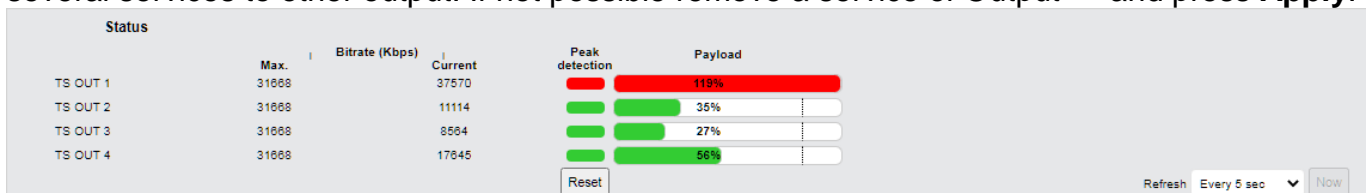
Follow the same steps with the next the services to add in each outputs, and press the button **Apply** to send the change to the device.

Press the button **Refresh** to reload the current values of the headend.

In the bottom of the screen is showing the status. In this status, you can see the current bit rate of each output. If the bar are green the bit rate of the all service added in the output is lower to the maximum bit rate allowed.

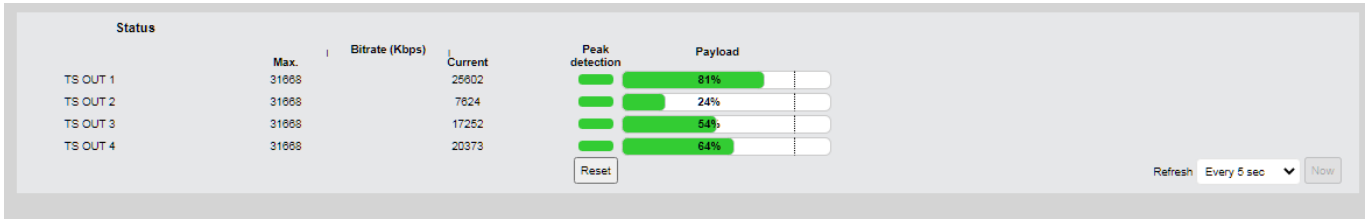


If the bar is red means the total bit rate of the services of the output is higher than the maximum bit rate. In this condition appear several blocks in the screen. To fix this problem, move one or several services to other output. If not possible remove a service of Output “-“ and press **Apply**.



When the overflow in the output is solved, the Peak detection keeps in red.

Press the button **Reset** to clear all Peak detection and show again in green.



The refresh rate of the status will be updated according to the value of the list on the right called **Refresh**.



The values are:

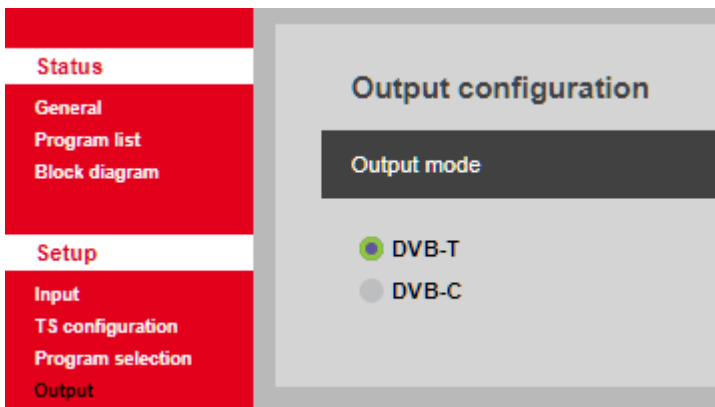
1. **Manual:** If select this element is needed press the button “Now” to update the value of the status.
2. **Every 2 sec:** Every 2 second will be read the current status.
3. **Every 3 sec:** Every 3 second will be read the current status.
4. **Every 4 sec:** Every 4 second will be read the current status.
5. **Every 5 sec:** Every 5 second will be read the current status.

6.2.4 Output

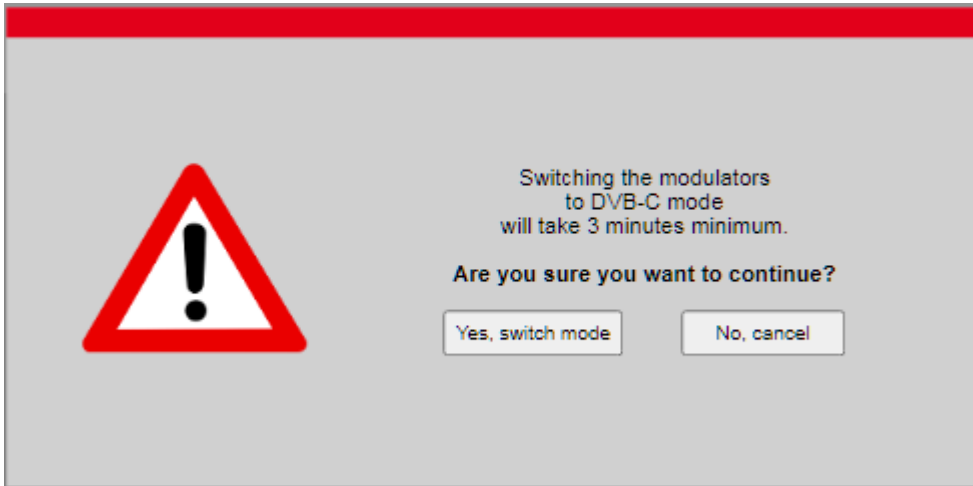
In this option is possible select the Output mode in the output. The values available are:

DVB-T: The output will be modulated in DVB-T (by default)

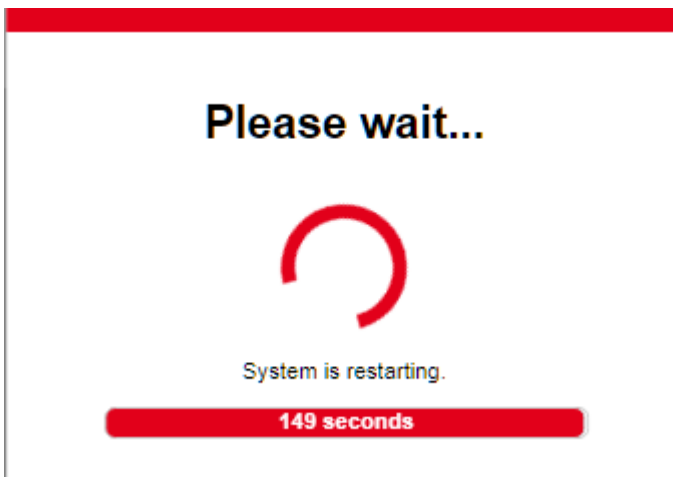
DVB-C: The output will be modulated in DVB-C



To change from DVB-T to DVB-C select DVB-C and you must be showing the next screen to confirm the action.



If press No cancel, this change will be cancelled. Press the button Yes, switch mode to start the process in the headend to switch the mode. The headend needs more than 3 minutes to change the mode. Wait until finish the process.



When the reboot finish, you must be show again Output mode.

6.2.4.1 RF Output

Depending of the Output mode DVB-T or DVB-C the settings will be different.

DVB-T

RF output								
	Channel	Frequency (MHz) 110.00 - 900.00	Constellation	Code rate	Guard interval	Channel bandwidth	Modulation	Enabled
Output 1	21	474.00	64-QAM	7/8	1/32	8 MHz	8K	<input checked="" type="checkbox"/>
Output 2	22	482.00	64-QAM	7/8	1/32	8 MHz	8K	<input checked="" type="checkbox"/>
Output 3	23	490.00	64-QAM	7/8	1/32	8 MHz	8K	<input checked="" type="checkbox"/>
Output 4	24	498.00	64-QAM	7/8	1/32	8 MHz	8K	<input checked="" type="checkbox"/>

Channel: Select in this list a channel to set the output frequency. The values of this list depend of the region in the regional configuration. The other output channels will be the next consecutive channels.

Frequency: Use this field to type the centre frequency of the output mux. The range of the value must be between 110 and 900 MHz.

Note:

The centre frequency of the other output will be equal to the previous centre frequency plus the channel bandwidth in MHz.

Constellation: Select in the list one of the next value QPSK, 16 QAM and 64 QAM.

Code rate: the values are 1/2, 2/3, 3/4, 5/6 and 7/8.

Channel Bandwidth: Select one of the next values 5, 6, 7 and 8 MHz.

Modulation: Select in the list the DVB-T mode. The values available are 2K, 4K and 8K.

Enabled: Check this field to allow send this mux to the RF output. It is possible enable or disable each mux.

Press **Apply** to send the new configuration to the headend.

DVB-C

	Frequency (MHz) 110.00 - 900.00	Step (MHz) 1.0 - 9.0	Symbol rate (MSPs) 2.5 - 9.0	Constellation	Enabled
Output 1	474.00	8.0	6.900	64-QAM	✓
Output 2	482.00	8.0	6.900	64-QAM	✓
Output 3	490.00	8.0	6.900	64-QAM	✓
Output 4	498.00	8.0	6.900	64-QAM	✓

Apply

Frequency: Type here the centre frequency in MHz. The values available are between 110 and 900 MHz.

Note:

The centre frequencies of the other outputs are equal to the previous mux plus the Step value in MHz.

Step: It is difference in MHz between centre frequencies of the each output mux. The values are between 1.0 and 9.0 MHz. The minimum step is 0.1 MHz. The default value is 8 MHz.

Symbol rate (MSPs): Type here the value of the symbol rate. The range of values is between 2.5 and 9.0 MSPs.

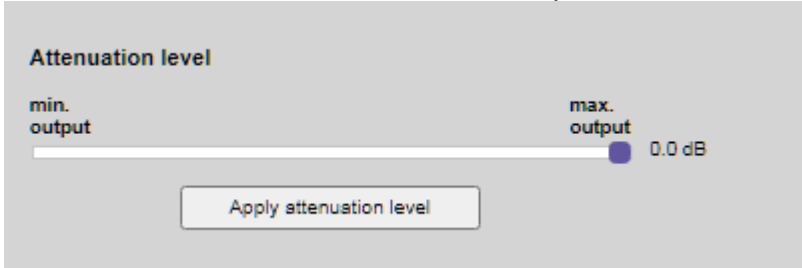
Constellation: The options are: 16-QAM, 32-QAM, 64-QAM, 128-QAM y 256-QAM.

Enabled: Check this field to allow the mux in the RF output. It is possible enable or disable each mux.

Press **Apply** to send the new configuration to the headend.

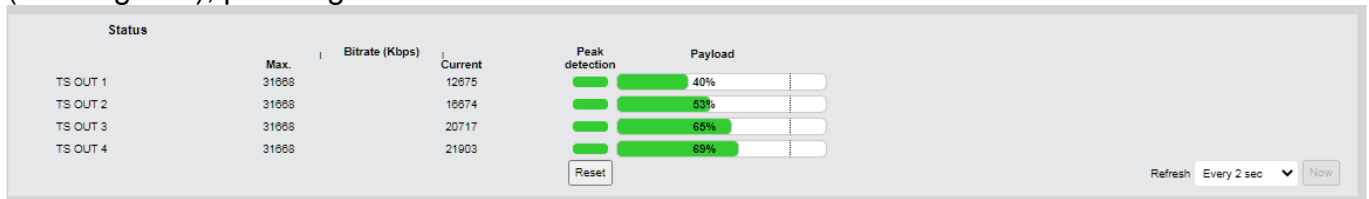
Attenuation level:

This setting allows change the output level of the headend. Use the mouse to change the adjustment of the attenuator between 0 and -31.5 dB. If the value of the attenuator is 0.0 dB then the headend has the maximum output level. If the value is -31.5 dB then the output is set to the minimum level. The minimum step is 0.5 dB.



Status

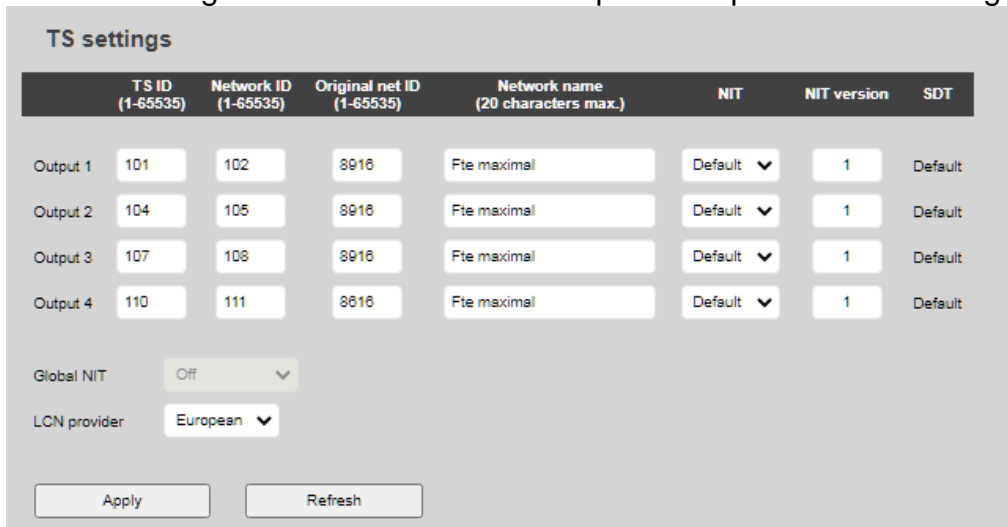
In the bottom of the screen appears the status section. We can show the maximum bit rate and the current bit rate of the headend. The peak detection will be red when detect the current bit rate is higher than the maximum bit rate. The Peak detection only will be clear the detection, (set to green), pressing the button Reset.



In the option **Refresh** we can set the refresh rate of the status. If we select Manual the button Now will be enabled and only will be update the information of the status pressing the button "Now".

6.2.4.2 TS settings

You can configure some values of the output Transport Stream settings



TS ID: Edit the value the Transport Stream ID. The value goes from 1 to 65535.

Network ID: Type the value of the network ID. The value must be between 1 and 65535.

Original Net ID: In this field set the value of the Original Network ID. The value is between 1 and 65535

Network name: In this field you can enter the name of the network. The maximum length is 20 characters.

NIT: Three options are available:

- **Default:** This is the default selection after a factory values. This option does a simple configuration of the NIT and SDT. The extended options of NIT and SDT settings will be disabled.
- **Global:** When select this option copy the NIT settings from the input. All TS, NIT and SDT settings will be disabled.
- **Custom:** The options of TS settings will be disable in this screen. These values will be edited in NIT settings. The NIT and SDT information must be writing by the user.

NIT Version: In this field type a value from 1 to 31. It is enabled only if the NIT setting is set to Default.

Global NIT: When in the field NIT select in the list Global must be select one of the next options.

OFF: No NIT information.

Front Input 1: Get the NIT information from the input 1.

Front Input 2: Get the NIT information from the input 2

Front Input 3: Get the NIT information from the input 3

Front Input 4: Get the NIT information from the input 4

LCN provider: Select the LCN provider from one of the next option: European, NorDig1 e ITC / UK.

Press **Apply** to update the TS settings in the headend

Pulse **Refresh** to reload the information from the headend.

6.2.4.3 NIT

In this option can change NIT settings. Select the tab with the name starting by output.

NIT mode. This setting was defined in the TS configuration. The value will be Default, custom or the value define in TS settings> NIT global.

Default: If was selected this mode cannot edit any setting. Only allow show or permit export the current settings to text file.

To export the information press the button **Export**, in the dialog select the name of the file and press OK. The file will be stored in the download folder of your web browser.

NIT - Network Information Table EN

Output 1 | Output 2 | Output 3 | Output 4 | Export

NIT mode: **Default**

Network name: NIT version:

Network ID: LCN provider: European

#	TSID	Orig. Net ID	Freq. (MHz)	Bandwidth	Constellation	Transmission mode	Code rate	Guard interval	Private data	Services					
										#	Svc ID	LCN	Type	Visible	Manage
1	101	8816	474.00	8 MHz	64-QAM	8K	7/8	1/32	00000028	1	10375	12	19	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
										2	3501	1	19	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
										3	3502	24	19	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Global

In this mode can be not be edit, because the value of the NIT is copy from the input selected in TS settings->NIT Global. It is not possible export the information.

NIT - Network Information Table

Output 1 | Output 2 | Output 3 | Output 4 | Export

NIT mode: **From Input 1**

Network name: NIT version:

Network ID: LCN provider: European

#	TSID	Orig. Net ID	Freq. (MHz)	Bandwidth	Constellation	Transmission mode	Code rate	Guard interval	Private data	Services				
										#	Svc ID	LCN	Type	Visible

Custom

In this mode we can edit the NIT parameter, the network, NIT version. In this mode too we can edit the information of the transport stream we include in the NIT table.

Network name: Here we can type the name of the network. The maximum length is 20 characters.

NIT version: The value must be between 1 and 31.

Network ID: The value must be between 1 and 65535.

Press the button **Apply** to send the changes to the headend.

NIT - Network Information Table EN ▼

Output 1 | Output 2 | **Output 3** | Output 4 | Export

NIT mode: Custom

Network name: Fte maximal | NIT version: 1

Network ID: 108 | LCN provider: European

#	TSID	Orig. Net ID	Freq. (MHz)	Bandwidth	Constellation	Transmission mode	Code rate	Guard interval	Private data	Services						
										#	Svc ID	LCN	Type	Visible	Manage	
1	107	8916	490.00	8 MHz	64-QAM	8K	7/8	1/32	00000028	1	10377	14	19	✓	✗	ⓘ
2										2	802	6	01	✓	✗	
3										3	804	7	01	✓	✗	
4										4	3203	3	01	✓	✗	
5										5	3584	43	02	✓	✗	
6										6	3585	44	02	✓	✗	
7										7	3586	45	02	✓	✗	+

Pressing Add we can add the information of the other transponder of our network. We need add too the services information

NIT - Network Information Table


Output 1 | Output 2 | **Output 3** | Output 4 | Export

NIT mode: Custom

Network name: Fte maximal | NIT version: 1

Network ID: 108 | LCN provider: European

#	TSID	Orig. Net ID	Freq. (MHz)	Bandwidth	Constellation	Transmission mode	Code rate	Guard interval	Private data	Services						
										#	Svc ID	LCN	Type	Visible	Manage	
1	107	8916	490.00	8 MHz	64-QAM	8K	7/8	1/32	00000028	1	10377	14	19	✓	✗	ⓘ
2	101	8916	474	8 MHz	64-QAM	8K	1/2	1/32	00000028	+						

After that we need add the service information. In the Service area select and click the icon  to add new service information. When all services are added press apply to save the change.

NIT - Network Information Table EN

Output 1 | Output 2 | **Output 3** | Output 4 | Export

NIT mode: Custom

Network name: Fte maximal | NIT version: 1

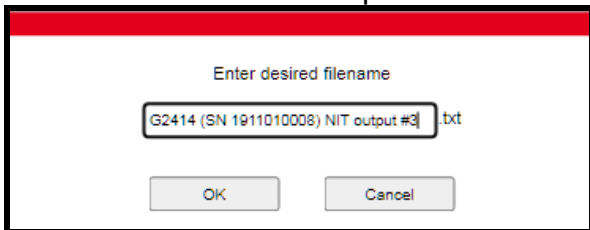
Network ID: 108 | LCN provider: European

Current settings

#	TSID	Orig. Net ID	Freq. (MHz)	Bandwidth	Constellation	Transmission mode	Code rate	Guard interval	Private data	Services						
										#	Svc ID	LCN	Type	Visible	Manage	
1	107	8916	490.00	8 MHz	64-QAM	8K	7/8	1/32	00000028	1	10377	14	19	✓	✗	ⓘ
										2	802	6	01	✓	✗	
										3	804	7	01	✓	✗	
										4	3203	3	01	✓	✗	
										5	3584	43	02	✓	✗	
										6	3585	44	02	✓	✗	
										7	3586	45	02	✓	✗	+
2	101	8916	474.00	8 MHz	64-QAM	8K	7/8	1/32	00000028	1	10375	12	19	✓	✗	ⓘ
										2	3501	1	19	✓	✗	
										3	3502	24	19	✓	✗	+

Delete: This button allow remove the information of a Transport Stream from the NIT. Check the field in the left side and press button delete.

Export: Allow save the setting of the current NIT in a text format. This file can be imported to add in a custom NIT. After press the button export, appears a dialog to select the filename. Enter the new name and press OK to download.

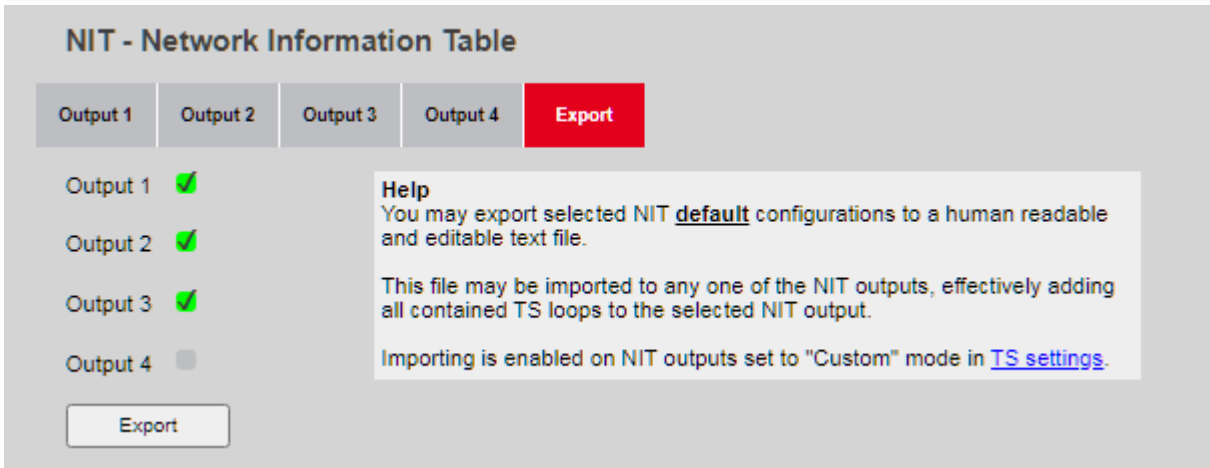


Import: Press the button import to recover the information of a NIT from a file. It is showing a dialog to select the file to import. When the file is selected, press the button **Open**. After import the settings, appear an warning window to remember we need press the button **Apply** to send the new configuration to the headend.

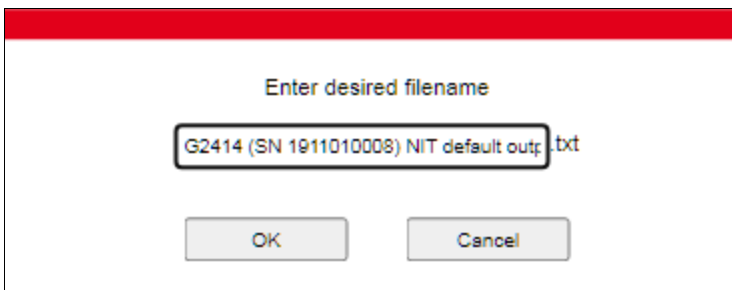
Apply: This button send the configuration to the headend.

Refresh: Press this button to read the current configuration of the headend. Remember if you do any change and press this button before to press **Apply** all changes doing before will be forgotten.

If select the tab **Export** can save the configuration from one to all output in the same file.

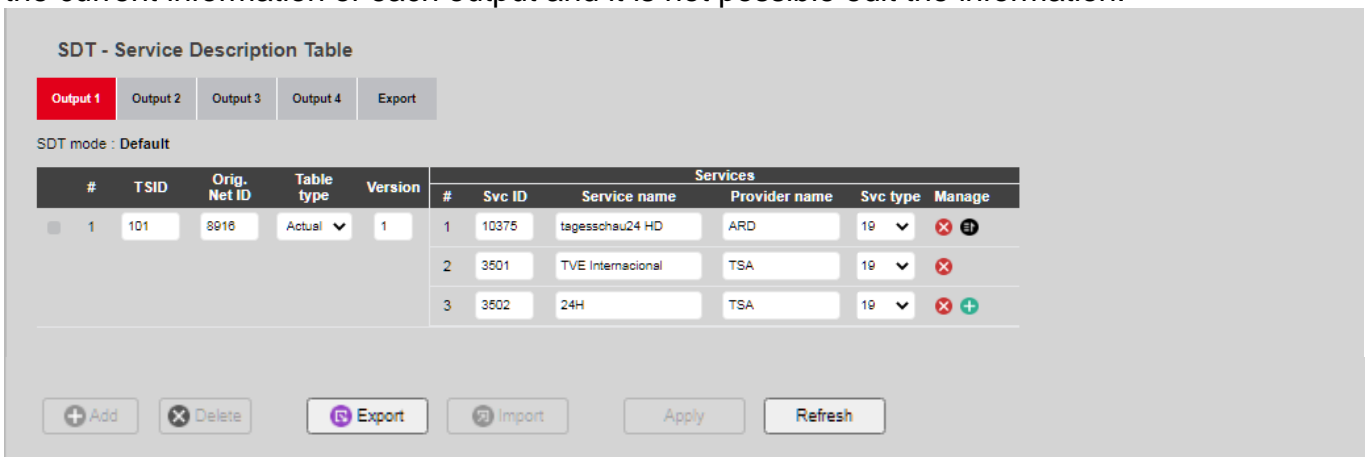


Select the outputs with the mouse in the field after each Output and press the button export. Appear the next dialog to select the filename. Type the new name and press OK to download the file.



6.2.4.4 SDT

When the value of SDT mode is default, this option shows the Service Description Table with the current information of each output and it is not possible edit the information.



Custom mode allow change the parameters of the SDT table as Service name, provider, type of service add and remove service and export and import a configuration.

Add: Insert a TS information in the SDT table. Enter each parameter as TSID, Original Network ID, Type of the table, Version and the all information of the service

SDT - Service Description Table

Output 1 Output 2 **Output 3** Output 4 Export

SDT mode : Custom

#	TSID	Orig. Net ID	Table type	Version	Services															
					#	Svc ID	Service name	Provider name	Svc type	Manage										
<input type="checkbox"/>	1	107	8916	Actual	1	10377	ARD-alpha HD	ARD	19	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					2	802	LIFE TV			01	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					3	804	Hillsong	overon		01	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					4	3203	TCI	overon		01	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Delete: Check box in the left of the Transport Stream and press the button Delete to remove all the information of the transport Stream selected

Export: Press this button to save in a file the current information of the SDT in the output select.

Import: Pressing this button to recover the SDT information from a file saving before with the option export.

Apply: Press apply to send the new configuration to the headend.

Refresh: Load from the headend the current settings.

When we set NIT global then it is not possible do any change.

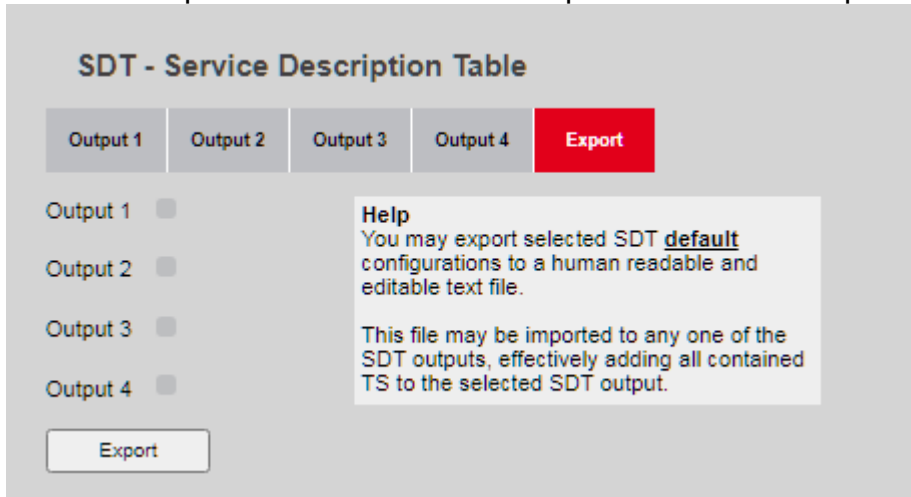
SDT - Service Description Table

Output 1 Output 2 Output 3 **Output 4** Export

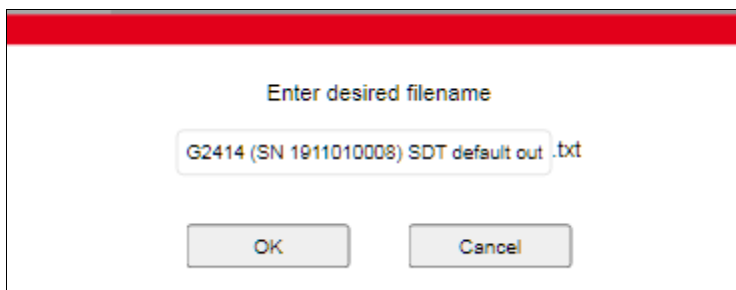
SDT mode : Default

#	TSID	Orig. Net ID	Table type	Version	Services															
					#	Svc ID	Service name	Provider name	Svc type	Manage										
<input type="checkbox"/>	1	110	8816	Actual	1	10378	SR Fernsehen HD	ARD	19	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					2	801	TBN Europe HD	Overon		01	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					3	807	TBN Poland	overon		01	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					4	783	Telesur SD	TSA		01	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					5	3581	Radio 1	TSA		02	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					6	3582	Radio Clasica	TSA		02	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					7	3583	Radio 3	TSA		02	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Select the tab Export to save the SDT information of the one or several output in a unique file. Mark the outputs to save in the file and press the Button Export.



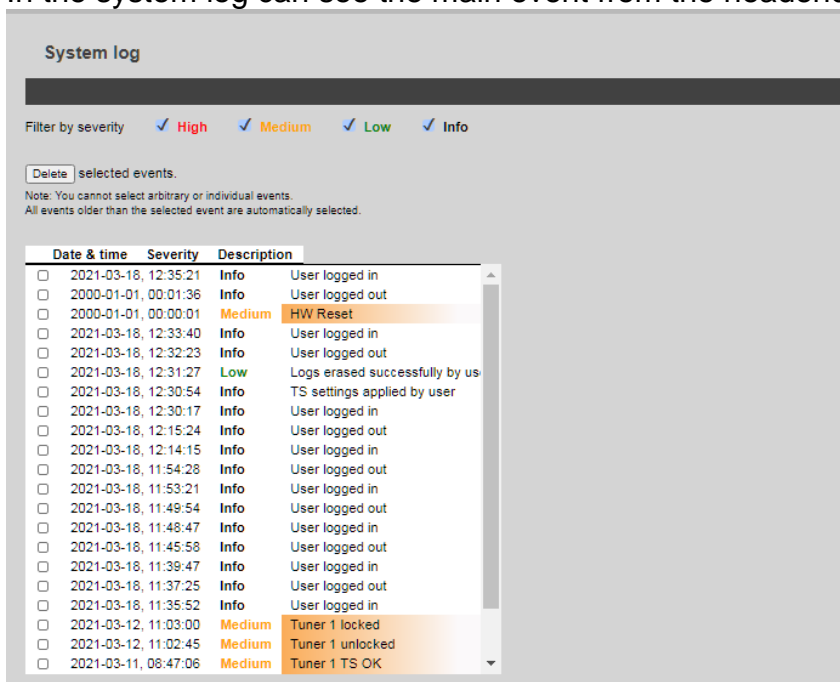
In the next dialog select the filename and press **OK** to export the information.



6.3. Menu System

6.3.1 System log

In the system log can see the main event from the headend and the user operation.



It is possible do a partial or total delete of the log. Mark an element of the list. From this element to the first record will be maker. Press the button delete to remove the selected elements.

6.3.2 LAN

In this menu can change the IP configuration of the headend.

Enable DHCP: Check this option to get the IP configuration from a DHCP server in your local network. If not use this option you must fill the next settings manually.

IP address: In this field write the IP address. Remember after apply the new configuration you must type the new IP address in the address bar of your navigation. The default value is 192.168.1.205.

Subnet mask: Type the subnet mask of your network. The default value is 255.255.255.0.

Gateway: Type the IP address of the Gateway in your network address. The default value is 192.168.1.1

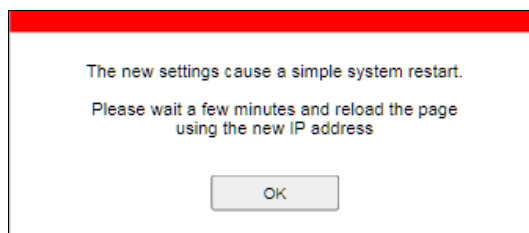
Primary DNS: Type the IP address of the Domain Name Server assigned by your internet service provider.

Secondary DNS: Type in this field the secondary Domain Name Server assigned by your internet service provider. If not has this information type 0.0.0.0.

Port: In this field type the IP port used to access to the web interface. Modify this value to avoid collision with another device use the same port in your network, for example a webserver. The default value is 80 but if it is changed the value remember to connect again need type the IP address add double colon “:” and the type the port. For example, if the port is 8000, and the IP address is 192.168.1.205 to we connect again to the headend is needed type <http://192.168.1.205:8000> in the address bar of your navigator. In the case of the port 80 is not needed add after the IP address.

Dirección MAC: It is read only and shows the MAC address

After press the button apply appears the next message. Press the button Ok and wait until the headend reboot.



After wait 2 minutes, type in the address bar of your navigator the new IP address to connect again to the headend.

6.3.3 Administration

This menu allows change the user and password to access to the web interface.

New username: Type here the new value of the username.

New password: Type the value of the new password

Confirm the new password: In this field must repeat the new password.

Keep username & password after applying factory default: If check this mark when the user does a factory reset keep the current settings of the user and password to login again. If not mark after load a factory reset values the user and the password will be the default values.

Press apply to update the new values in the headend.

6.3.4 System restart

Press the button Restart to reboot the system. This process need around two minutes. Please wait until the restart of the system finish

6.3.5 Factory default

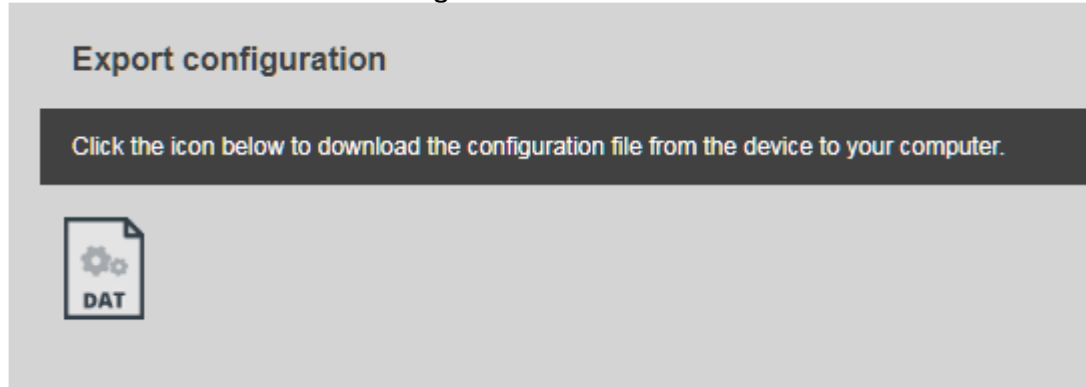
When press the button Load Factory defaults all settings will be delete and replace by the default values. After that, the headend reboot to finish the process. Before to press the button **Load Factory default**, you can check the mark **Erase all event logs after applying factory default** to clear the System Log when load the factory default values.

6.3.6 Import/Export Config

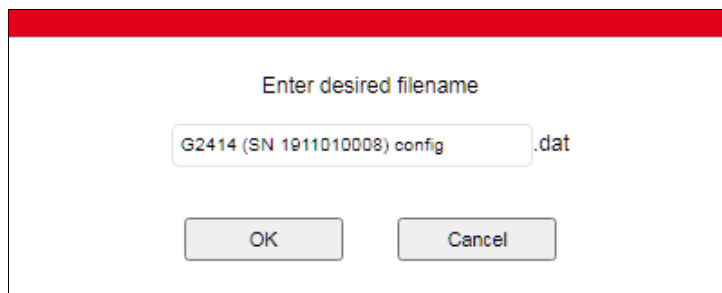
In this menu could be export and import the configuration of the headend.

- **Export configuration**

Move the mouse over the Image with the text DAT and do left click.

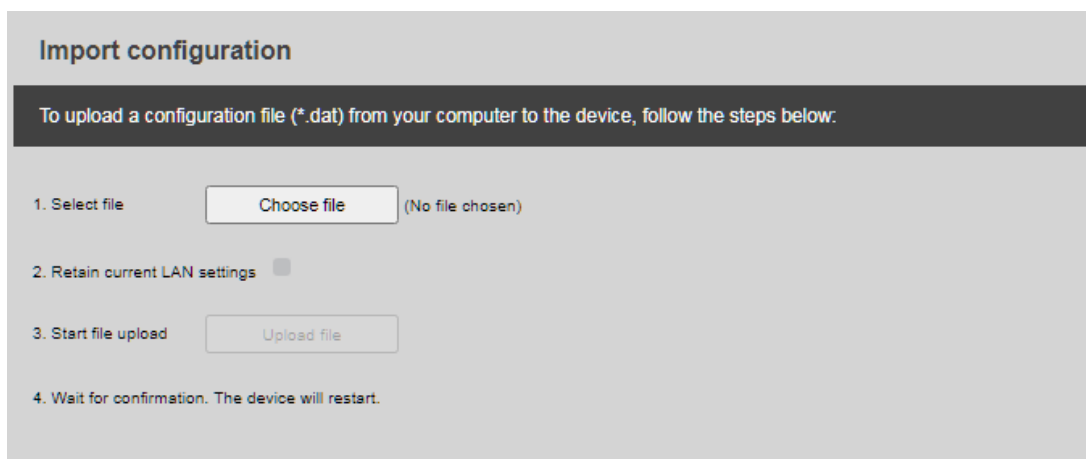


Then appear the next dialog to enter the filename of the file to export. Press OK to save the export the settings in a file or press cancel to skip the operation.

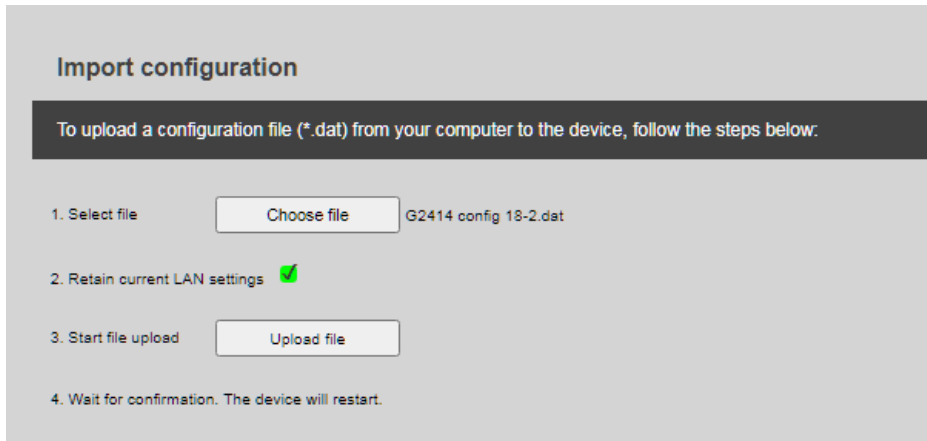


- **Import configuration**

Choose this option to import a file with configuration saved before using the option export. Follow the next steps to import the configuration:



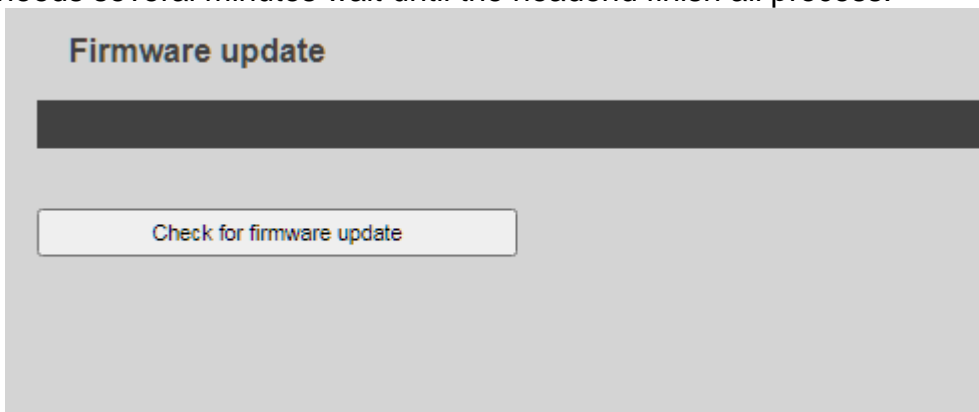
- 1) **Select file:** Press the button **Choose file**, then appear a dialog to find the file. Select the file with the mouse and press **Open** in the dialog.



- 2) **Retain current LAN settings:** Check this field to keep the current IP configuration and avoid import the IP settings store in the configuration file.
- 3) **Start file upload:** Press the button Upload file and the file will be reading for the headend. After that the headend will be reboot to finish the process. Please wait until all process finish.

6.3.7 Firmware update

Before to update the firmware check if the headend is connected in a network with access to internet and the IP configuration of the headend is valid to connect to internet. Press the button **Check for firmware update** and wait some seconds. If show the button “**begin update**” then exist a new version. Press the button “**begin update**” upgrade the firmware. The upgrade needs several minutes wait until the headend finish all process.



Note:

While the headend is upgrading please don't change of page of the web browser or turn off the headend. If the power fails while it is upgrading the headed can be damage.

6.3.8 Regional settings

Allow select the clock source and the region

Source Clock: The headend allow get the clock from the next source:

- **From:** Select an input in the list to get the date time information from the signal received in the input. The input must be tuned to get the time.
- **From NTP server:** The headend must be connected to internet before to select. The option available are:
 - **Default:** The device get the information from a NTP server predefined.
 - **Custom:** The operator must be type the NTP server address.
- **Timezone:** Select your current time zone in the list.

Please the button **Apply** to send the new settings to the headend

Region: This configuration is used to select the local oscillator and the channel list. The regions available are: Europe, Australia y New Zeeland. Select an element in the list and press the button apply to update the configuration.

6.3.9 Info

Show the information of the software and hardware.

7. Technical specification

Technical Specification													
Reference	G 2414.												
Code	2002414												
Description	Compact transmodulator headend 4 x DVB-S/S2/S2x to 4 x DVB-T/ DVB-C												
Input													
Number	4												
Tuner Loop	Yes												
Connectors	75 Ω, F type female												
DVB-S	Symbol rate: 1-55 Mbits Roll off: 0,2, 0,25, 0,35 (Automatic) FEC: 1/2, 2/3, 3/4, 5/6, 7/8 (Automatic) Spectrum inversion: Inverted and not inverted (Automatic)												
DVB-S2	Symbol Rate: QPSK: 1-55 MBaud/s 8-PSK: 1-45 MBaud/s Roll off: 0,2, 0,25, 0,35 (Automatic) FEC: QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 8/10 (Automatic) 8-PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 (Automatic) Spectrum inversion: Inverted and not inverted (Automatic)												
DVB-S2X	Symbol Rate: QPSK: 1-45 MBaud/s 8-PSK: 1-30 MBaud/s Roll off: 0,2, 0,35 (Automatic) FEC: QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 8/10 (Automatic) 8-PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 (Automatic) Spectrum inversion: Inverted and not inverted (Automatic)												
Frequency range	950-2150 MHz												
Input level	44 dBμV - 84 dBμV / (-65 dBm to -25 dBm)												
LNB (Remote power supply)	0V / 13V/ 18V/ 0-22kHz												
Maximum LNB current	400 mA												
Support Diseqc 1.0	Yes												
Integrated multiplexor	Yes, allow routing a service from one input to any output mux												
Support Multistream	Yes												
Output													
Number of connectors	1												
Connector	75 Ω, F type female												
Number of output MUX	4												
DVB-T	<table border="1"> <tr> <td>Frequency range</td> <td>110-950 MHz</td> </tr> <tr> <td>Mode</td> <td>2K/8K</td> </tr> <tr> <td>Bandwidth</td> <td>6, 7 y 8 MHz</td> </tr> <tr> <td>Constellation</td> <td>QPSK, 16 QAM y 64 QAM</td> </tr> <tr> <td>Guard interval</td> <td>1/4, 1/8, 1/16 y 1/32</td> </tr> <tr> <td>Code rate</td> <td>1/2, 2/3, 3/4, 5/6 y 7/8</td> </tr> </table>	Frequency range	110-950 MHz	Mode	2K/8K	Bandwidth	6, 7 y 8 MHz	Constellation	QPSK, 16 QAM y 64 QAM	Guard interval	1/4, 1/8, 1/16 y 1/32	Code rate	1/2, 2/3, 3/4, 5/6 y 7/8
Frequency range	110-950 MHz												
Mode	2K/8K												
Bandwidth	6, 7 y 8 MHz												
Constellation	QPSK, 16 QAM y 64 QAM												
Guard interval	1/4, 1/8, 1/16 y 1/32												
Code rate	1/2, 2/3, 3/4, 5/6 y 7/8												
DVB-C	<table border="1"> <tr> <td>Frequency range</td> <td>110-950 MHz</td> </tr> <tr> <td>Constellation</td> <td>16QAM, 32QAM, 64QAM, 128QAM & 256QAM</td> </tr> <tr> <td>Symbol rate</td> <td>1.-7.200 Mbd</td> </tr> </table>	Frequency range	110-950 MHz	Constellation	16QAM, 32QAM, 64QAM, 128QAM & 256QAM	Symbol rate	1.-7.200 Mbd						
Frequency range	110-950 MHz												
Constellation	16QAM, 32QAM, 64QAM, 128QAM & 256QAM												
Symbol rate	1.-7.200 Mbd												
Output level	90 dBμV / (-25 dBm)												
Regulation	0-31.5 dB (step 0.5 dB)												
MER	≥ 42 dB												
LAN (Only used for programming)													
Programmng	Using a Web interface												
Web interfaz supported language	English, Spanish and French												
Type of connector	RJ 45												
Speed	100 Mbits												
Standard	IEEE 802.3 10/100 Base-T												
GENERAL													
Supply Voltage / current consumption	12Vdc / 1.8 A												
External power supply	100-240Vac 50-60Hz / 12Vdc -2.5 A												

DC IN jack connector	2 x Φ 2.1 mm
Maximum power consumption	23 W
Dimensions	235 mm x 115 mm x 48 mm
Working temperature range	0-40 °C

1. ANNEX I

Next it is shown the channel capacity for systems without hierarchy in all the cases of constellation, guard interval and codification relation, for DVB-T transmissions of 8MHz, 7MHz, 6MHz. The useful capacity channel is identical for all modes.

Useful channel capacity (8 MHz)

Modulation	FEC codification	Guard Interval			
		1/4	1/8	1/16	1/32
QPSK	1/2	4.976	5.529	5.855	6.032
	2/3	6.635	7.373	7.806	8.043
	3/4	7.465	8.294	8.782	9.048
	5/6	8.294	9.216	9.758	10.053
	7/8	8.709	9.676	10.246	10.556
16-QAM	1/2	9.953	11.059	11.709	12.064
	2/3	13.271	14.745	15.612	16.086
	3/4	14.929	16.588	17.564	18.096
	5/6	16.588	18.431	19.516	20.107
	7/8	17.418	19.353	20.491	21.112
64-QAM	1/2	14.929	16.588	17.564	18.096
	2/3	19.906	22.118	23.419	24.128
	3/4	22.394	24.882	26.346	27.144
	5/6	24.882	27.647	29.273	30.16
	7/8	26.126	29.029	30.737	31.668

Useful channel capacity (7 MHz)

Modulation	FEC codification	Guard Interval			
		1/4	1/8	1/16	1/32
QPSK	1/2	4.354	4.838	5.123	5.278
	2/3	5.806	6.451	6.83	7.037
	3/4	6.532	7.257	7.684	7.917
	5/6	7.257	8.064	8.538	8.797
	7/8	7.62	8.467	8.965	9.237
16-QAM	1/2	8.709	9.676	10.246	10.556
	2/3	11.612	12.902	13.661	14.075
	3/4	13.063	14.515	15.369	15.834
	5/6	14.515	16.127	17.076	17.594
	7/8	15.24	16.934	17.93	18.473
64-QAM	1/2	13.063	14.515	15.369	15.834
	2/3	17.418	19.353	20.491	21.112
	3/4	19.595	21.772	23.053	23.751
	5/6	21.772	24.191	25.614	26.39
	7/8	22.861	25.401	26.895	27.71

Useful channel capacity (6 MHz)

Modulation	FEC codification	Guard Interval			
		1/4	1/8	1/16	1/32
QPSK	1/2	3.732	4.147	4.391	4.524
	2/3	4.976	5.529	5.855	6.032
	3/4	5.599	6.221	6.587	6.786
	5/6	6.221	6.912	7.318	7.54
	7/8	6.532	7.257	7.684	7.917
16-QAM	1/2	7.465	8.294	8.782	9.048
	2/3	9.953	11.059	11.709	12.064
	3/4	11.197	12.441	13.173	13.572
	5/6	12.441	13.824	14.637	15.08
	7/8	13.063	14.515	15.369	15.834
64-QAM	1/2	11.197	12.441	13.173	13.572
	2/3	14.929	16.588	17.564	18.096
	3/4	16.796	18.662	19.76	20.358
	5/6	18.662	20.735	21.955	22.62
	7/8	19.595	21.772	23.053	23.751

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