



# User guide

## PAL module 492050/51

Model

**PAL HD downscale module 492052/53**

Item no.

**492050/51/52/53**

Version

**891075B**

**01 - 2012**

**EN**

[triax.com](http://triax.com)

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## Disposal



Within in the European Union this label indicates that the product cannot be disposed of with the general household waste. Neither the headend nor the input and output modules can be disposed of with the general household waste.

For proper treatment and recycling of old products, please take them to designated collection points in accordance with your national legislation.

## Box content

A new output module is wrapped in antistatic bubble wrap and packed in a cardboard box when you receive it.

Included in the box is a user guide instructing you in how to use the TDX Service Tool to configure the module.

## PAL module

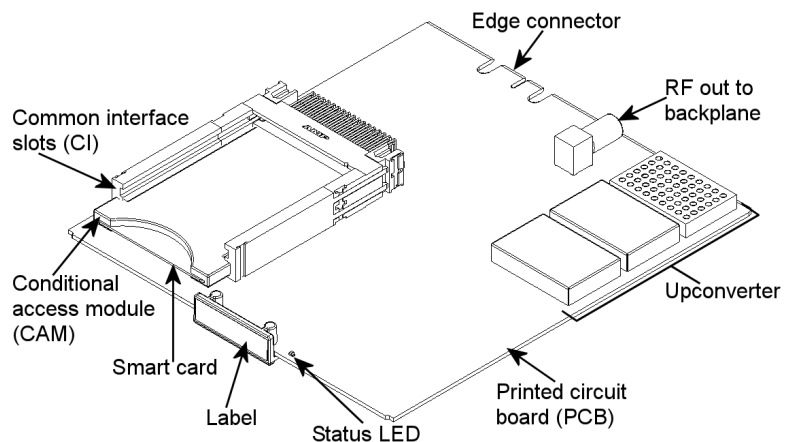
The PAL output module is one of the output modules that you can install in the output section of your TDX headend unit.

The PAL output module is available in four versions:

- PAL
- PAL with Common Interface (CI)
- PAL HD downscale
- PAL HD downscale with Common Interface (CI)

The PAL HD downscaling module enables the TDX system to downscale HD services to SD services before they are output.

Below you can see an illustrated description of a PAL module with CI slots.

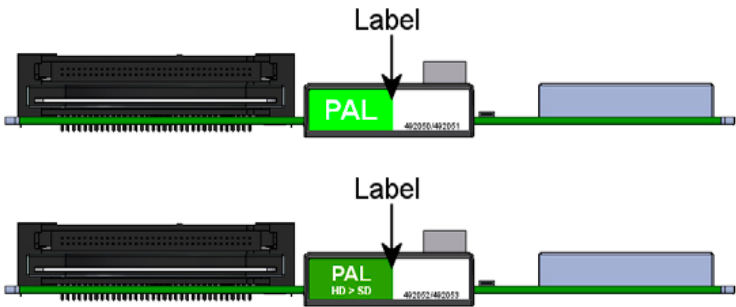


# Basics

## Labels

A label is placed on the output module where you can write the information regarding the configuration of the module.  
Besides the information that you write on the label, the module type and part number are also displayed on the label.

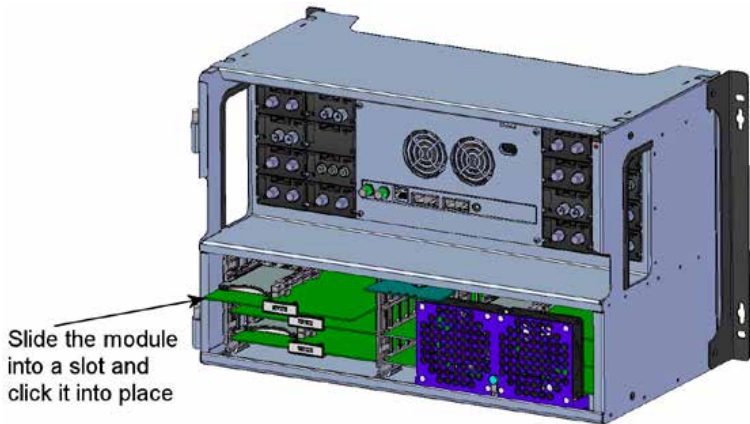
**Note** The coloured part of the label informs you of the module type. Each type of module is allocated a unique coloured label.



On the bottom of the module you will find a label with the bar code and a serial number printed on it.

## Module installation

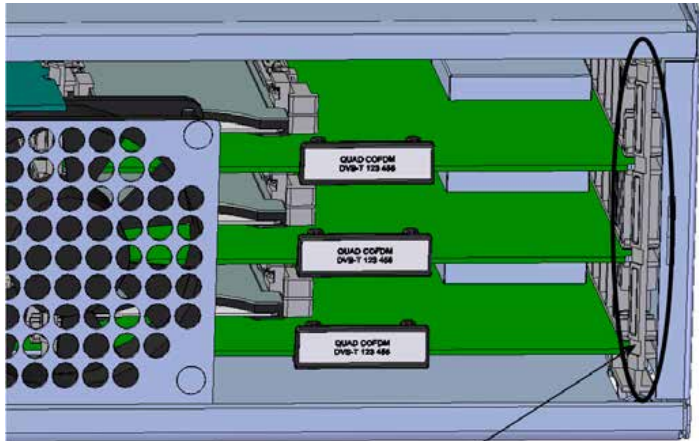
You install an output module by sliding the module into a module slot in the lower section of the headend unit and click it into place.



**Note** You can use hot swapping when you insert an output module into or remove an output module from the TDX system.

## Module removal

You release an output module from a slot by using the lock mechanism that is placed to the right of the modules in the output section. Move the lock mechanism slightly to release the module.

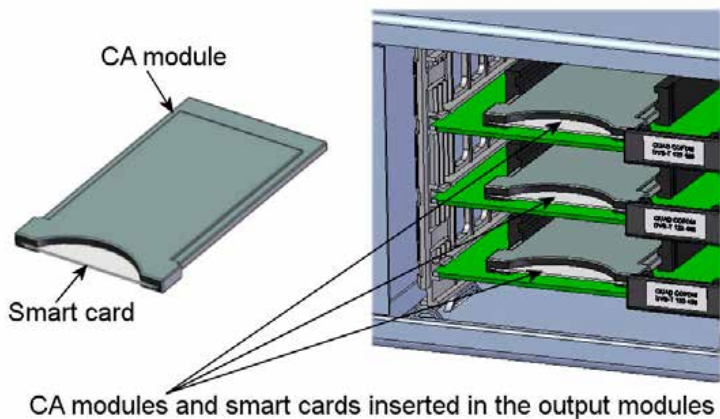


To take a module out of a slot in the output section, tip the lock mechanism and then pull the module out

## CAM/Smart card

You can insert 2 Conditional Access modules (CA) into each of those output modules that have Common Interface (CI) slots.

Each CA module is able to unscramble at least one service. Which services depend on the service provider of the CA module and smart card.



# Basics

## Status LED

There is a status LED on the front of each module. The LED indicates whether the module functions according to its purpose or fails.

- Green - flashing**      The output module receives data.
- Green - constant on**      The output module receives valid services.
- Red**      When starting the TDX system the output module and the system controller negotiate connection speed. If the LED continues to be red either the output module or the system controller has not been inserted correctly.
- No colour**      The output module has not been configured yet or the module has not been inserted correctly.



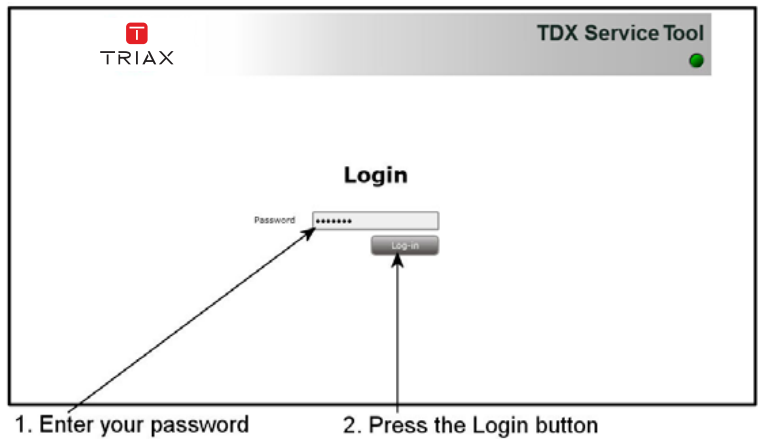
When you update the software of a module the status LED provides you with information about the updating process.

- Orange**      Boot loader state.
- Temporary off**      Initiation of the software update.
- Temporary green**      Every time the modules receives a valid data package. Repeated until the update is completed without errors.
- Red**      Software update failed.

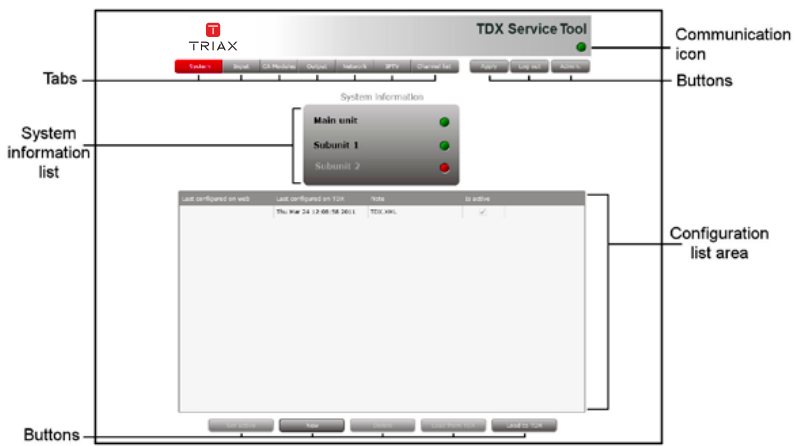
# TDX Service Tool

## Log in

When you have loaded the TDX Service Tool from your TDX headend system to your laptop/computer the Login window of TDX Service Tool is displayed.



When you have pressed the Log in button the System window is displayed.

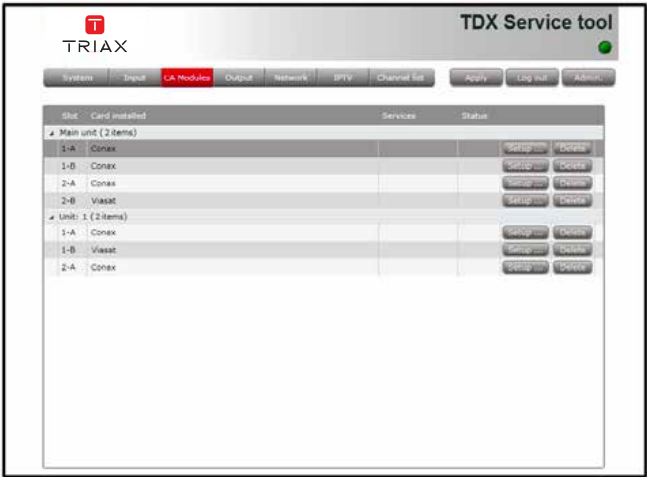


# TDX Service Tool

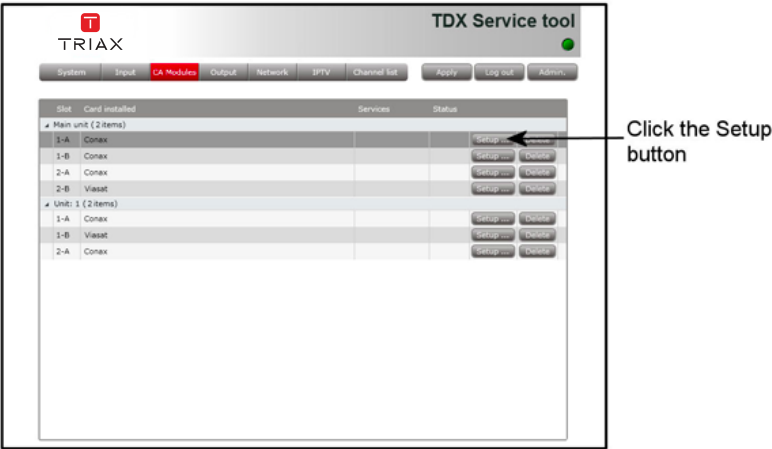
## CA Modules window

Click the CA Modules tab in the TDX Service Tool to display the CA Modules window.

The first time you display the CA Modules window in a new configuration the module list only displays the number and type of the CA modules that you have inserted in the main and subunits.



You configure the CA modules individually.  
To display the Configuration window, click the Setup button of the CA module you want to configure.

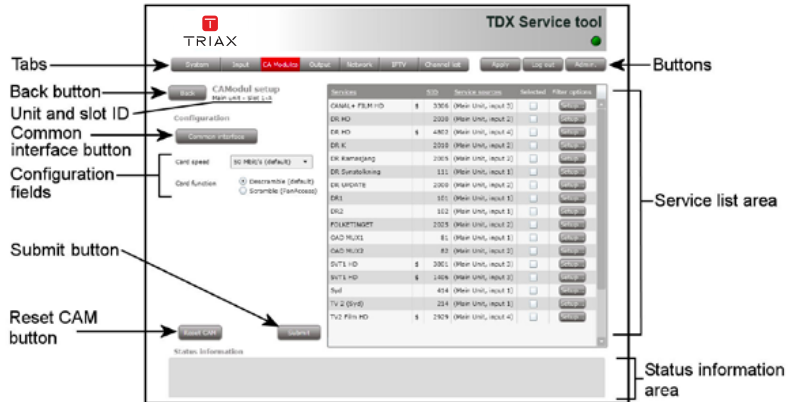




# TDX Service Tool

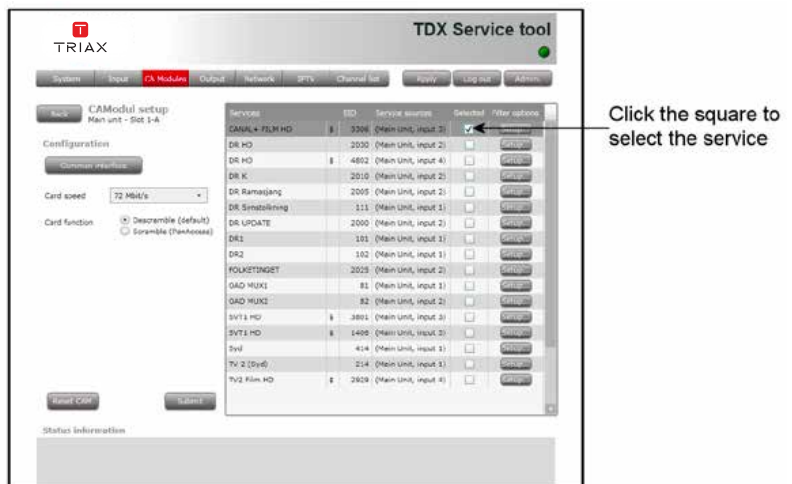
## CA Modules configuration window

The first time the TDX Service Tool displays the Configuration window for a CA module in a new configuration the fields and radio buttons display default values and nothing is selected in the service list area.



## Card speed

If your smart card is able to use a higher card speed than the default card speed, open the drop-down list with the card speeds you can choose from. Select the card speed you want to use.



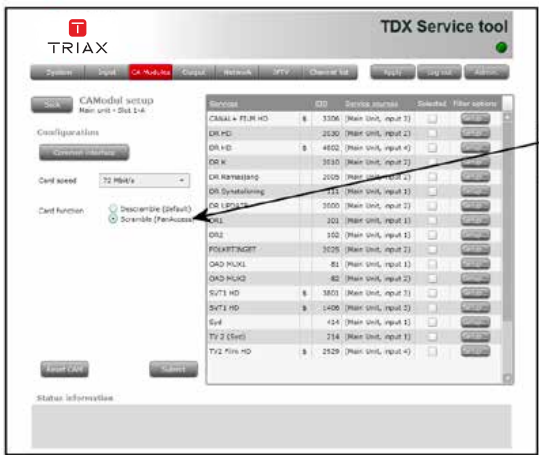
# TDX Service Tool

## Card function

You can use the Card function radio buttons to determine whether you want the CA module to descramble services that are scrambled or you want the module to scramble services that are not scrambled .

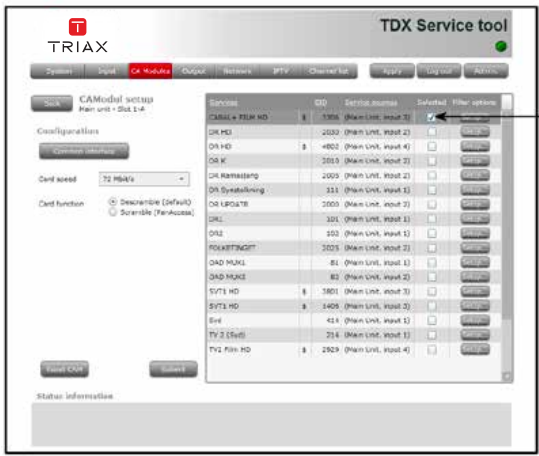
Click the Descramble (default) button if you want to de-scramble services .

Click the Scramble (PanAccess) button if you want to scramble services using the PanAccess Scrambler.



In the Service list area you can select the service or services that you want to descramble and you can set up individual filter options for each service.

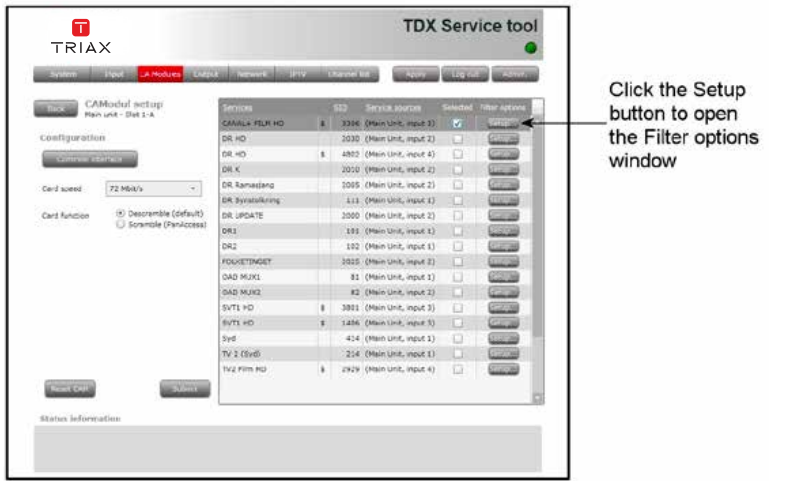
The services that are scrambled are marked with a dollar sign - \$.



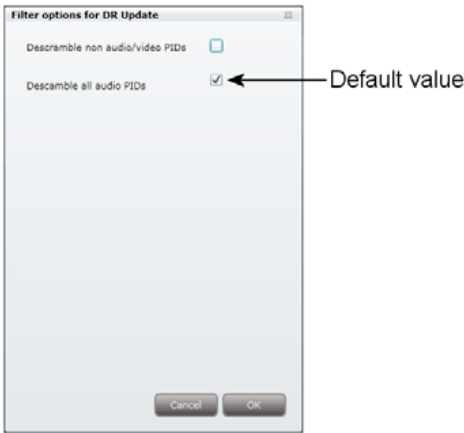
# TDX Service Tool

To select a service, click the check box (square) to the right of the service in question.

If you want to change the filter options for a service, click the Setup button of the service in question to open the Filter options window.

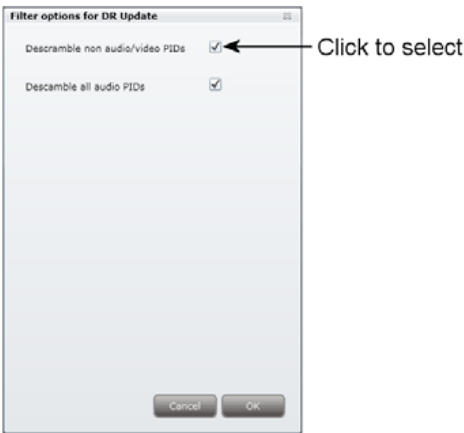


The first time you open the Filter options window the default value Descramble all audio PIDs has been selected.



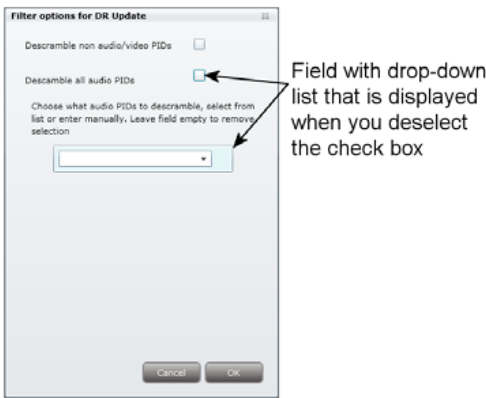
# TDX Service Tool

If you want to descramble PIDs (Packet Identifier) that are not audio or video PIDs, click the Descramble non audio/video PIDs check box.



In case you do not want to descramble all audio PIDs you can select which audio PIDs you want to descramble.

To descramble only selected audio PIDs you have to deselect the Descramble all audio PIDs check box.

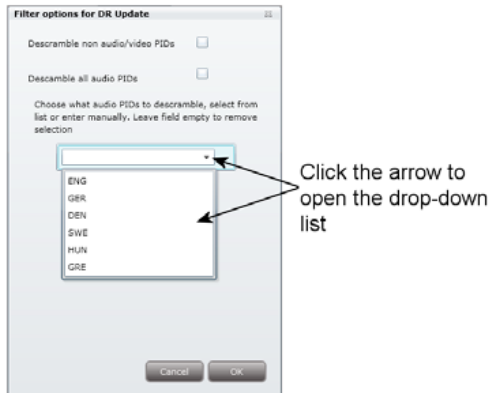


When you have deselected the Descramble all audio PIDs check box a field with a drop-down list is displayed below the check box.

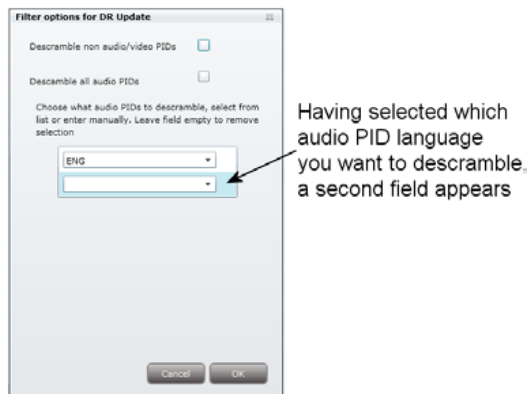
To select which audio PID you want to descramble, open the drop-down list with the languages you can choose from.

# TDX Service Tool

Select the language of the audio PID you want to descramble.



When you have selected the required language, a second field is displayed below the first field so you can descramble another audio PID. You can descramble as many audio PIDs as you need.



If the language of the audio PID you want to descramble is not displayed in the list you can enter a three letter string signifying the language you need. To remove your selection leave the field empty.

Click OK to return to the Configuration window.

When you have selected the services you want to descramble and changed the filter options you want to change, you have to click the Submit button to save this information in the headend system and return to the CA Modules window.

# TDX Service Tool

You use the Common interface button to open the common interface menu.

Clicking the Common interface button gives you access to information from the smart card inserted in the CA module. The type of information provided by the smart card depends on the card itself and its make.

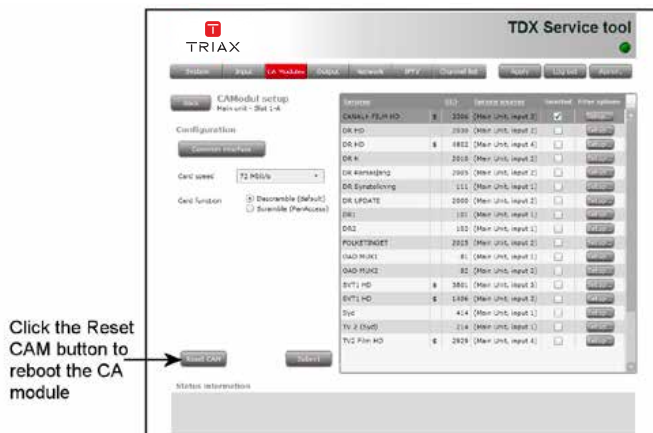
Below is an example of the interface of a Conax card.



Please refer to the user guides of the CA modules and smart cards you have inserted in the output modules for further information.

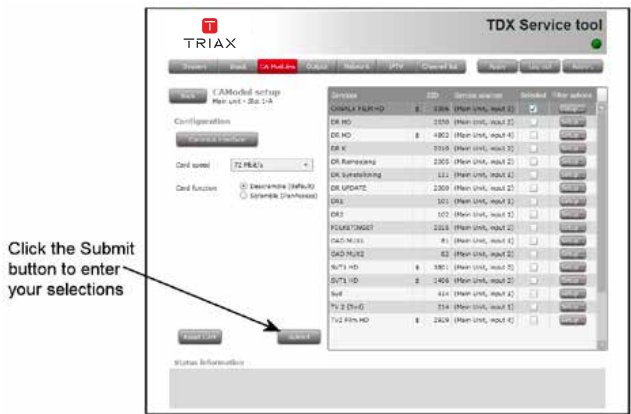
If you need to reboot the CA module you can use the Reset CAM button.

Click the Reset CAM button to reboot the TDX headend system.

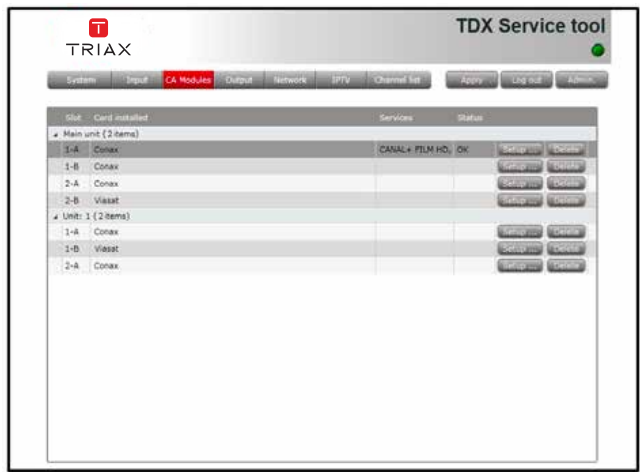


# TDX Service Tool

When you have selected the services you want to descramble or scramble you have to click the Submit button to enter this information into the head-end system and return to the CA Modules window.



When you return to the CA Modules window the descrambled services will be displayed next to the CA module you have configured.



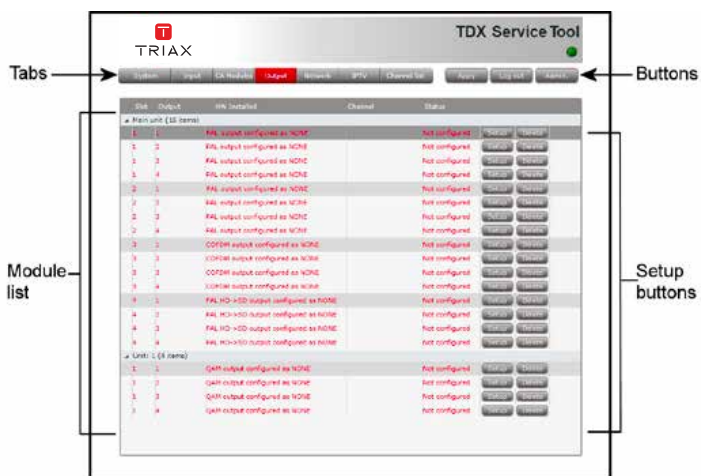
Remember to click the Apply button in the upper right-hand corner to save new settings in the configuration.

**Status information**

To be implemented later.

# TDX Service Tool

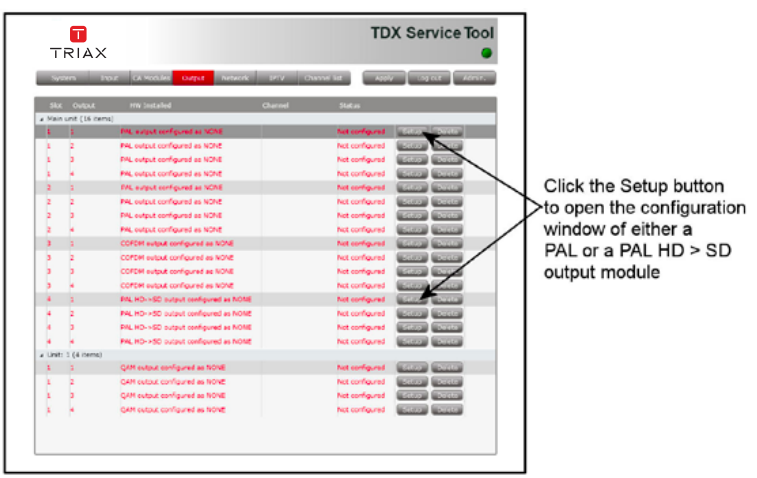
**Output window** Click the Output tab in the TDX Service Tool to display the Output window. The first time you display the Output window in a new configuration the module list only displays the number and type of output modules that you have inserted in the main and subunits.



You have to configure the output modules individually.

**Note** The four channels on an output module is locked together so you can only change the first channel.

To display the Configuration window, click the Setup button of either the PAL module or the PAL HD downscaling module you want to configure.





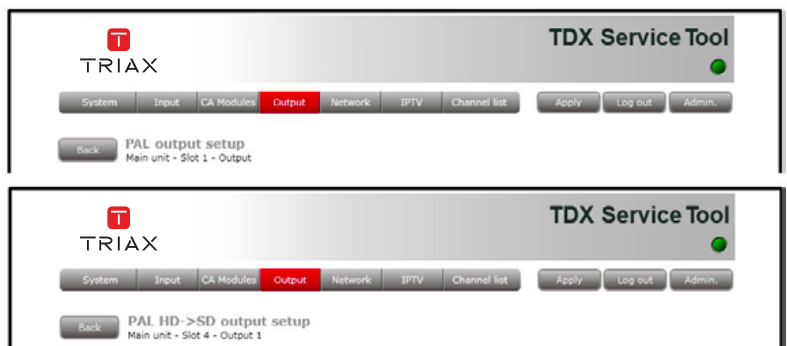
# TDX Service Tool

## Configuration of output modules



The first time the TDX Service Tool displays the Configuration window for an output module in a new configuration the fields in the window will either display a default value or be empty.

**Note** The only difference between the configuration windows of a PAL module and a PAL HD downscale module is the module name next to the Back button.



### Disabled output

If you want to disable this output, click the Disabled output check box.

### Colour system

To select another colour system, open the drop-down list with the systems you can choose from. Select the system you want to use.

# TDX Service Tool

The screenshot shows the TRIAX TDX Service Tool interface. At the top, there's a navigation bar with tabs: Systems, Input, CA Modules, Output, Network, IPTV, Channel Set, Apply, Log out, and Admin. The 'Output' tab is selected. Below the navigation bar, there's a sub-header 'PAL output setup' and 'Main unit - Slot 1 - Output'. The main configuration area is divided into two columns. The left column contains: 'Disabled output' (checked), 'Colour system' (dropdown menu), 'Broadcast system' (dropdown menu showing 'PAL'), 'Channel' (dropdown menu), 'Frequency (kHz)' (text input), 'Channel spacing' (dropdown menu showing '7 kHz'), 'Select input' (dropdown menu showing 'Component'), and 'RF level correction' (dropdown menu showing '0 dB'). The right column contains: 'Aspect ratio' (dropdown menu showing 'Letterbox'), 'First audio language' (dropdown menu showing 'English'), 'Second audio language' (dropdown menu showing 'English'), 'Audio system' (dropdown menu showing 'MONO'), 'Audio level correction' (dropdown menu showing 'T-80'), 'First subtitle language' (dropdown menu showing 'English'), 'Second subtitle language' (dropdown menu showing 'English'), 'Preferred subtitling type' (dropdown menu showing 'DVB subtitles'), 'Subtitles offset (pixels)' (text input showing '0'), and 'Disable teletext' (checked). At the bottom right of the configuration area is a 'Submit' button. Below the configuration area is a 'Status information' section showing 'Status: Not configured' and 'DW-Revision: 1.8.1.15262'. An arrow points from the text 'Click the arrow to open the drop-down list' to the dropdown arrow of the 'Broadcast system' menu.

Click the arrow to open the drop-down list

**Broadcast system** To select another TV system open the drop-down list with the systems you can choose from. Select the system you want to use.

**Channel, Frequency and Channel spacing** You have two possibilities when you configure a PAL module:

- You can use the specifications of the channel plan, or
- You can enter a frequency manually.

## Using the channel plans:

To select the required channel, open the drop-down list with the channels you can choose from.

Select the channel you want to use.

When you have selected a channel the Frequency and Channel spacing fields are automatically filled in.

## Enter a frequency manually:

To be able to enter a frequency manually, open the drop-down list with the channels you can choose from. Select "Frequency" from the drop-down list.

Enter the desired frequency in kHz in the Frequency field.

To select the required channel spacing, open the drop-down list with the channels spacings you can choose from.

Select the channel spacing you want to use.

# TDX Service Tool

**Note** When you have selected a channel on the first output of the output module using the channel plan or entered a frequency manually then you have also set up the other three RF channels on the module in question.

You only need to select services for each of the three other RF channels, or disable one or more of the three channels.

## Select input

To select services, click the Services... button next to Select input label to open the Select services window.

Click the Service button

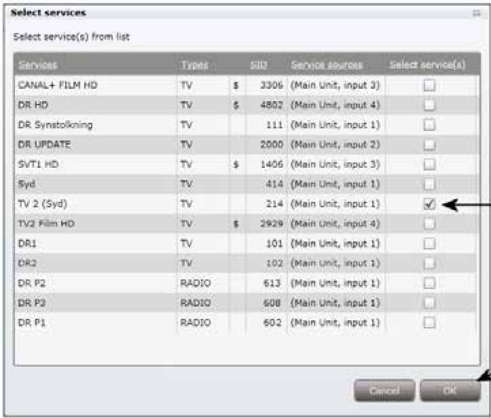
Services	Types	SIO	Service sources	Select service(s)
CANAL+ FILM HD	TV	3306	(Main Unit, input 3)	<input type="checkbox"/>
DR HD	TV	4802	(Main Unit, input 4)	<input type="checkbox"/>
DR Synthesizing	TV	111	(Main Unit, input 1)	<input type="checkbox"/>
DR UPDATE	TV	2000	(Main Unit, input 2)	<input type="checkbox"/>
SVT1 HD	TV	1406	(Main Unit, input 3)	<input type="checkbox"/>
Syd	TV	414	(Main Unit, input 1)	<input type="checkbox"/>
TV 2 (Syd)	TV	214	(Main Unit, input 1)	<input type="checkbox"/>
TV2 Film HD	TV	2929	(Main Unit, input 4)	<input type="checkbox"/>
DR1	TV	101	(Main Unit, input 1)	<input type="checkbox"/>
DR2	TV	102	(Main Unit, input 1)	<input type="checkbox"/>
DR P2	RADIO	613	(Main Unit, input 1)	<input type="checkbox"/>
DR P3	RADIO	608	(Main Unit, input 1)	<input type="checkbox"/>
DR P1	RADIO	602	(Main Unit, input 1)	<input type="checkbox"/>

# TDX Service Tool

**Note** Using a PAL or PAL HD downscale module you can only output one service on each RF channel.

In the Select Services window you can select the service that you want to output.

**Note** By clicking one of those column headlines that are underlined in the Select services window you can sort the list into alphabetical or numerical order depending on which column headline you click.



1. Click the square to select a service

2. Click OK to save and leave the window

To select a service, click the check box (square) to the right of the service you want.

Click OK to return to the Configuration window.

Now you continue to select or enter values in the other fields in the Configuration window.

## RF level correction

To select another RF level correction, open the drop-down list with the levels you can choose from. Select the level you want to use.

## Aspect ratio

To select the desired picture format, open the drop-down list with the formats you can choose from. Select the format you want to use.

# TDX Service Tool

The screenshot shows the TRIAX TDX Service Tool interface. At the top, there's a navigation bar with tabs: System, Input, CA Modules, Output (selected), Network, IPTV, and Channel list. Below the tabs are buttons for Apply, Log out, and Admin. The main heading is 'PAL output setup' with a sub-heading 'Main unit - Slot 1 - Output'. A 'Back' button is on the left. The 'Configuration' section contains various settings: 'Disabled output' (checked), 'Colour system' (PAL), 'Broadcast system' (R/G), 'Channel' (Ch21 (471250)), 'Frequency (KHz)' (471250), 'Channel spacing' (8 MHz), 'Select input' (Services), 'RF level correction' (-3 dB), 'Aspect ratio' (Letterbox), 'First audio language' (English), 'Second audio language' (English), 'Audio system' (MONO), 'Audio level correction' (0 dB), 'First subtitle language' (English), 'Second subtitle language' (English), 'Preferred subtitling type' (DVB subtitles), 'Subtitles offset (pixels)' (0), and 'Disable teletext' (checked). A 'Submit' button is at the bottom right. The 'Status information' section at the bottom shows 'Status: Not configured' and 'SW-Revision: 1.8.1.15262'.

## First audio language

To select the preferred audio language, open the drop-down list with the languages you can choose from. Select the language you want to use.

## Second audio language

To select the second choice of audio language, open the drop-down list with the languages you can choose from. Select the language you want to use.

## Audio system

To select audio system, open the drop-down list with the audio systems you can choose from. Select the audio system you want to use.

## Audio level correction

To make a correction to the audio level, open the drop-down list with the correction in decibel (dB) you can choose from. Select the audio level correction you want to use.

## First subtitle language

To select the preferred subtitle language, open the drop-down list with the languages you can choose from. Select the language you want to use.

# TDX Service Tool

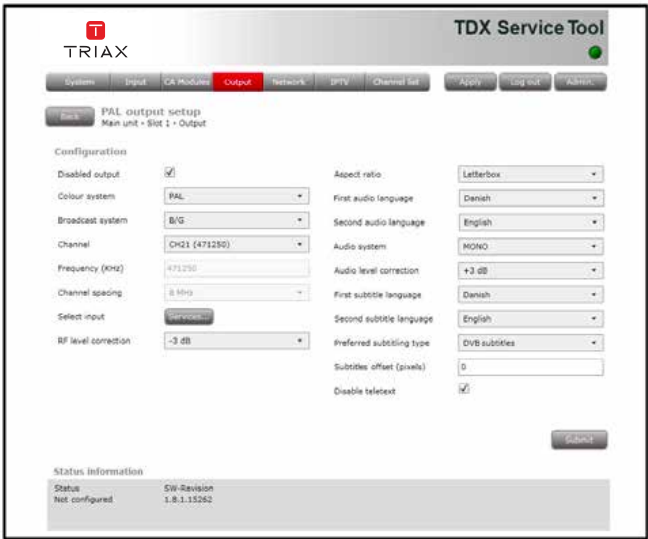
- Second subtitle language

To select the second choice of subtitle language, open the drop-down list with the languages you can choose from.  
Select the language you want to use.
- Preferred subtitling type

To select the desired subtitling type or to turn subtitling off, open the drop-down list with the options you can choose from.  
Select the subtitling type you want to use.
- Subtitles offset

To move the position of the subtitles on a TV screen a bit up or down you can enter the number of pixels (from -40 to +40) you want to move the subtitles up or down in the Subtitles offset field.
- Disable teletext

If you want to make teletext unavailable, click the Disabled teletext check box.



**Note** When you display the Configuration window for an output module that has been configured, all fields are filled in and services have been selected.

If you want to change the existing values or services just follow the same procedure as when you configure an output module for the very first time.

When you have selected or inserted the values you want, you have to click the Submit button to enter this information into the headend system and return to the Output window.

# TDX Service Tool

The screenshot shows the TRIAX TDX Service Tool interface. At the top, there's a header with the TRIAX logo and the title 'TDX Service Tool'. Below the header is a navigation bar with tabs: System, Input, Output (selected), Network, IPV, and Channel list. To the right of the tabs are buttons: Apply, Log out, and Admin. Below the navigation bar, the main title is 'PAL output setup' with a subtitle 'Main unit - Slot 1 - Output'. The 'Back' button is visible. The 'Configuration' section contains various settings: Disabled output (checked), Colour system (PAL), Broadcast system (B/G), Channel (CH21 (471250)), Frequency (kHz) (471250), Channel spacing (8 MHz), Select input (Service), RF level correction (-3 dB), Aspect ratio (Letterbox), First audio language (Danish), Second audio language (English), Audio system (MONO), Audio level correction (+3 dB), First subtitle language (Danish), Second subtitle language (English), Preferred subtitling type (DVB subtitles), Subtitles offset (pixels) (0), and Disable teletext (checked). At the bottom right, there is a 'Submit' button. An arrow points to this button with the text 'Click the Submit button to save your selections'. At the bottom left, the 'Status information' section shows 'Status: Not configured' and 'SW-Revision: 1.8.1.13262'.

Remember to click the Apply button in the upper right-hand corner to save new settings in the configuration.

## Status information

Status information is placed at the bottom of the Configuration window. The information displayed in the configuration window of a PAL module includes status and revision of software.

### Status

Informs you about the state of the output module.

### SW revision

Displays the software version of the output module.

Information

This screenshot is similar to the one above, but the 'Status information' section at the bottom is highlighted. It shows 'Status: Ok' and 'SW-Revision: 1.8.1.13262'. An arrow points from the word 'Information' to this section.

# TDX Service Tool

When you return to the Output window the configuration of the output module is displayed in the module list.

TRIAX

TDX Service Tool

System

Input

Output

Network

SPV

Channel list

Apply

Log out

Admin

Unit	Output	Not installed	Channel	Status		
Main unit (16 items)						
1	1	FAL	CH01	OK	Configure	Monitor
1	2	FAL	CH02	Not configured	Configure	Monitor
1	3	FAL	CH03	Not configured	Configure	Monitor
1	4	FAL	CH04	Not configured	Configure	Monitor
2	1	FAL output configured as NONE		Not configured	Configure	Monitor
2	2	FAL output configured as NONE		Not configured	Configure	Monitor
2	3	FAL output configured as NONE		Not configured	Configure	Monitor
2	4	FAL output configured as NONE		Not configured	Configure	Monitor
3	1	COPDM output configured as NONE		Not configured	Configure	Monitor
3	2	COPDM output configured as NONE		Not configured	Configure	Monitor
3	3	COPDM output configured as NONE		Not configured	Configure	Monitor
3	4	COPDM output configured as NONE		Not configured	Configure	Monitor
4	1	FAL HD→SD	CH05	OK	Configure	Monitor
4	2	FAL HD→SD	CH06	Not configured	Configure	Monitor
4	3	FAL HD→SD	CH07	Not configured	Configure	Monitor
4	4	FAL HD→SD	CH08	Not configured	Configure	Monitor
Unit 1 (4 items)						
1	1	QAM output configured as NONE		Not configured	Configure	Monitor
1	2	QAM output configured as NONE		Not configured	Configure	Monitor
1	3	QAM output configured as NONE		Not configured	Configure	Monitor
1	4	QAM output configured as NONE		Not configured	Configure	Monitor

Output modules that have been configured

Now you can continue to configure the other output modules one by one, following the procedure described on the previous pages.



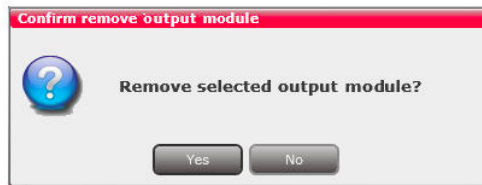
# TDX Service Tool

## Delete output modules

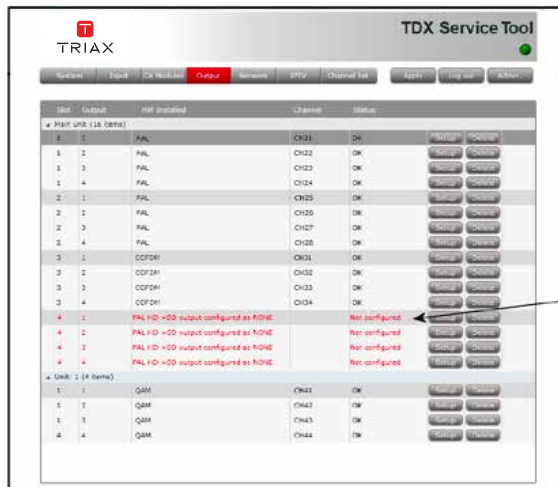
If you want to remove an output module and the associated configuration you can use the Delete button of the module in question in the Output window.

Click the Delete button of the PAL or PAL HD downscale output module you want to remove.

A message window is displayed asking you to confirm that you want to remove the output module.



Until you have removed the output module physically from the headend unit the module list will display four lines with the writing in red.



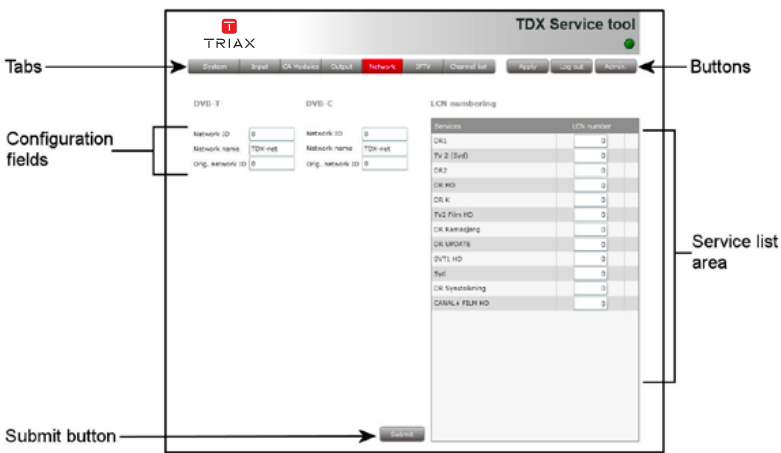
The configuration has been deleted

# TDX Service Tool

## Network window

Click the Network tab in the TDX Service Tool to display the Network window.

The first time you display the Network window the fields in the window will display a default value. The service list area will display all the digital services you have configured to output using the Output tab.



End-users may need the network ID if they have to make a NIT (Network Information Table) search when searching for services on their televisions or set-top boxes. Some set-top boxes may also need the original network ID in connection with a NIT search.

You have to state network ID's and names for both DVB-T and DVB-C.

- Network ID** Enter the required network ID in the Network ID field. If it is an open network, the network ID has to follow the "ETSI TR 101 211" guidelines. If it a closed network you can determine the ID yourself.
- Network name** Enter a network name in the Network name field. The maximum number of characters you can enter in the field is 255.
- Set original ID** If you want to change the default values of the original network ID, click Set original ID check box to enable the Orig. network ID field.
- Orig. network ID** Enter the required original network ID in the Orig. network ID field.

A barker channel carries all EIT information for a number of services.

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Using a barker channel all EIT information will be transferred from the individual outputs to the barker channel thereby making more room/ payload available to the output of services.

**Note** If you to use a barker channel to carry the EIT information you have to make sure that the set-top boxes used by end-users are NorDig compliant, i.e. they can read a Linkage Descriptor from a NIT.

**Enable barker channel for DVB-T/ DVB-C** Click the this check box to enable a barker channel for DVB-T and/or DVB-C .

**Unit** Enter the ID number of the unit you where you want to place the barker channel. You can enter values 1-3.  
 "1" = main unit  
 "2" = unit 1  
 "3" = unit 2

**Backend** Enter the number of the output module where you want to place the barker channel. You can enter values 1-6

**Output** Enter the number of the output where you want to place the barker channel. You can enter values 1-4.

In the service list area you determine the numerical output order of the digital services on the television or set-top box of the end-user.

**LCN number** Enter the desired number in the LCN number field to the right of each service in the service list area.

**Note** You cannot give the same LCN number to more services.

When you have inserted the values you require you have to click the Submit button to enter this information in to the headend system.

The screenshot shows the TDX Service Tool interface. At the top, there's a header with the TRIAX logo and the title 'TDX Service tool'. Below the header is a navigation bar with tabs: System, Input, CA Module, Output, Network (selected), IPTV, Channel list, Apply, Logout, and Admin. The main content area is divided into three sections: DVB-T, DVB-C, and LCN numbering. The DVB-T section has fields for Network ID (13312), Network name (Triax net), and Orig. network ID (73). The DVB-C section has fields for Network ID (43264), Network name (Triax net), and Orig. network ID (73). The LCN numbering section contains a table with two columns: 'Service' and 'LCN number'. The table lists various services and their corresponding LCN numbers. At the bottom right, there is a 'Submit' button. An arrow points from the text 'Click the Submit button to enter the information' to the Submit button.

Service	LCN number
DR1	1
TV 2 (Syd)	2
DR2	3
DR HD	4
DR K	5
TV2 Film HD	7
DR Ramasjang	8
DR UPDATE	9
SVT1 HD	11
Syd	12
DR Synstallning	13
CANAL+ FILM HD	15

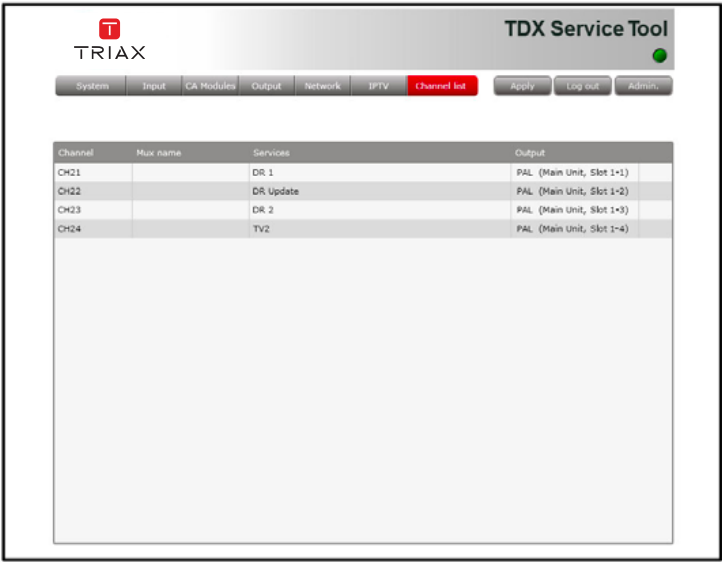
# TDX Service Tool

Remember to click the Apply button in the upper right-hand corner to save new settings.

## Channel list

Click the Channel list tab in the TDX Service Tool to display the Channel list window.

When you have finished configuring all the output modules you have inserted in to the headend units the Channel list tab displays a list with all the channels and services that you have selected.



# TDX Service Tool

## Save configuration

An **important button** when you change your configuration of the headend system is the **Apply** button placed in the upper right-hand corner of the TDX Service Tool window.



Click the Apply button to save the changes

## Apply

Whenever you have made changes in your configuration, “Apply” on the Apply button turns red to tell you that you have unsaved changes that need to be saved.

Click the Apply button to **save** the changes. When changes have been saved the “Apply” text loses the red colour.

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**WARNING - All unsaved changes will be lost in case of a power cut**

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# Manufacturer

## Manufacturer

Dear Customer,

Should you require technical assistance in the event that your expert dealer is unable to help you, please contact us at:

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Your notes



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