



TRIAx



User guide

Model

Item no.

DVB-T module

492022

DVB-T2 module

492023

DVB-C module

492024

Version

891074E

09 - 2012

EN

triax.com

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Introduction

Disposal



Within 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

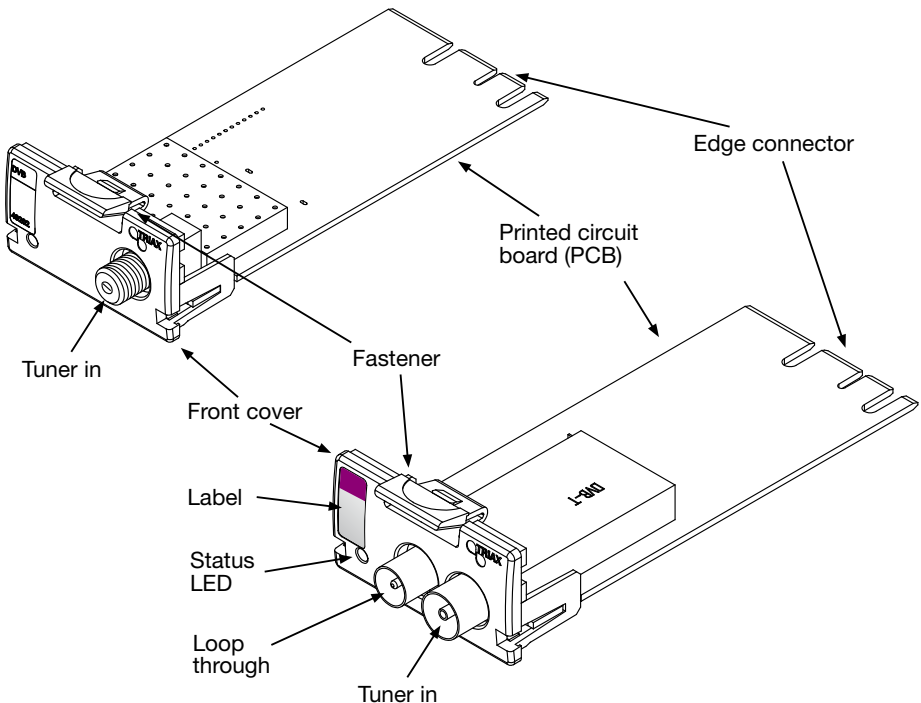
A new input module is wrapped in antistatic bubble wrap and packed in a cardboard box when you receive it.

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

DVB-T/T2/C module

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

Below is an illustrated description of a DVB-T and a DVB-T2/C module.



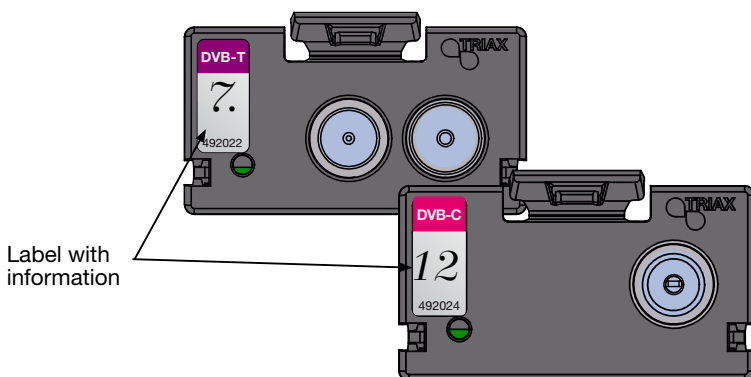
Basics

Labels

A label is placed on the input 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 at the top of the label informs you of the module type. Each type of module is allocated a unique coloured label.

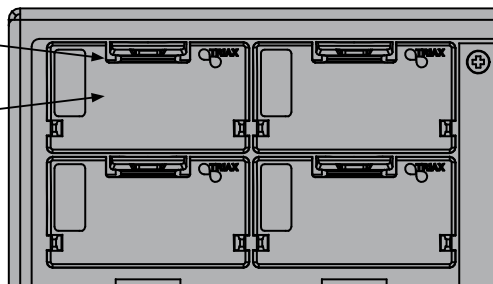


On the bottom of the module you will find a label with the bar code and a serial number printed on it.

Cover removal

Before you can install a module in the input section you hHDMIe to remove the cover that protects the module slot.

1. Press the fastener downwards
2. Pull the cover outwards to remove it



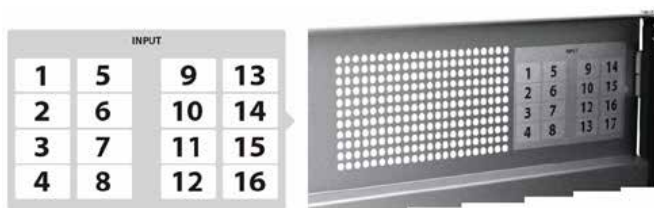
You do not need tools to remove the covers, just use your fingers.

For EMC and cooling reasons only remove covers from the module slots that you want to insert modules into.

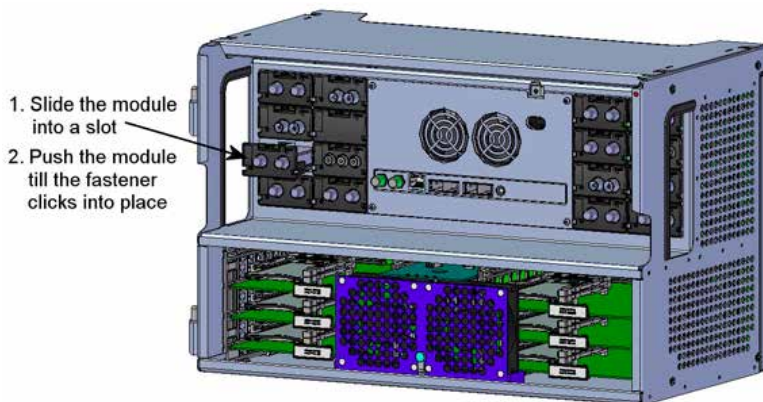
Module installation

It is optional in which slots you place the individual input modules in the input section. For convenience each slot has been given a number, and an overview of the slot numbers has been placed on the inside of the door of each unit.

Note Slot no. 1 is placed in the top left-hand corner of the input section when you face the front of the unit.



You install an input module by sliding the module into a module slot in the input section of the headend unit and push it till the module clicks into place.



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

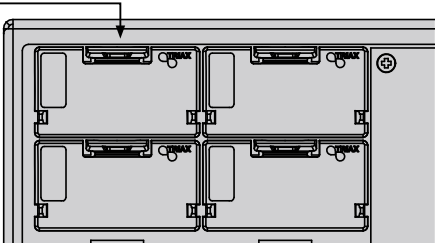
Basics

Module removal

It is possible to remove an input module from a module slot without using any tools, just use your fingers to press the fastener downwards and then pull the module outwards to remove it from the module slot.

- 1) Press the fastener downwards

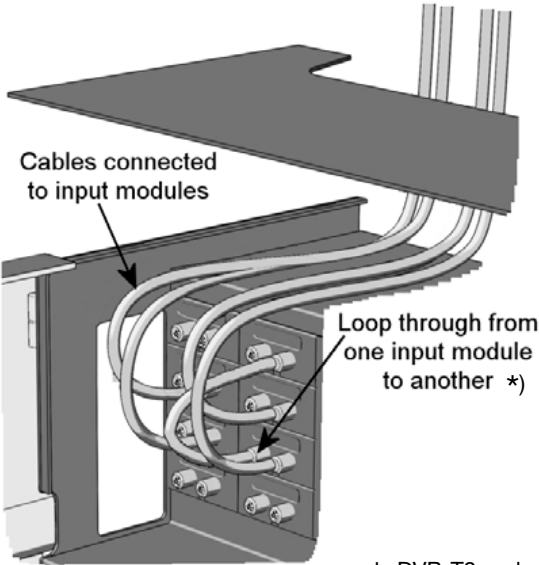
- 2) Pull the module outwards to remove it from the module slot



Input cable installation

When all the required input modules hHDMIe been installed you can connect the input signal cables one by one to the input modules.

It is also possible to make a loop through from one input module to another *).

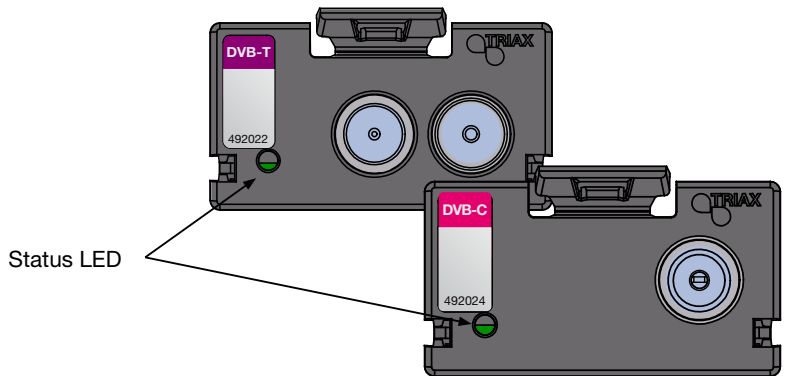


* DVB-T2 and DVB-C has no loop-through

Status LED's

There is a status LED on the front of each module. The LED indicates whether the module has locked on to a frequency or needs to be configured.

Green - flashing	The module has not been configured yet.
Green	No errors and the module is locked to the frequency.
Red	Error and the module is not locked to the frequency.
No colour	Power has not been switched on.



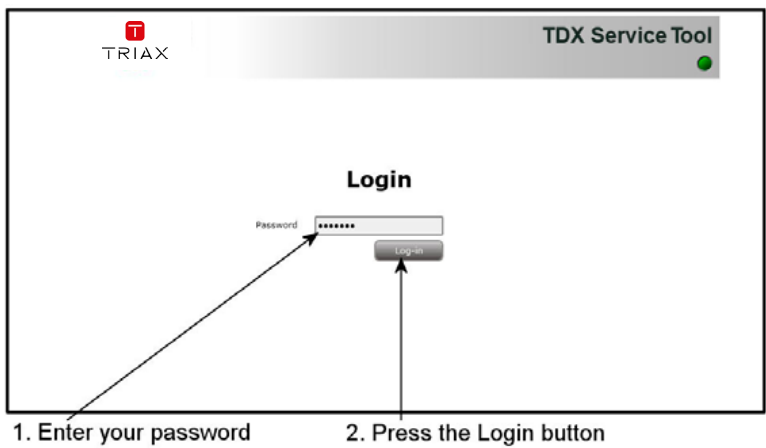
When you update the software of a module the status LED provides you with information about the updating process.

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.

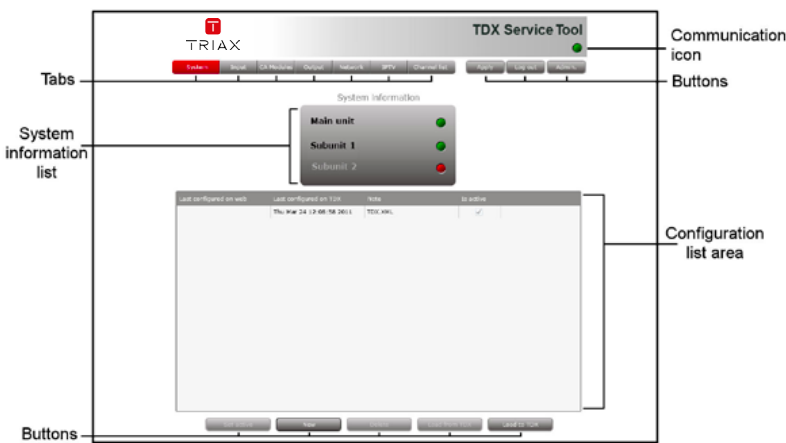
Basics

Log in

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



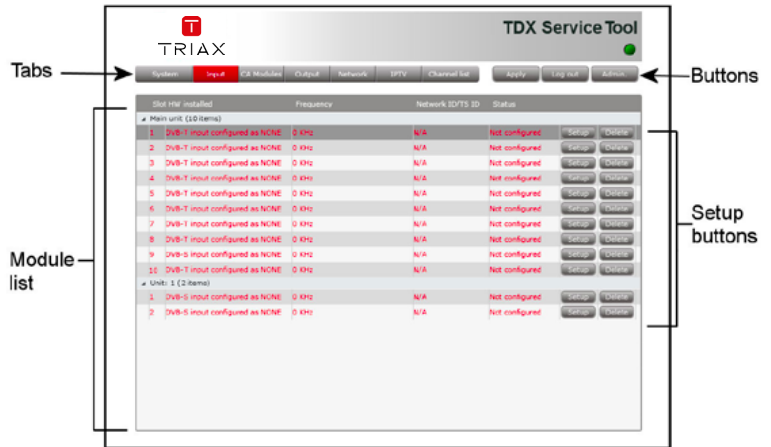
When you hHDMle pressed the Log in button the System window is displayed.



TDX Service Tool

Input window

Click the Input tab in the TDX Service Tool to display the Input window. The first time you display the Input window in a new configuration the module list only displays the number and type of input modules that you hH-DMle inserted in the main and subunits.



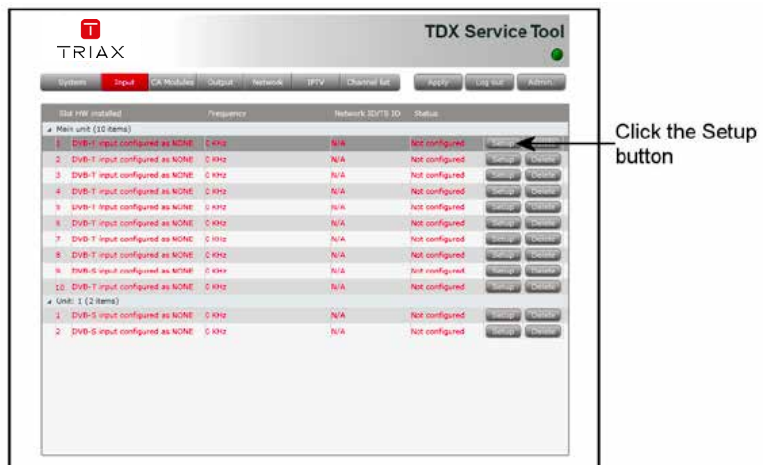
You hHDMle to configure the input modules individually.

To display the Configuration window, click the Setup button of the DVB-T input module you want to configure.

DVB-T2 is supported from release 1.13.1.x

DVB-C is supported from release 1.14.1.x

- you can see the software version of each module in the "Status information area" at the bottom of the window - please see next page



TDX Service Tool

Configuration of input module

The first time the TDX Service Tool displays the Configuration window for an input module in a new configuration, the fields will display default values and the list of services will be empty.

DVB-T

Buttons and fields in the DVB-T configuration window:

- Buttons: System, Input, CA Modules, Output, Network, RFV, Channel list, Config, Log list, Status
- Back button: DVB-T2 Input setup Main unit - Slot 1
- Unit and slot ID: Main unit - Slot 1
- Configuration fields: Channel plan (B/G), Channel (DVB), Frequency (MHz) (468.000), Bandwidth (8 MHz)
- Update button: Update
- Submit button: Submit
- Status information area: Status Locked, BER before Viterbi: 0, BER after Viterbi: 0, SNR: 44.5 dB, Modulation: DVB-T, Number of PLPs: 0
- Service list area: Services in system 0 (empty table)
- Buttons: Select/deselect buttons (checkboxes in the service list)

DVB-T2

Buttons and fields in the DVB-T2 configuration window:

- Buttons: System, Input, CA Modules, Output, Network, RFV, Channel list, Config, Log list, Status
- Back button: DVB-T2 Input setup Main unit - Slot 1
- Unit and slot ID: Main unit - Slot 1
- Configuration fields: Channel plan (B/G), Channel (DVB), Frequency (MHz) (468.000), Bandwidth (8 MHz)
- Update button: Update
- Submit button: Submit
- Status information area: Status Locked, BER before LDPC: 1.02e-03, BER after LDPC: 0, SNR: 43.9 dB, Modulation: DVB-T2, Number of PLPs: 1
- Service list area: Services in system 0 (table with services)

DVB-C

Buttons and fields in the DVB-C configuration window:

- Buttons: System, Input, CA Modules, Output, Network, RFV, Channel list, Config, Log list, Status
- Back button: DVB-C Input setup Main unit - Slot 1
- Unit and slot ID: Main unit - Slot 1
- Configuration fields: Channel plan (B/G), Channel (DVB), Frequency (MHz) (468.000), Symbol rate (6875), Modulation (256-QAM)
- Update button: Update
- Submit button: Submit
- Status information area: Status Locked, BER before RS: 0, BER after RS: 0, SNR: 45.8 dB, SW Revision: 1.13.1.24215
- Service list area: Services in system 1 (table with services)

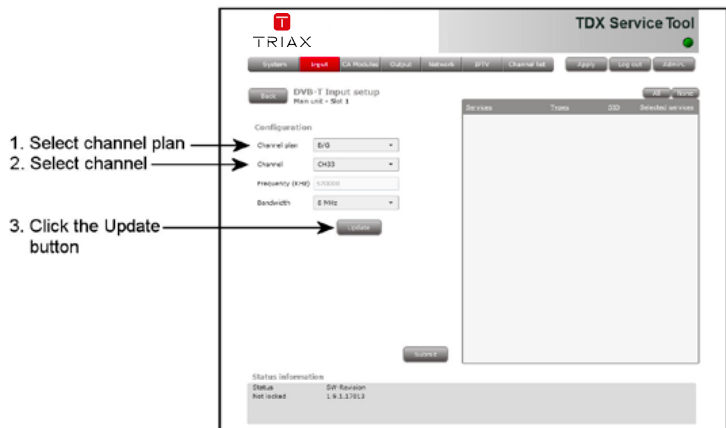
You hHDMIe two possibilities when you configure a module:

1. You can use the specifications of the channel plan or
2. You can enter a frequency manually in order to search for the services you require.

Using the channel plans (1):

To select the required channel plan, click the arrow to the left of the Channel plan field to open the drop-down list with the channel plans you can choose from.

Select the channel plan you want to use.



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 hHDMIe selected a channel the Frequency and Bandwidth fields are automatically filled in.

Click the Update button to enter the information into the headend system and in return get a list of HDMIavailable services.

TDX Service Tool

Configuration of input module

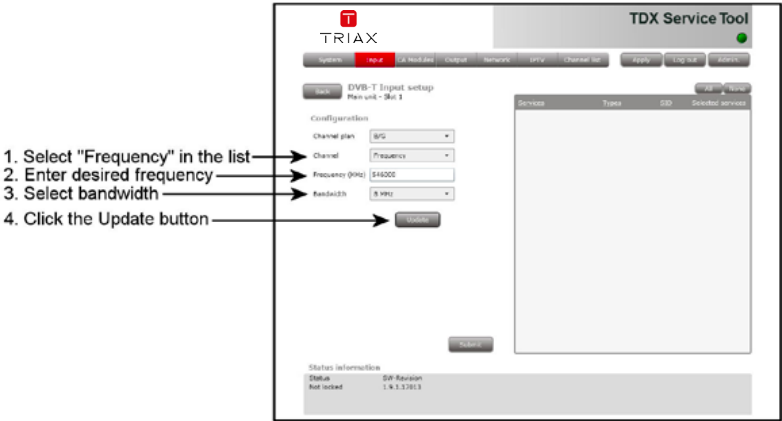
Enter frequency manually:

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 bandwidth, open the drop-down list with the bandwidths you can choose from.
Select the bandwidth you want to use.

Click the Update button to enter the information into the headend system.



As a result a list of HDMIavailable services is displayed in the services list area.



TDX Service Tool

To select services you can either select all services in the service list area by clicking the All button at the top of the list or select the services one by one clicking the square to the right of the services you want to make HDMIavailable in your TDX service pool.

The screenshot shows the TDX Service Tool interface. At the top, there's a TRIAX logo and a title bar 'TDX Service Tool'. Below the title bar, there are tabs: 'System', 'Input', 'CA Related', 'Output', 'Network', 'API', 'Channel list', 'About', 'Log on', and 'Logout'. The 'Input' tab is selected. Under the 'Input' tab, there's a section 'DVB-T Input setup' with 'Main unit - Skt 1'. Below this, there's a 'Configuration' section with dropdowns for 'Channel plan' (set to '6/8'), 'Channel' (set to 'CH2'), 'Frequency (MHz)' (set to '57000'), and 'Bandwidth' (set to '8 MHz'). There's a 'Submit' button below these settings. To the right of the configuration section is a table titled 'Service' with columns: 'Service', 'Type', 'SD', and 'Selected services'. The table lists several services: 'Euron', 'Discovery', 'Kanal 4', 'Signal 5', 'MTV', 'DAD M204', 'TV 2 Charlie', 'TV 2 Film', 'TV 2 Melus', 'TV 2 Sport', and 'TV 2 Zulu'. Each row has a checkbox in the 'Selected services' column. An arrow points to the 'All' button at the top right of the table with the text 'Click the All button to select all the services in the list'. Another arrow points to the checkbox for 'TV 2 Charlie' with the text 'Click the squares one by one to select the services one by one'. At the bottom left, there's a 'Status information' section showing 'Status: Locked' and 'SW-Revision: 1.9.1.17012'.

Service	Type	SD	Selected services
Euron	TV	8 4022	<input type="checkbox"/>
Discovery	TV	8 4025	<input type="checkbox"/>
Kanal 4	TV	8 4015	<input type="checkbox"/>
Signal 5	TV	8 4015	<input type="checkbox"/>
MTV	TV	8 4040	<input type="checkbox"/>
DAD M204	DATA	84	<input type="checkbox"/>
TV 2 Charlie	TV	8 4000	<input checked="" type="checkbox"/>
TV 2 Film	TV	8 4030	<input type="checkbox"/>
TV 2 Melus	TV	8 4028	<input type="checkbox"/>
TV 2 Sport	TV	8 4045	<input type="checkbox"/>
TV 2 Zulu	TV	8 4008	<input type="checkbox"/>

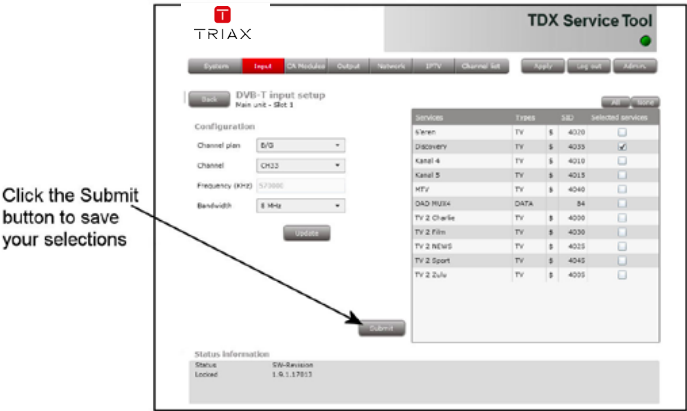
Note

By clicking one of those column headlines that are underlined in the service list area you can sort the list into alphabetical or numerical order depending on which column headline you click.

When you hHDMI selected the services you want, click the Submit button to enter this information into the headend system and return to the Input window.

TDX Service Tool

Now the selected services are HDMIavailable in the TDX service pool.



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

Note When you display the Configuration window for an input module that has been configured, all fields are filled in and services hH-DMle been selected.
If you want to change the existing channel plan, channel, frequency, bandwidth or services just follow the same procedure as when you configure an input module for the very first time.

Status information

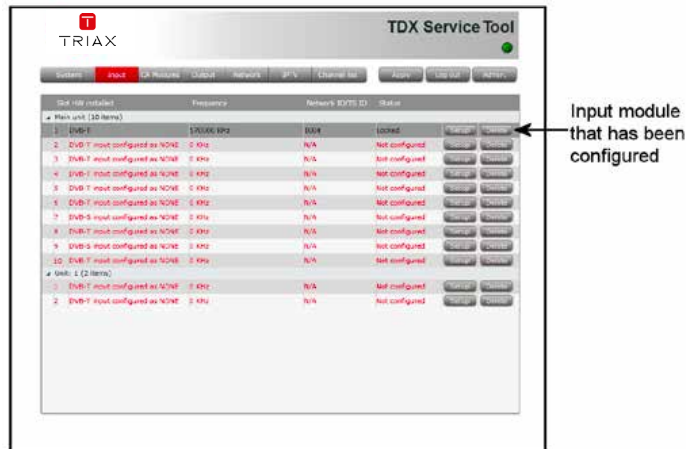
Status information is placed at the bottom of the Configuration window. The information displayed in the configuration window of a module includes the status of the module and revision of software.



TDX Service Tool

- Status** Informs you whether the input module is locked or not.
- SW revision** Displays the software version of the input module.

When you return to the Input window the configuration of the input module is displayed in the module list.

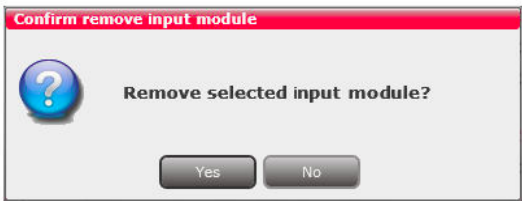


Now you can continue to configure the other input modules one by one, following the procedure described on the previous pages.

Delete setup

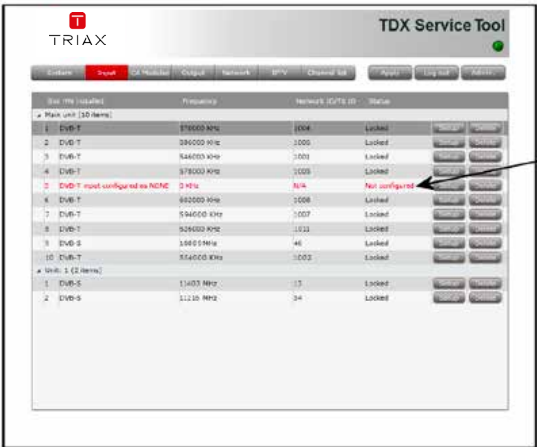
If you want to remove an input module and the associated configuration you can use the Delete button of the module in question in the Input window.

Click the Delete button of the input module you want to remove.
A message window is displayed asking you to confirm that you want to remove the input module.



Until you hHDMIe removed the input module physically from the headend unit the module list will display a line with the writing in red.

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.



Apply

Whenever you have made changes in your configuration, "Apply" on the Apply button turns red to tell you that you hHDMIe unsHDMIed changes that need to be sHDMIed. Click the Apply button to **sHDMIe** the changes. When changes hHDMIe been sHDMIed the "Apply" text looses the red colour.

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

Type

TDX - DVB-T input module - COFDM demodulator

Description

The Triax DVB-T Frontend part No. 492022 is an input module for reception of digital terrestrial signals on a TDX system. It includes a tuner, IF amplifier with channel filtering and a COFDM demodulator with serial transport stream input to the TDX system.

Features

Antenna loop through.
Software downloading through TDX system controller module.
Preconfiguration from/to file through system controller module.
Log to file/flash.
Hot swappable in TDX system.

Technical data

Product		DVB-T - COFDM input demodulator
Art. No.		492022
RF		
Frequency range - VHF III (channel center)	MHz	177.5 - 226.5
Frequency range - UHF (channel center)	MHz	474.0 - 858.0
Input sensitivity		
QPSK, FEC 2/3, guard interval 1/4	dBm	- 90.3... - 18
QAM16, FEC 2/3, guard interval 1/4	dBm	- 84.1... - 18
QAM64, FEC 2/3, guard interval 1/4	dBm	- 78.5... - 18
Input impedance	Ohm	75
Input return loss	dB	> 6.0
Loop through gain	dB	1...+ 3
Noise figure	dB	< 9.0
Bandwidth	MHz	7/8
Demodulator		
Type		COFDM
FFT mode		2K, 8K
Constallations		QPSK, 16QAM, 64QAM
Guard interval		1/4, 1/8, 1/16, 1/32
Power supply		
Voltage/current	V/mA	12 / 120
Environment		
Temperature, operating	°C	-10...+50
Temperature, storage	°C	-20...+70
Humidity, operating	%	20...80
Humidity, storage	%	10...90
Mechanical data		
Input connector		IEC - female
Output connector		IEC - male
Power supply/control connector	mm	Edge connector 2X18P
Weight	kg	0.060
Dimension (HxDxW)	mm	29 x 132 x 50

Technical data

Type	TDX - DVB-T2 input module - COFDM demodulator
Description	The Triax DVB-T2 frontend part No. 492023 is an input module for reception of second generation digital terrestrial signals on a TDX system. It includes a tuner, with integrated IF selectivity and wideband gain control, and a COFDM demodulator with serial transport stream input to the TDX system.
Features	Software downloading through TDX system controller module. Preconfiguration from/to file through system controller module. Log to file/flash. Hot swappable in TDX system.

Technical data

Product		DVB-T/T2 - COFDM input demodulator
Art. No.		492023
RF		
Frequency range - VHF III (channel center)	MHz	177.5 - 226.5
Frequency range - UHF (channel center)	MHz	474.0 - 858.0
Input sensitivity		
QPSK, 8K, FEC 2/3, guard interval 1/4	dBm	- 91.3... - 23
QAM16, 8K, FEC 2/3, guard interval 1/4	dBm	- 85.1... - 23
QAM64, 8K, FEC 2/3, guard interval 1/4	dBm	- 80.0... - 23
Input impedance	Ohm	75
Input return loss	dB	> 7.0
Noise figure	dB	< 7.0
Bandwidth	MHz	7/8
Demodulator		
Type		COFDM
FFT mode	DVB-T DVB-T2	2K, 8K 1K, 2K, 4K, 8K, 16K, 32K
Constellations	DVB-T DVB-T2	QPSK, 16QAM, 64QAM QPSK, 16QAM, 64QAM, 256QAM
Code rates	DVB-T DVB-T2	1/2, 2/3, 3/4, 5/6 and 7/8 1/2, 2/3, 3/4, 5/6
Guard interval	DVB-T DVB-T2	1/4, 1/8, 1/16, 1/32 1/4, 1/8, 1/16, 1/32, 1/128
Power supply		
Voltage/current	V/mA	12 / 200
Environment		
Temperature, operating	°C	-10...+50
Temperature, storage	°C	-20...+70
Humidity, operating	%	20...80
Humidity, storage	%	10...90
Mechanical data		
Input connector		F - female
Power supply/control connector	mm	Edge connector 2X18P
Weight	kg	0.060
Dimension (HxDxW)	mm	29 x 132 x 50

Type

TDX - DVB-C input module - QAM demodulator

Description

The Triax DVB-C frontend part no. 492024 is an input module for reception of digital cable signals on a TDX system. It includes a tuner, with integrated IF selectivity and wideband gain control, and a QAM demodulator with serial transport stream input to the TDX system.

Features

Software downloading through TDX system controller module.
Preconfiguration from/to file through system controller module.
Log to file/flash.
Hot swappable in TDX system.

Technical data

Product			DVB-C input demodulator
Art. No.			492024
RF			
Frequency range -	(channel center)	MHz	114 - 858
Input sensitivity			
QAM256		dBm	- 61... - 31
QAM64		dBm	- 65... - 35
Input impedance		Ohm	75
Input return loss		dB	> 7.0
Noise figure		dB	< 7.0
Bandwidth		MHz	8
Demodulator			
Type			QAM
QAM mode	DVB-C		16QAM, 64QAM 128QAM, 256QAM
Symbol rates supported		Msym/s	1.8 to 7.2
Power supply			
Voltage/current		V/mA	12 / 150
Environment			
Temperature, operating		°C	-10...+50
Temperature, storage		°C	-20...+70
Humidity, operating		%	20...80
Humidity, storage		%	10...90
Mechanical data			
Input connector			F - female
Power supply/control connector		mm	Edge connector 2X18P
Weight		kg	0.060
Dimension (HxDxW)		mm	29 x 132 x 50