User guide

TDX Headend Unit - Art. No. 492090

Contents

Contents

Safety

Safety Precautions

Environment	Operating temperature -10 C to +50 C. Storage temperature -20 C to + 70 C. Max. Operating humidity 80% (RH). Max. Storage humidity 90% (RH).
Power supply	The input voltage must be 190-264 VAC. ~ 45/65 Hz / 280 W (Max). Use only power connections installed by professionals.
Weight	Minimum weight 10.5 kg Maximum weight 13.8 kg*
Earth	Headend units must be correctly earthed according to applicable national regulations.
Disposal	 This product may not be disposed of with general household waste. Follow applicable national legislation when disposing of this product.

Introduction

The TDX cabinet is designed to accommodate up to 16 input modules and 6 quad output modules. Up to three TDX headends can be combined as one system of up to 48 input muxes and 72 output channels.

The TDX headend system accommodates up to 490 services.

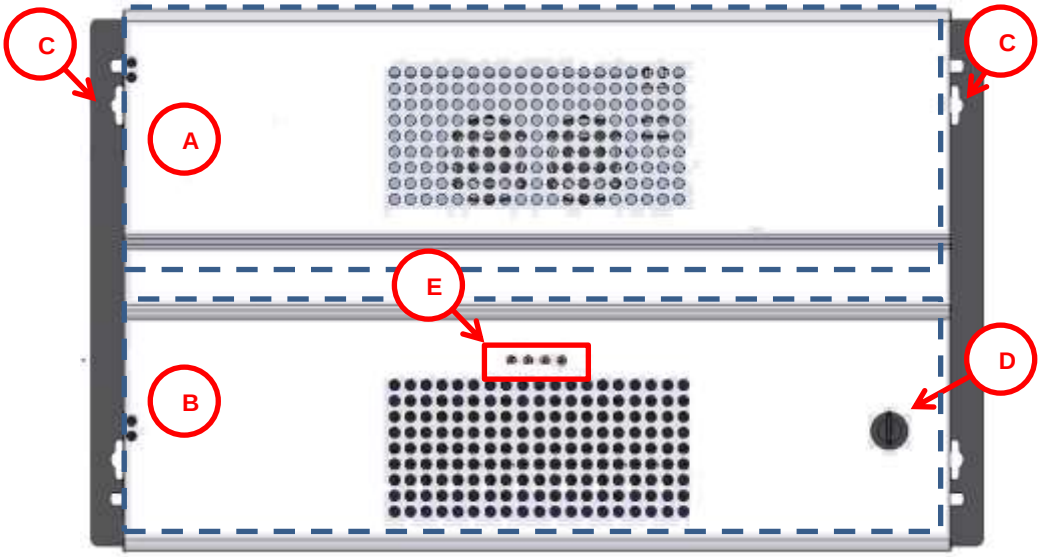
All incoming signals from input modules initially arrive in the TDX service-pool, where conversion to defined output signals occurs, after which the converted signals are fed to output modules.

Box contents

- TDX headend unit,
- 1 x TDX Key 775310
- 2 x Mounting brackets 775285
- 4 screws (M4 x 8 hexagon ISO 7380) 840200)
- 1 x Torx® key (2.5 mm) 848603
- 1 x Power cord
- User guide.

Headend overview

Exterior



A Input module area

B Output module area

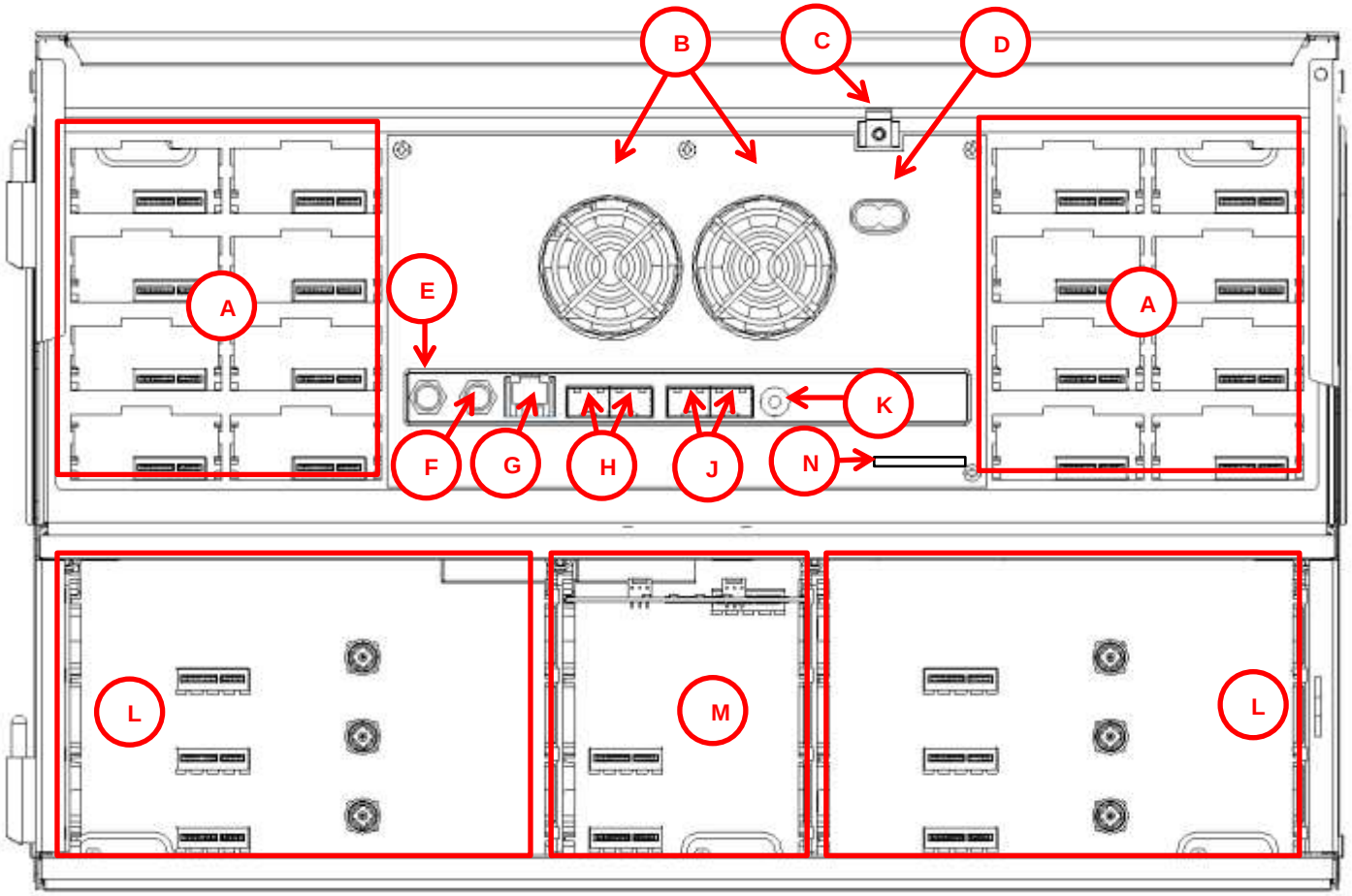
C Mounting brackets

D Lock

E Headend status LEDs

Headend Overview

Interior



A **Input slots (16 in total)**

B **Extractor fans**

C **Earth terminal**

D **Power input**

E **RF output**

Distributes the RF channels from the output modules using an F-connector.

F **Test point -20 dB**

RF test point of output (-20 dB).

G **Configuration port**

Ethernet configuration port for setting up the headend unit.

H **AUX 1 & 2**

Distributes services from IP output modules.

J **Link 1 & 2**

Connects the main unit with subunits 1 and 2. Can also be used in connection with IP input and output.

K **ID switch**

Switch for setting the ID of the main unit and the two subunits.

M **Slot 1 & 2 for auxiliary boards**

Auxiliary boards are used in connection with IP output modules.

N **Secure Digital (SD) card**

Memory card for storage of the system configuration (behind panel).

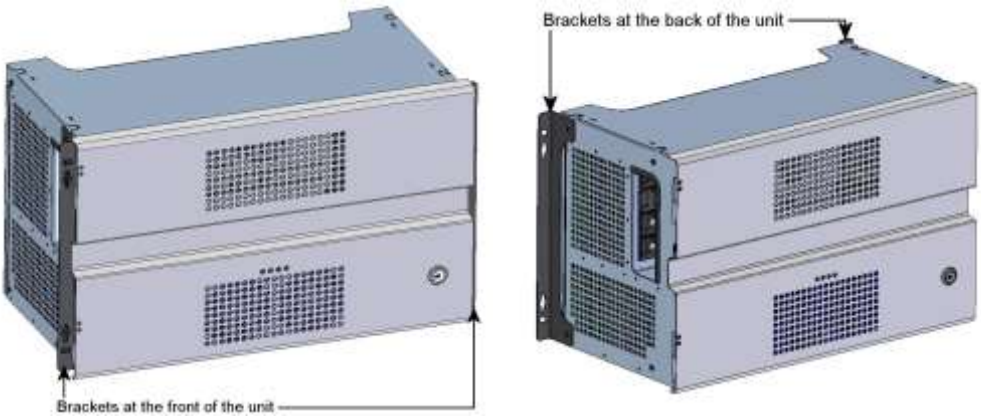
L **Output slots (6 in total)**

Headend Installation

Single headend installation

Mounting

The headend can be mounted either on a system rack or directly onto a wall.



Rack installation

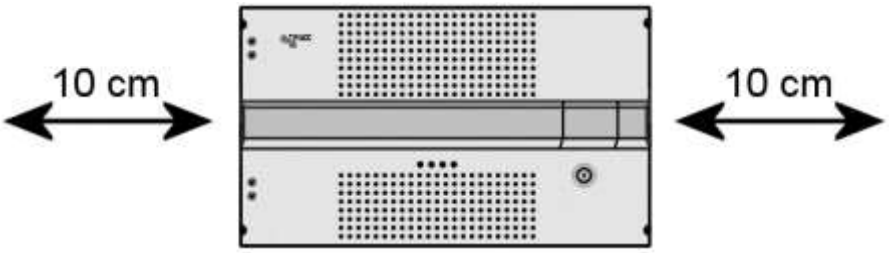
Wall installation

1. Attach the mounting brackets to the headend with the supplied screws.

Installation	Bracket position
Rack	At the front of a headend.
Wall	At the rear of a headend.

2. Attach the headend to the wall or onto a system rack.

Ventilation requirements



1. Ensure that min. 10cm ventilation space is available on both sides and the front of the headend.
2. Insert the key into the headend.
3. Open the door.
4. Lift the door off its hinges (optional).
5. Remove the top cover (optional).

Power/Earth

1. Connect an earth cable to the **Earth** terminal.
2. Attach the other end of the earth cable to an approved ‘earth’ connection point.
3. Insert the supplied cable into the **Power Input** port.

ID switch

- Confirm that the ID Switch is set to "0".

Multi headend installation

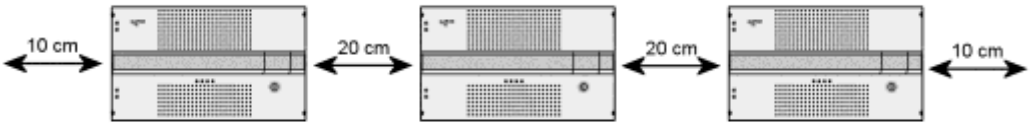
Up to three headends can be combined to further increase the number of services provided.

The headends are physically installed as per installation of single headend, i.e. by using the supplied brackets described above.

Ventilation requirements

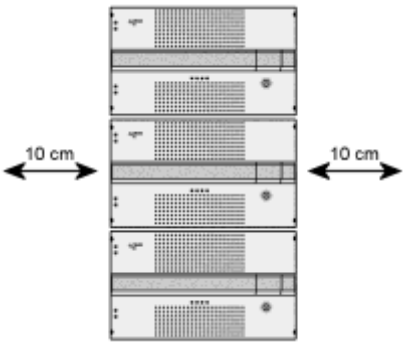
Ensure that the following ventilation requirements are met:

Horizontal installation



- Min. 20cm ventilation space must be available between headends.
- Min. 10cm ventilation space must be available outside the end headends.
- Min. 10cm ventilation space must be available from the front of each headend.

Vertical installation

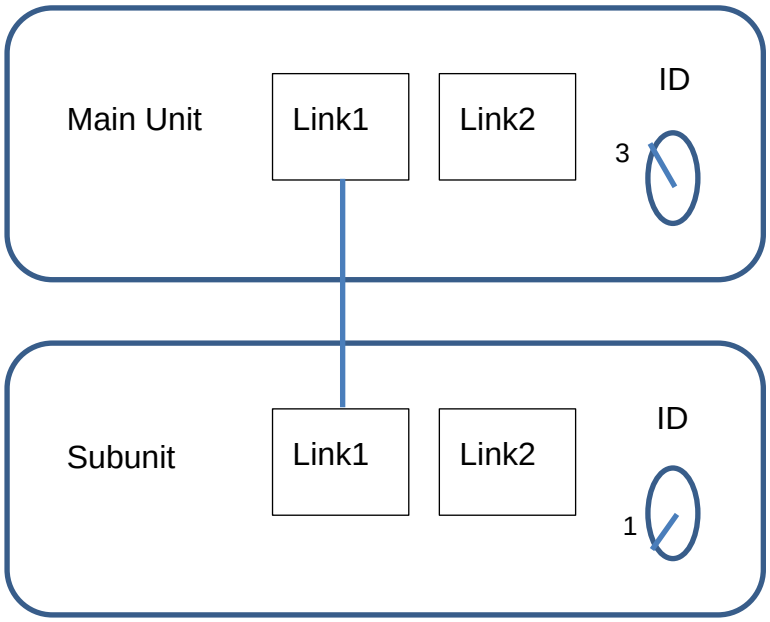


- 10cm ventilation space must be available on both sides of each headend.
- 10cm ventilation space must be available from the front of each headend.

Connecting units – Direct connection

Note that direct connection hardware configurations require the **Connection type** field in the service tool's Admin/IP Settings/Setup window to be set to 'Direct'.

1xMain – 1xSub

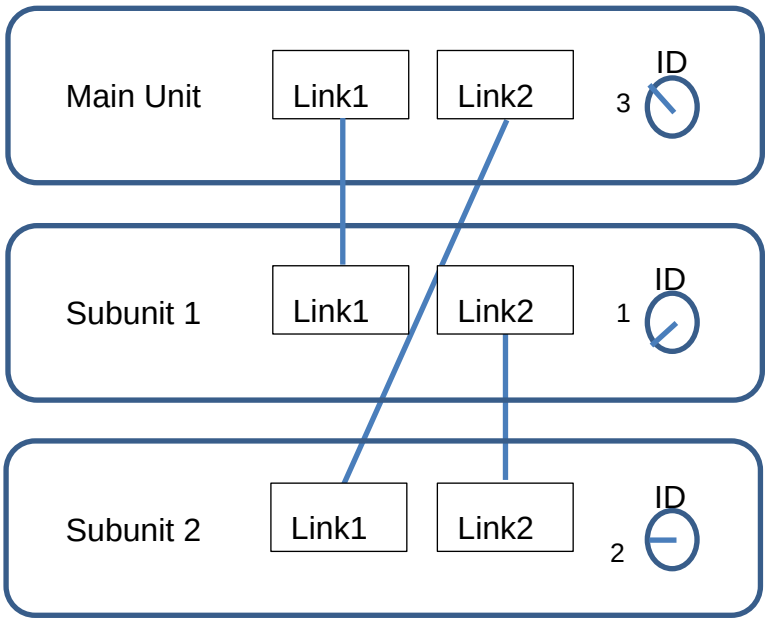


1. Insert SFP copper transceivers into the "Link 1"sockets on the main headend and subunit headend.
2. Route a RJ45 Cat5e or better cable from the "Link 1" socket on the main unit to the "Link 1" socket on subunit 1.
3. Set the "ID switch" on the main headend and subunit headend to the following:

- Main unit = "3"
- Subunit = "1"

Headend Installation

1xMain – 2xSub



1. Insert SFP copper transceivers into the “Link 1“ and “Link 2” sockets on the main headend and subunit headends.
2. Route a RJ45 Cat5e or better cable from the "Link 1" socket on the main unit to the "Link 1" socket on subunit 1.
3. Route a RJ45 Cat5e or better cable from the "Link 2" socket on the main unit to the "Link 1" socket on subunit 2.
4. Route a RJ45 Cat5e or better cable between the “Link 2” sockets on both subunits.
5. Set the "ID switch" on the main headend and subunit headends to the following:

- Main unit = "3"
- Subunit 1 = "1"
- Subunit 2 = "2"

RF output

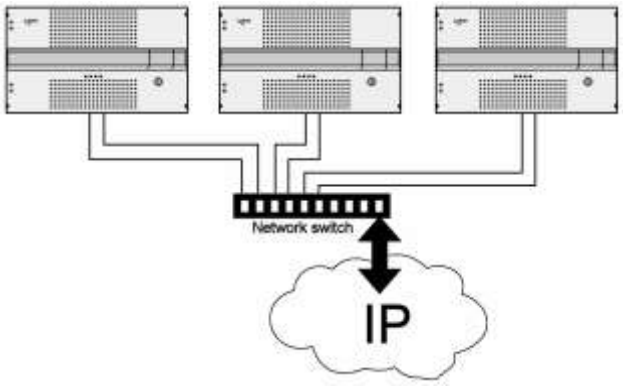
- Connect each headend unit to a combiner using RF cables from the RF output socket to the combiner.

Power

1. Connect each headend unit to an approved ‘earth’ connection point.
2. Provide power to each headend unit with the supplied power lead.

Connecting units – Switch connection

Note that headend units connected using a network switch require the **Connection type** field in the service tool’s **Admin /IP Settings** /Setup window to be set to **Switch**.



Triax recommends that a network switch is used for connecting the main and subunits even if IP services are not currently supported. The network switch used must support IGMP ver. 2 and contain a sufficient number of ports to connect to the Link sockets on the main and subunits.

1. Insert SFP copper transceivers into the “Link 1“ and “Link 2” sockets on the main headend and subunit headend(s).
2. Route a RJ45 Cat5e or better cable from the "Link 1" socket on the main unit and subunit(s) to the network switch.
3. Route a RJ45 Cat5e or better cable from the "Link 2" socket on the main unit and subunit(s) to the network switch.
4. Set the "ID switch" on the main headend and subunit headends to the following:

- Main unit = "3"
- Subunit 1 to "1"
- Subunit 2 (if present) to "2"

5. Connect the network switch to the IP network.

Headend Installation

Multi headend installation – Fiber optic

Fiber-optic cables must be used to connect the main headend unit to one or two subunits over distances greater than 100m.

The following SFP fibre-optic transceivers must be used in the Link sockets:

Triax Art.	Type	Data rate	Reach	Application
492087	Fiber (850nm) (LC)	1000Mbps	550m	Gigabit Ethernet
492088	Fiber (1310nm) (LC	1000Mbps	2km	Gigabit Ethernet

Resetting IP address

The IP address of a headend unit can be returned to the factory default address by using the ID switch.

1. Turn off the power to the main unit.
2. Set the ID switch on the main unit to "7".
3. Turn on the power.

The four LEDs flash red and yellow until the process of resetting the IP address has been completed.

The LEDs show green-constant if the reset process was successful.

1. Turn off the power to the main unit.
2. Set the ID switch on the main unit back to the initial setting.
3. Turn on the power to the main unit.

The IP address has been reset to the factory default.

Input modules

16 input modules can be installed per headend unit. Hot swap technology is used in the headend, meaning that modules can be inserted/removed/moved when the headend is in operation.

Input module types

Each input module is identified through the use of a specifically coloured label. The label also indicates the module type's name and associated item number. The remainder of the label is used for noting post-installation module information.

Another label containing a barcode and serial number is located on the underside of the input module.

Name	DVB-C input module
Item number(s)	492024
Label colour	Crimson

Name	HDMI input module
Item number(s)	492030
Label colour	Orange

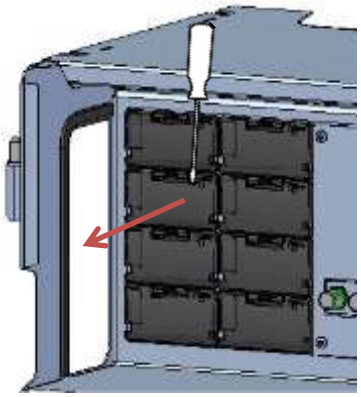
Name	A/V input module
Item number(s)	492080
Label colour	Yellow

Name	DVB-S/DVB-S2 input module
Item number(s)	492020
Label colour	Light blue

Name	DVB-T/DVB-T2 input modules
Item number(s)	492022, 492023
Label colour	Purple

Input Modules

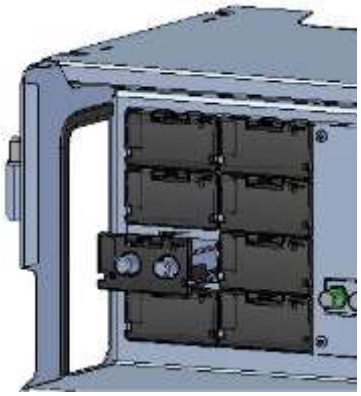
Inserting input modules



1. Prize the protective cover away from an available input slot.
2. Retain the protective cover.

Note:

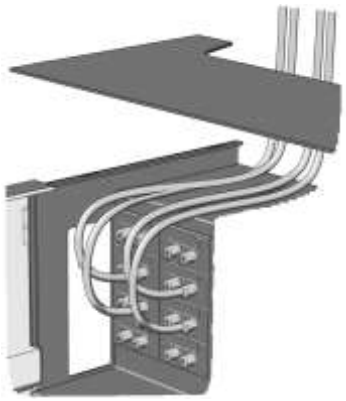
Any available input slot can be used.

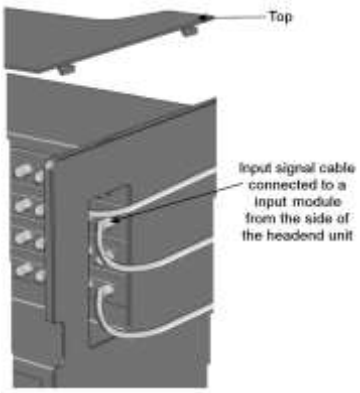


3. Push the input module into the input slot until the input module is locked in position.
4. Note details for the input module on the label (optional).
5. Note details for the input module on the label located inside of the door (optional).
6. Continue inserting all additional input modules.

Attaching cables

Signal cables can be attached when all input modules have been installed.



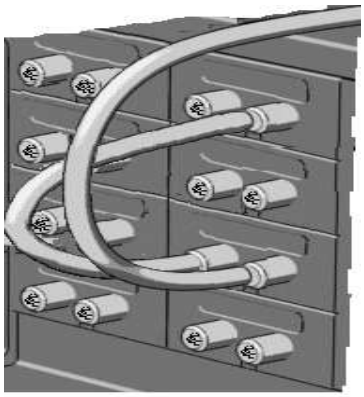


1. Route the cables either through the cable openings on the top or on the sides of the headend.
2. Attach the signal cables to the ‘IN’ connector on the input module.

Note:

Ensure that enough cable is available for relocating input modules to alternate input slots at a later date.

Looping cables



DVB-S/S2 signals can be looped between input modules:

1. Attach the signal cable to the IN port on one DVB-S/S2 input module.
2. Attach a loop cable to the OUT port on the same DVB-S/S2 input module.
3. Attach the other end of the loop cable to the IN port on another DVB-S/S2 input module.*

Removing input modules

Input modules are removed from the headend by:

1. Remove the signal cable from the module.
2. Prize the module out of the headend with a flathead screwdriver.
3. Pull the module out of the headend.

Note:

Modules can be removed while the headend is in operation.

Moving input modules

1. Prize the module out of the headend with a flathead screwdriver.
2. Pull the module out of the headend.
3. Insert the module in a new input slot.

Note:

Modules can be moved while the headend is in operation.

Output Modules

Output modules

Six output modules, each consisting of four RF channels can be installed in a headend unit. Hot Flash technology is used in the headend, meaning that output modules can be inserted/removed/moved while the headend is running.

Output module types

Each output module is identified through use of a specifically coloured label. The label also indicates the module type's name and associated item number. The remainder of the label is used for noting post-installation module information.

Another label containing a barcode and serial number is located on the underside of the output module.

Name	QAM FTA/CI output module
Item number(s)	492055/492056
Label colour	Purple

Name	PAL FTA/CI output module
Item number(s)	492050/492051/492052/492053
Label colour	Green

Name	COFDM FTA/CI output module
Item number(s)	492060/492061
Label colour	Orange

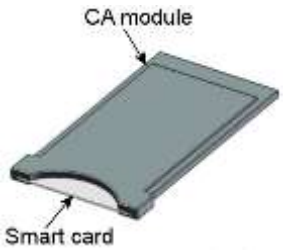
Name	2xCI Slots output module
Item number(s)	492070
Label colour	Black

Note:

Some output modules also contain slots for two CAM modules

Inserting output module

Depending on where you want to insert the output module push the extractor fan to the opposite side.



1. Insert smart cards (if relevant).
   - Insert the service provider's smartcard into the CA module.
   - Insert the CA module into either of the available slots in the output module.
2. Push the output module into an available output slot.
3. Press until the output module is locked into position.
4. Continue inserting all additional output modules.
5. Note details about the output module on the label (optional).
6. Note details about the output module on the label located on the inside of the door (optional).
7. Return the extractor fan to the centre of the output area.

Removing output module

1. Release the lock mechanism on the module to be removed.
2. Extract the module from the headend.
3. Return the extractor fan to the centre of the output area.

Auxiliary Modules

Two slots are present in the middle of the output section for installation of auxiliary modules. For details refer to products that use auxiliary boards.

Module status - LED

Each input module has an LED on the front to indicate its current status when the headend is powered.

Green - flashing	The module is yet to be configured yet.
Green	No errors, and the tuner is locked to the frequency.
Red	Error, and the tuner is not locked to the frequency.
No colour	Module is not powered.

Input module software updates are also displayed on the LED when the modules are updating.

Orange	Booting.
Temporary off	Initiation of the software update.
Temporary green	Every time the module receives a valid data package.
	Repeated until the update is completed without errors.
Red	Software update failed.

System Monitoring

LEDs

Four LEDs are placed at the top of the output section of each headend unit, and provide information on the state of the headend and subunits (if present).

The four LEDs are named (from left to right):

System Status Tuner Status Unit Link 1 Unit Link 2

The LEDs can be green - constant, green – flashing, red, or no colour is displayed. The message being indicated are different for each LED.

Headend type/usage	LED Name	Colour	Message
Standalone	System Status	Green – constant	Power is on and the headend is operational.
		Green – flashing	The headend is booting up.
		Red	An error has been detected in the headend, which must be investigated.
	Tuner Status	Green – constant	The input module tuners are locked.
		Red	One or more Input module tuners are not locked.
	Unit Link 1	Not used	
	Unit Link 2	Not used	
Headend type/usage	**LED Name**	**Colour**	**Message**
Main Unit in multi-unit installation	System Status	Green – constant	Power is on and the headend is operational.
		Green – flashing	The headend is booting up.
		Red	An error has been detected in the headend, which must be investigated.
	Tuner Status	Green – constant	The input module tuners are locked.
		Red	One or more Input module tuners are not locked.
	Unit Link 1	Green – constant	The subunit is connected to the main unit.
		Red	There is a problem with the connection to the subunit.
		No colour	No subunit is connected to the main unit.
	Unit Link 2	Green – constant	The subunit is connected to the main unit.
		Red	There is a problem with the connection to the subunit.
		No colour	No subunit is connected to the main unit.
Sub Unit 1 in multi-unit	System Status	Green – constant	Power is on and the headend is operational.

installation		Green – flashing	The headend is booting up.
		Red	An error has been detected in the headend, which must be investigated.
	Tuner Status	Green – constant	The input module tuners are locked.
		Red	One or more Input module tuners are not locked.
	Unit Link 1	Green – constant	The subunit is connected to the main unit.
		Red	There is a problem with the connection to the subunit.
		No colour	No subunit is connected to the main unit.
	Unit Link 2	Green – constant	The subunit is connected to the main unit.
		Red	There is a problem with the connection to the subunit.
		No colour	No subunit is connected to the main unit.
Headend type/usage	**LED Name**	**Colour**	**Message**
Main Unit in multi-unit installation	System Status	Green – constant	Power is on and the headend is operational.
		Green – flashing	The headend is booting up.
		Red	An error has been detected in the headend, which must be investigated.
	Tuner Status	Green – constant	The input module tuners are locked.
		Red	One or more Input module tuners are not locked.
	Unit Link 1	Green – constant	The subunit is connected to the main unit.
		Red	There is a problem with the connection to the subunit.
		No colour	No subunit is connected to the main unit.
	Unit Link 2	Green – constant	The subunit is connected to the main unit.
		Red	There is a problem with the connection to the subunit.
		No colour	No subunit is connected to the main unit.
Sub Unit 1 in multi-unit installation	System Status	Green – constant	Power is on and the headend is operational.
		Green – flashing	The headend is booting up.
		Red	An error has been detected in the headend, which must be investigated.
	Tuner Status	Green – constant	The input module tuners are locked.
		Red	One or more Input module tuners are not locked.
	Unit Link 1	Green – constant	The subunit is connected to the main unit.

		Red	There is a problem with the connection to the subunit.
		No colour	No subunit is connected to the main unit.
	Unit Link 2	Green – constant	The subunit is connected to the main unit.
		Red	There is a problem with the connection to the subunit.
		No colour	No subunit is connected to the main unit.
Sub Unit 2 in multi-unit installation	System Status	Green – constant	Power is on and the headend is operational.
		Green – flashing	The headend is booting up.
		Red	An error has been detected in the headend, which must be investigated.
	Tuner Status	Green – constant	The input module tuners are locked.
		Red	One or more Input module tuners are not locked.
	Unit Link 1	Green – constant	The subunit is connected to the main unit.
		Red	There is a problem with the connection to the subunit.
		No colour	No subunit is connected to the main unit.
	Unit Link 2	Green – constant	The subunit is connected to the main unit.
		Red	There is a problem with the connection to the subunit.
		No colour	No subunit is connected to the main unit.

Service tool

The headend needs to be configured before it can be used.

System requirements

Computer minimum requirements

A computer meeting the following minimum requirements is required for configuring the headend.

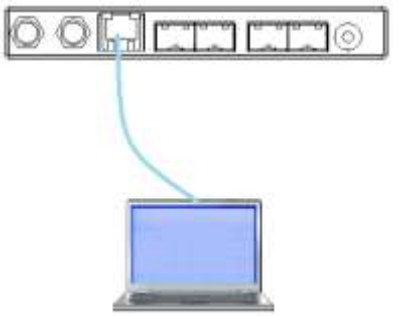
Operating system:	Windows XP or above
Browser:	Windows Internet Explorer version 6.0 or equivalent
Additional software:	Microsoft© Silverlight Runtime version 3.0 or above

Static IP address

A static address must be used on the computer you use to configure the headend.

Refer to the computer's operating software documentation for assistance on using static IP addresses.

Physical connection to headend

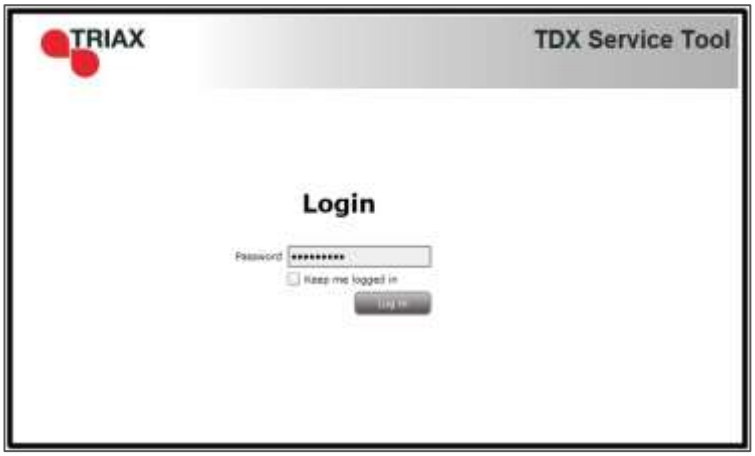


- Connect a Cat5e shielded cable or better between the computer's network port and the configuration port on the headend.

Service Tool

Starting Service tool

1. Open a web browser window.
2. Enter **'http://192.168.0.**100' in the web address field.
3. Press **Enter**.



4. Enter the password.
5. Press the **Log in** button.

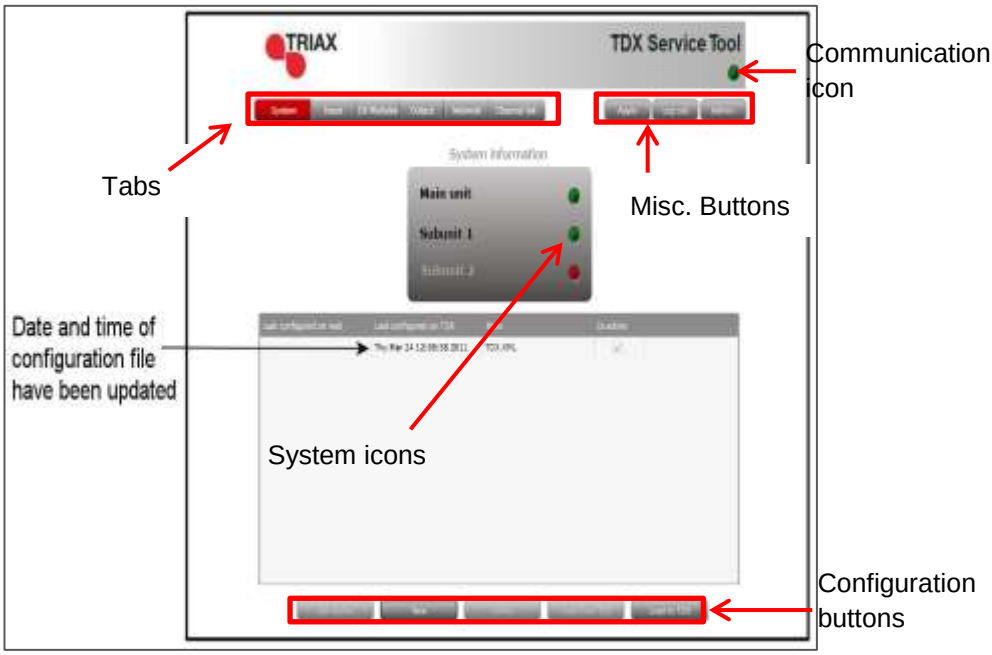
Note:

Password = '**triax1234'** when the service tool is opened on each headend for the first time.

The **Keep me logged in** checkbox overrides the system's automatic time out function, which is activated after 20 minute's inactivity.

General Settings Administration

Overview



Communication icon Indicates whether the service tool is communicating correctly with the headend unit.

Green	The service tool and headend are communicating correctly.
Red	The service tool and headend are NOT communicating correctly.

System icons Indicates whether the headend unit is functioning correctly.

Green	The headend unit is functioning correctly.
Red	The headend unit is NOT functioning correctly.

General Settings Administration

Tabs

Accesses the various tabs used to configure the headend's input and output modules.

System	The service tool's 'home' window. Provides system overview information and configuration activation/control.
Input	Tab for configuring input modules and services.
CA Modules	Tab for configuring CI modules and CA cards. Refer to output module manuals for information.
Output Network	Tab for configuring output modules and services.
Channel List	Tab for viewing available channels, refer to input module manuals for information.

Misc. Buttons

Apply	Stores configuration settings on the SD card located in the headend.

Button colour

Red	There are changes that have not been stored on th headend's SD card.
Grey	All changes are stored on the headend's SD card.

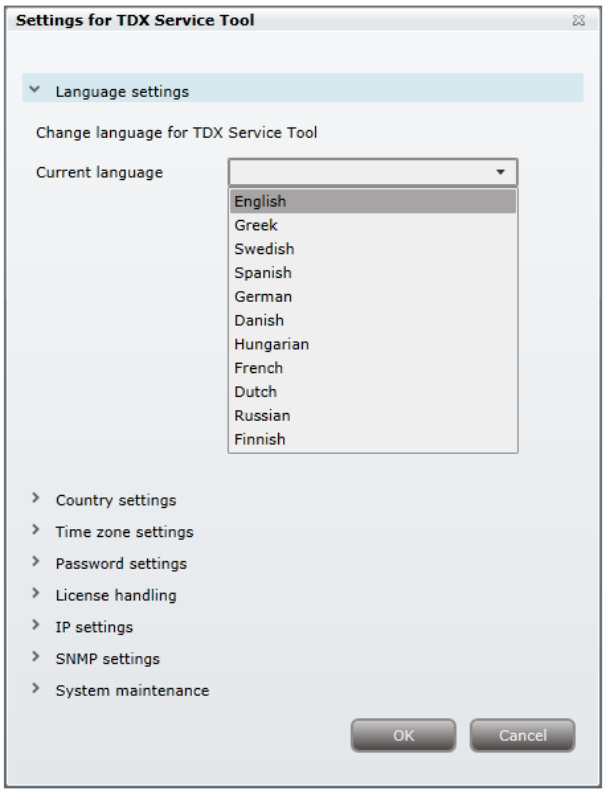
Log In/Out	Service tool access control.
Admin.-	Opens the settings for service tool window, where language, location, time zone, and initial IP addresses are specified.

Administration

The system language, locale, and time zone need to be specified on each headend unit.

It is also necessary to specify IP addresses for headends which are located on a distribution network.

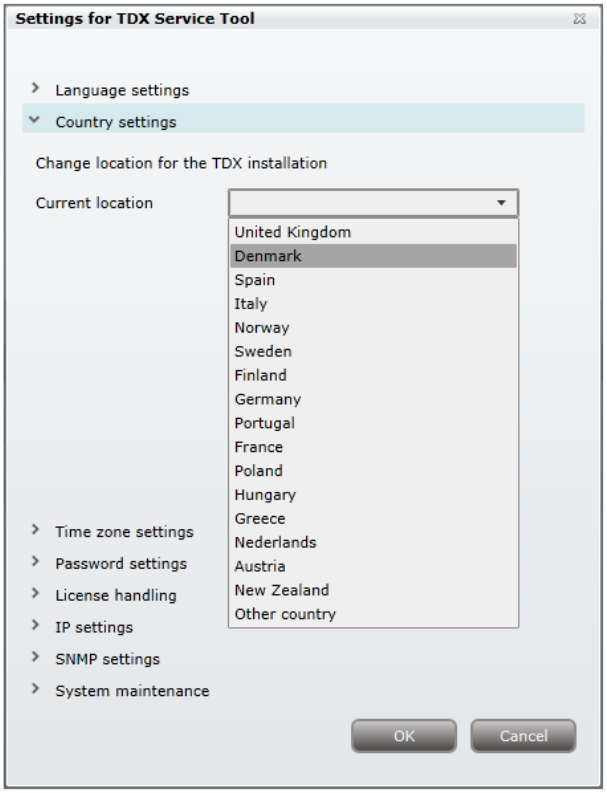
Language



1. Press the **Admin** button at the top right-hand corner of the System window.
2. Open the **Current language** drop-down list.
3. Select the desired language.
4. Press the **OK** button.

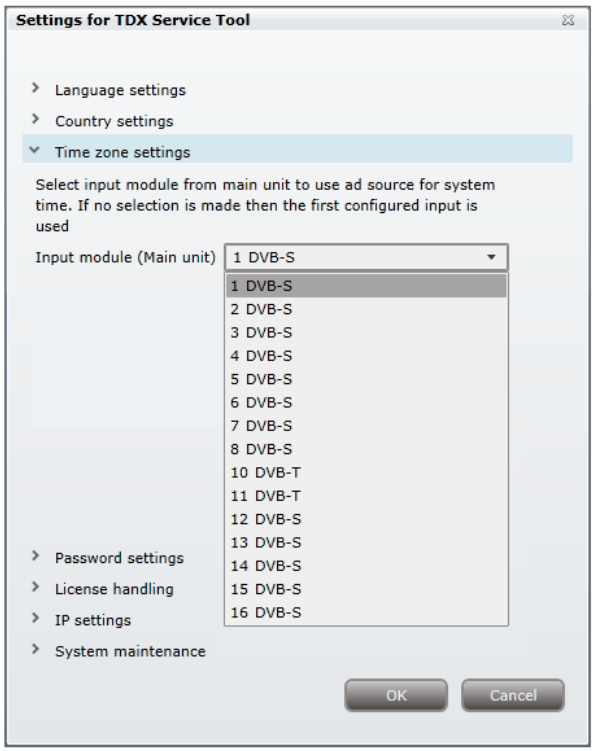
General Settings Administration

Location



1. Press the **Admin** button at the top right-hand corner of the System window.
2. Expand the **Country settings** area.
3. Open the **Current location** drop-down list.
4. Select the country where the headend is located.
5. Press the **OK** button.

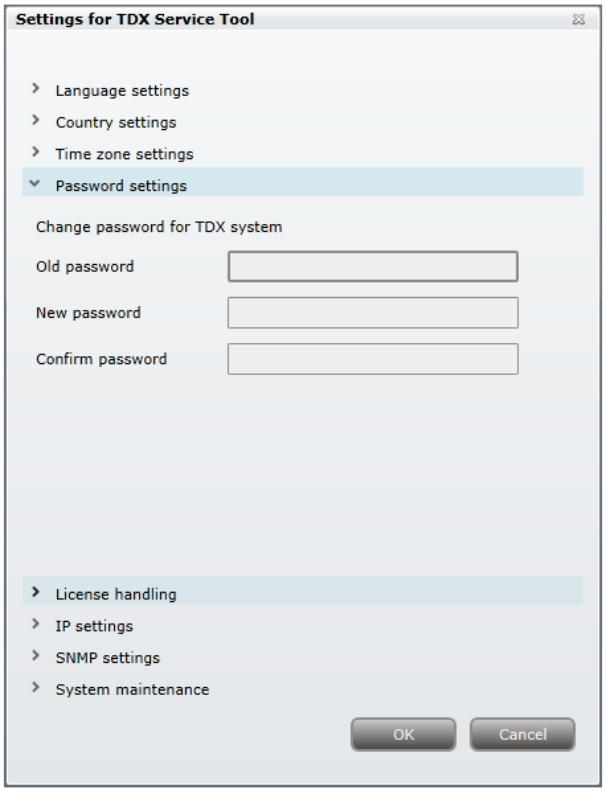
Time zone



1. Press the **Admin** button at the top right-hand corner of the **System** window.
2. Expand the **Time zone settings** area.
3. Open the **Input module (Main unit)** drop-down list.
4. Select the input module that is to be used for setting the headend's system date/time/time zone.
5. Press the **OK** button.

General Settings Administration

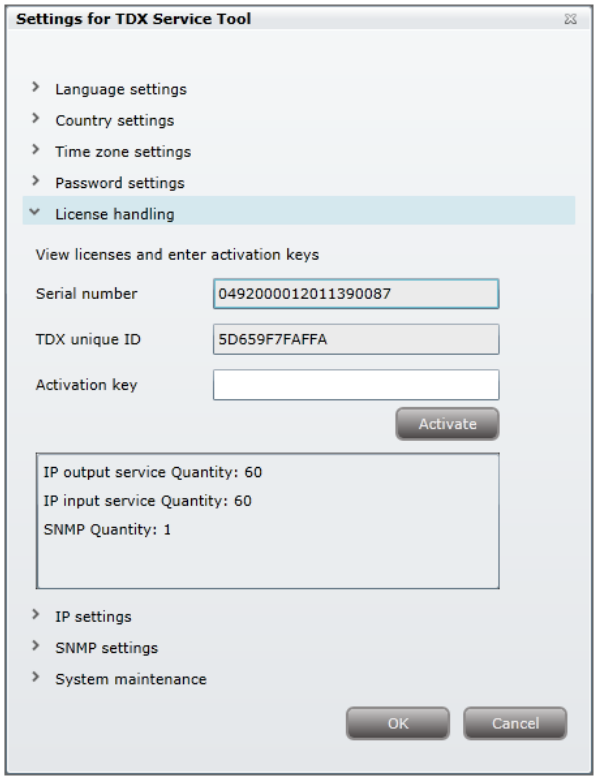
Security



1. Press the **Admin** button at the top right-hand corner of the System window.
2. Expand the **Password settings** area.
3. Specify the current password in the **Old password** field. (‘**triax1234’**) if the service tool is being used for the first time.
4. Specify a new password in the **New password** field.
5. Re-specify the new password in the **Confirm password** field.
6. Press the **OK** button.

Licences

Licenses handle particular services, e.g. IP input and/or IP output or SNMP functionality. When you have purchased licences they need to be activated in the headend system.



1. Press the **Admin** button at the top right-hand corner of the System window.
2. Expand the **Licence handling** area.
3. Contact Triax Sales and provide the contents of the serial number and unique ID fields.
4. Enter the code provided by Triax Sales into the **Activation key** field.
5. Press the **Activate** button.
6. Press the **OK** button.

Note:

Clicking the **Activate** button accesses the available licence(s), the TDX unique ID changes, the activation key is deleted, and the activated licenses are listed in the pane.

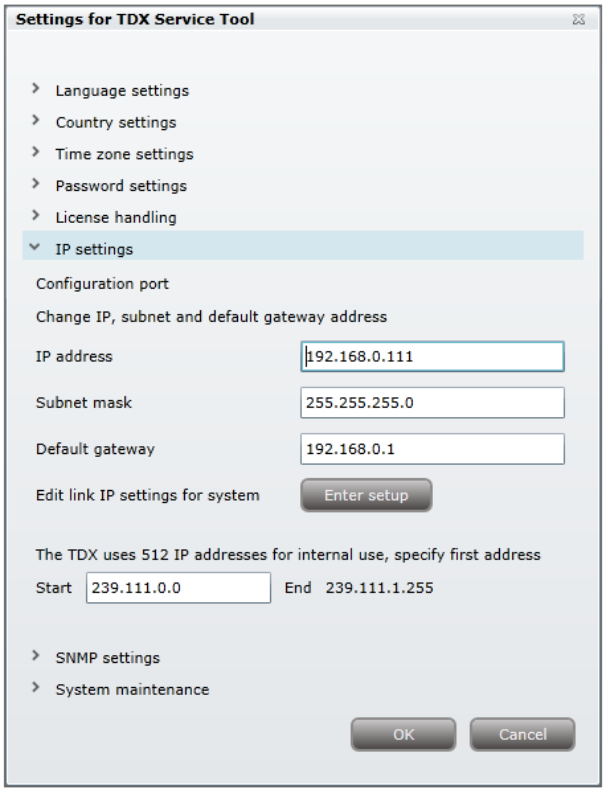
Additional licenses are purchased by contacting Triax and providing the serial number and unique ID. A new activation key will then be provided for accessing the additional licences.

IP addresses

It may be necessary to specify specific IP addresses for the headend to avoid network IP address conflicts.

Note:

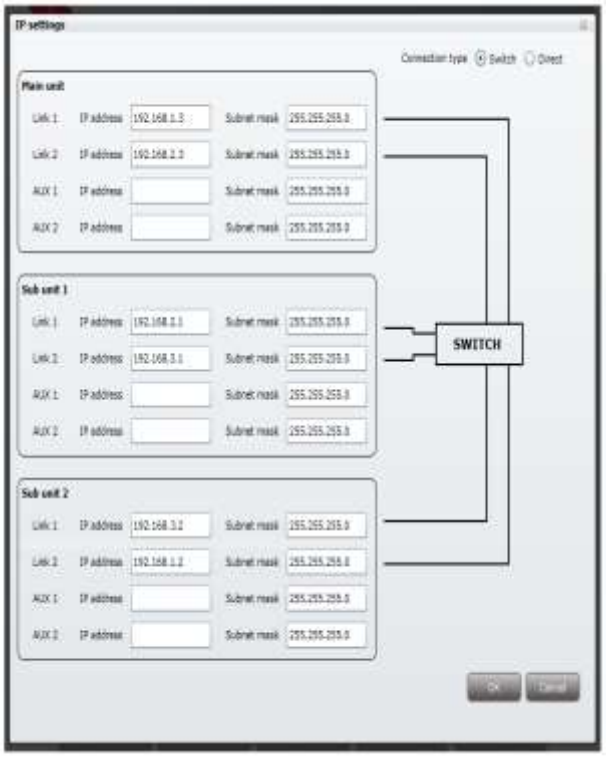
Headend IP addresses can be reset to factory default settings if required. This is done via the ID switch located on the headend unit(s).



1. Press the **Admin** button at the top right-hand corner of the System window.
2. Expand the **IP settings** area.
3. Specify the headend's IP address, subnet mask and default gateway in the corresponding fields.

Next step is only relevant where Main and sub units are connected to the network via a Gigabit network switch.

4. Press the **Enter Setup** button.



The **IP Settings** window is used to specify unique IP addresses and subnet masks used by the Link 1 and Link 2 sockets on the main and sub units. This provides additional functionality to avoid IP address conflicts.

1. Select the **Switch** radio button.
2. Specify unique IP addresses and subnet mask details for the main and subunits in the corresponding fields.
3. Press the **OK** button.

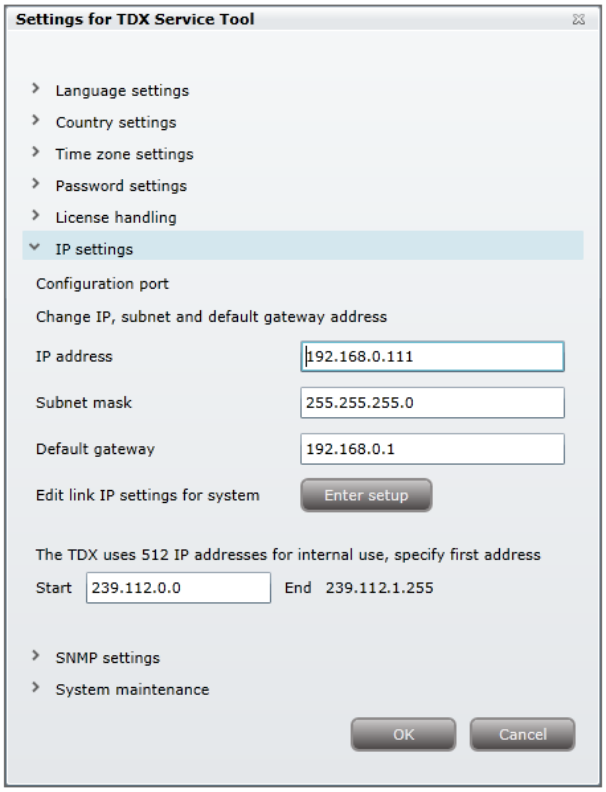
Note:

The **AUX 1**, **AUX 2** and associated **IP Address** and **Subnet mask** fields are used in connection with the IP output module.

Remaining steps are valid for all multi-unit installations.

The 512 IP addresses used by the headend(s) must not conflict with any of the IP addresses used either within the network or for services.

1. Enter the first of the 512 IP addresses used for internal purposes in the **Start** field.
2. Press the **OK** button when all changes have been made.

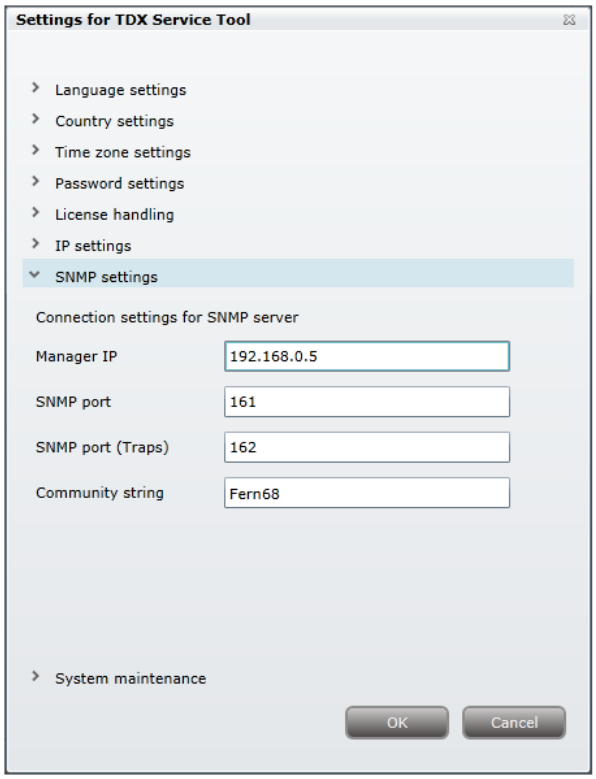


A message is displayed if the headend needs to be rebooted due to IP address changes having been made.

SNMP settings

SNMP stands for “Simple Network Management Protocol”.

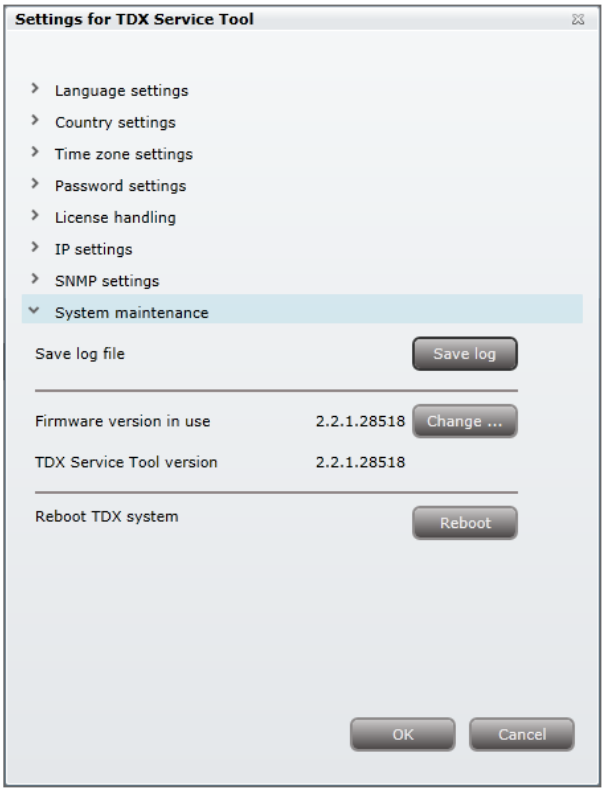
SNMP is an Internet standard protocol that you use for exchanging management information between the equipment in a CATV network. You can use SNMP to monitor sub-headends, fibre notes and amplifiers or to check the status of the equipment.



1. Press the **Admin** button at the top right-hand corner of the System window.
2. Expand the **SNMP settings** area.
3. Specify the IP address of the computer that monitors the network, i.e. the SNMP manager.
4. Specify new SNMP port numbers if you want to change the default values in the two SNMP port fields.
5. Enter a password to access the SNMP manager in the **Community string** field.
6. Press the **OK** button.

For an overview of SNMP traps, see “SNMP Traps”.

Rebooting



1. Press the **Admin** button at the top of the right-hand corner of the System window.
2. Expand the System maintenance area.
3. Press the **Reboot** button.

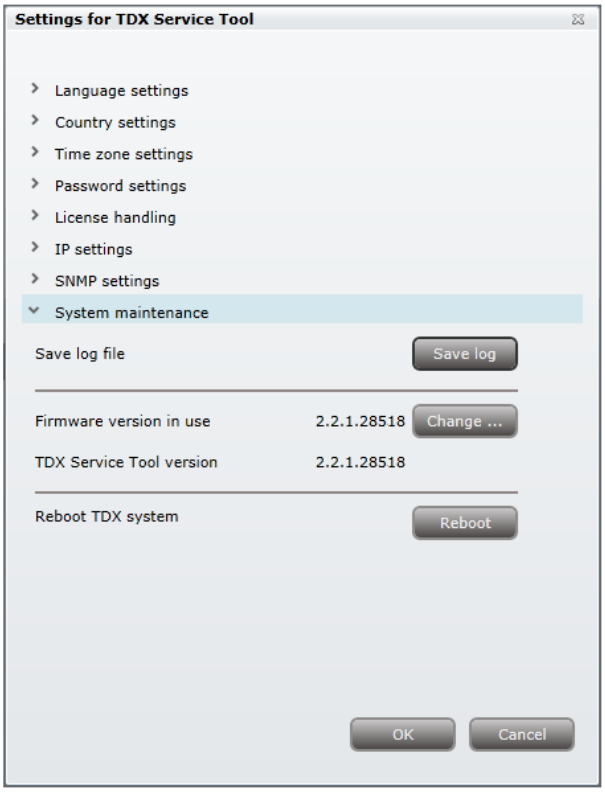
Note:

Changes to IP addresses only take effect when the headend has been rebooted.

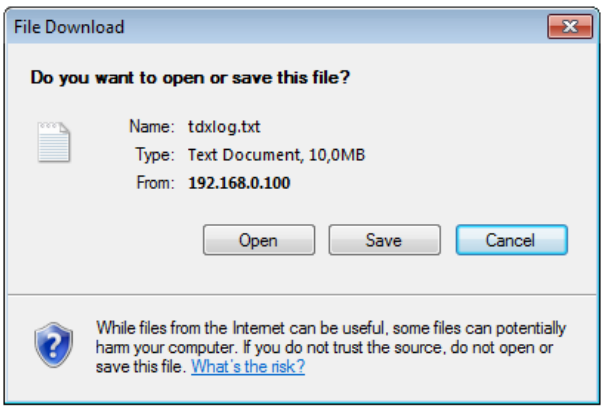
Viewing system log

It is possible to save log files for viewing headend actions.

1. Press the **Admin** button at the top of the right-hand corner of the System window.



2. Expand the System maintenance area.
3. Press the **Save log** button.



4. Press **Open** to view the log file in notepad.
5. Press **Save** to specify a file location and if required rename the log file as per normal Windows operating system procedure.

Firmware

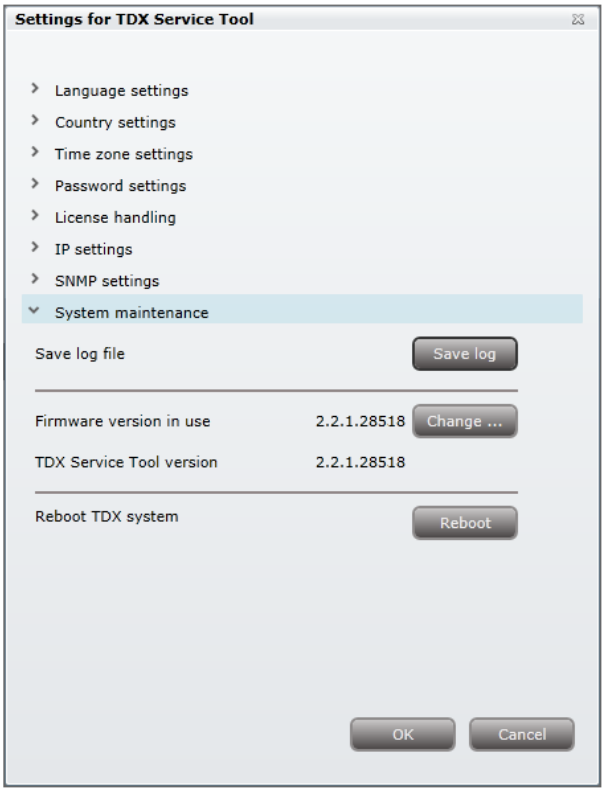
Updating

Firmware updates are available from the Triax home page,

www.Triax.com.

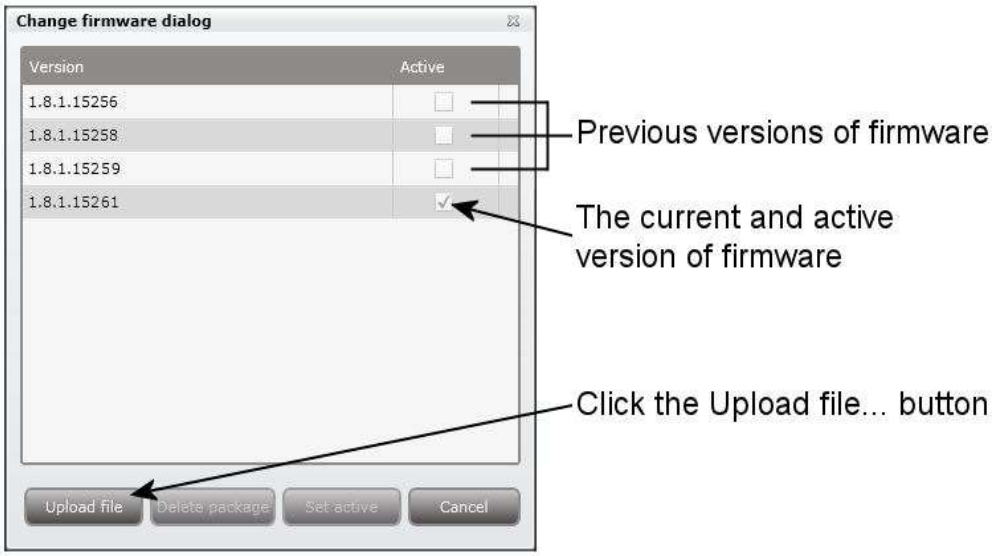
Always read the release notes to determine whether the headend would benefit from available firmware updates or not.

1. Press the **Admin** button at the top of the right-hand corner of the System window.



2. Expand the **System maintenance** area.
3. Press the **Change** button.

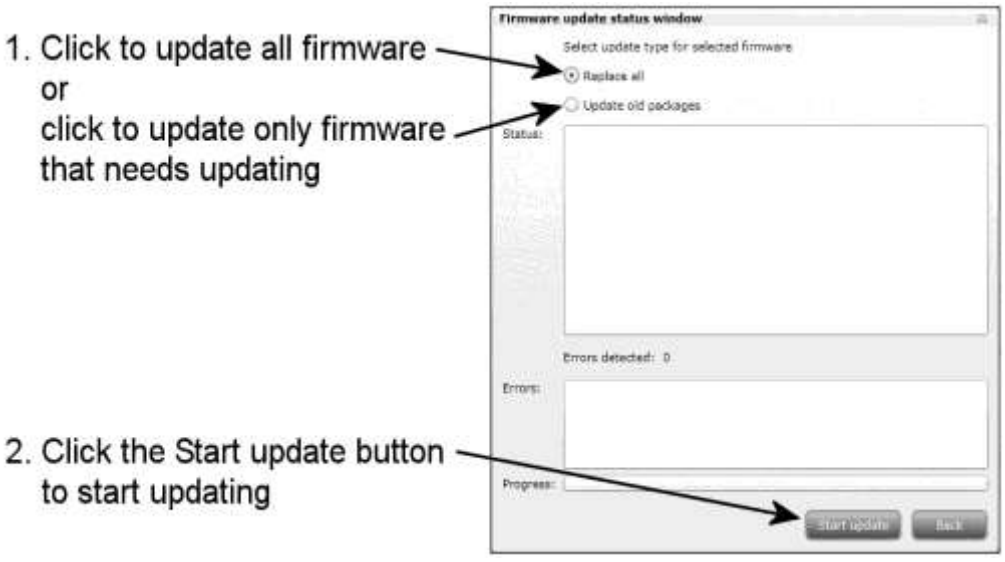
The **Firmware** window lists the headend's current and previous firmware versions.



4. Press the **Upload file** button.
5. Navigate to where the update file is saved.
6. Select the file.
7. Press the **Open** button.

The new firmware update file is listed in the **Change firmware** dialog.

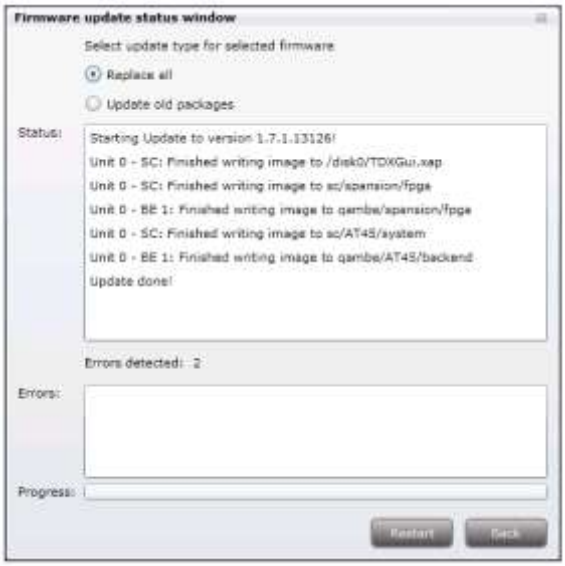
8. Check the **Active** check box for the new update file.
9. Press the **Set active** button.



10. Select the **Replace** all radio button to update all of the headend's firmware, i.e. modules, system controller and user interface. (Recommended)
11. Select the **Update old packages** radio button to only update outdated modules.
12. Press the **Start update** button.

Note:

The **Update old packages** radio button should only be used in cases where the headend consists mainly of new modules, but also contains some older modules that might benefit from an update.

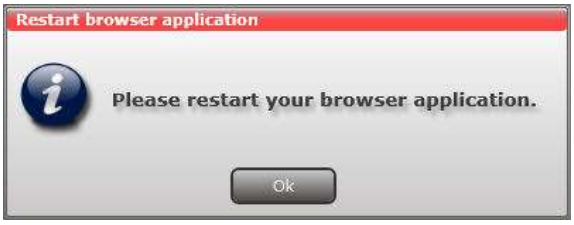


The firmware update takes approximately 5 minutes, during which time upgrade information is displayed in the Status area.

13. Press the **Restart** button when the firmware update has completed.

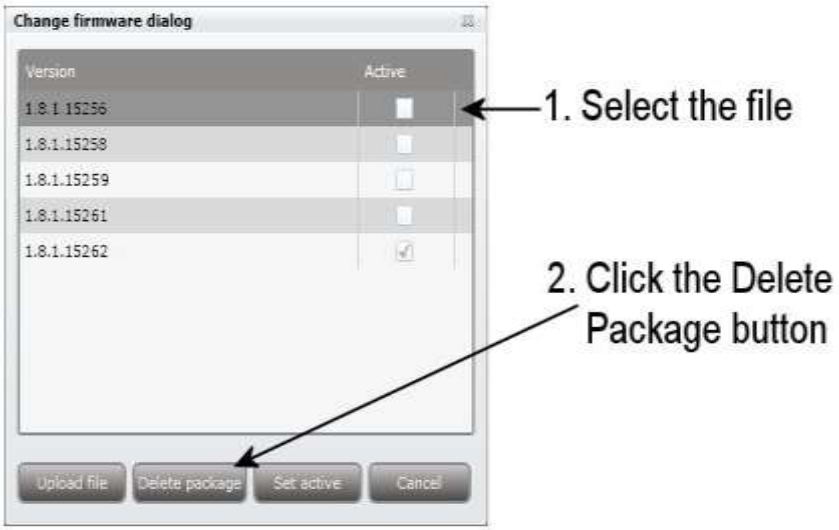
Note:

Service distribution to end-users will be disrupted while the headend restarts.



14. Restart the internet browser when prompted.
15. Logon to the system tool and make any further changes.

Cleaning up



1. Select the firmware updates to be removed from the system tool.
2. Press the **Delete** package button.

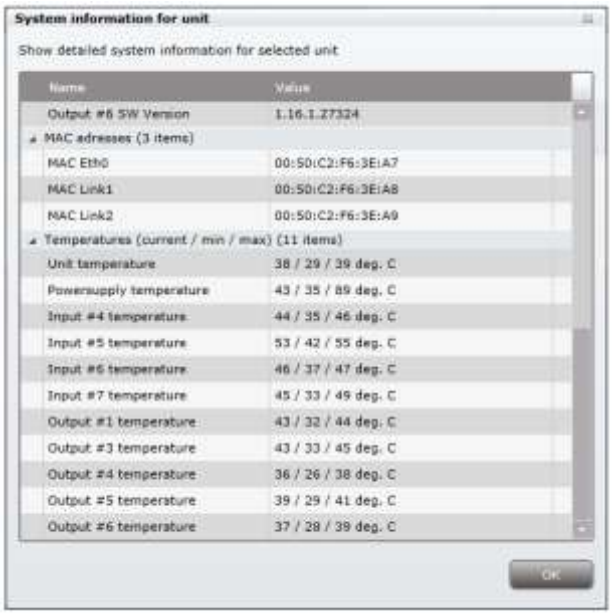
System Information

Viewing System information

Detailed information is available on headend units:

1. Select the **System** tab.
2. Select the main unit or one of the subunits in the **System information list** area.

The **System information for unit** window is displayed. The window contains information relating to:



- Any headend system errors
- Name and associated software version of input and output modules

  Note that the software versions installed on all headends, including each input/output module must be identical.

Update the software for the entire headend installation (including input/output modules) if this is not the case.

- MAC addresses
- Current/minimum/maximum temperatures
- Power supply

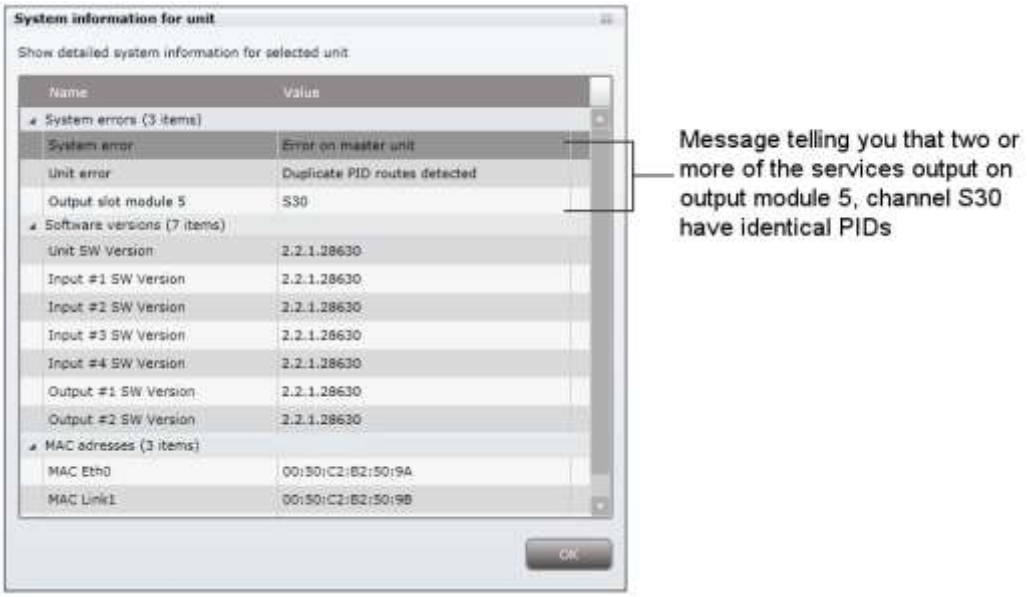
Duplicated PIDs

Selecting IP services for output may result in a selection of services from an MPTS stream that uses the same PID for two or more services.

It is not possible to output services with identical PIDs.

If you have selected services with identical PIDs, the System icon of the headend unit that handles the output of the services with identical PIDs turns red.

- Click the affected unit to open the **System information for unit** window.



The **System information for unit window** lists the output module(s) and channel(s) which attempt to output services with identical PIDs.

To solve the problem you have to open the configuration window of the output module(s) listed in the **System information for unit** window, and deselect the selected IP services one by one while checking the **System information for unit** window until the message disappears from the window.

Managing configuration files

Creating

1. Select the **System** window.
2. Select the **New** button.

An empty configuration file is created and listed in the configuration list area.

Activating

1. Select the **System** tab.
2. Select the configuration that is to be actively used on the headend.
3. Press the **Set active** button.

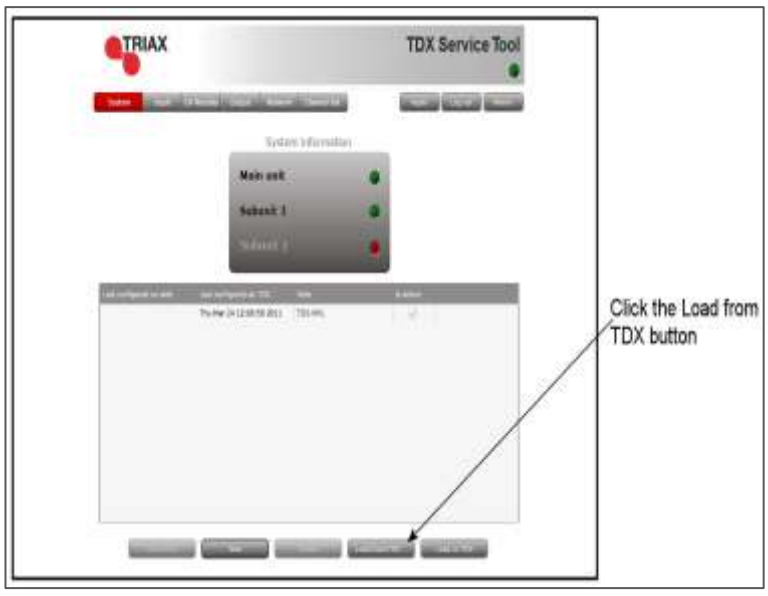
Deleting

1. Select the **System** tab.
2. Highlight the configuration file to be deleted.
3. Press the **Delete** button.

Saving

Headend configuration files can, if desired, be saved on the computer. This simplifies the process of configuring additional headends that contain the same modules.

A saved configuration file can also be used on headends that do not contain exactly the same modules. It will, however, be necessary to reconfigure/delete/add the modules that differ between the initial headend and that being configured.



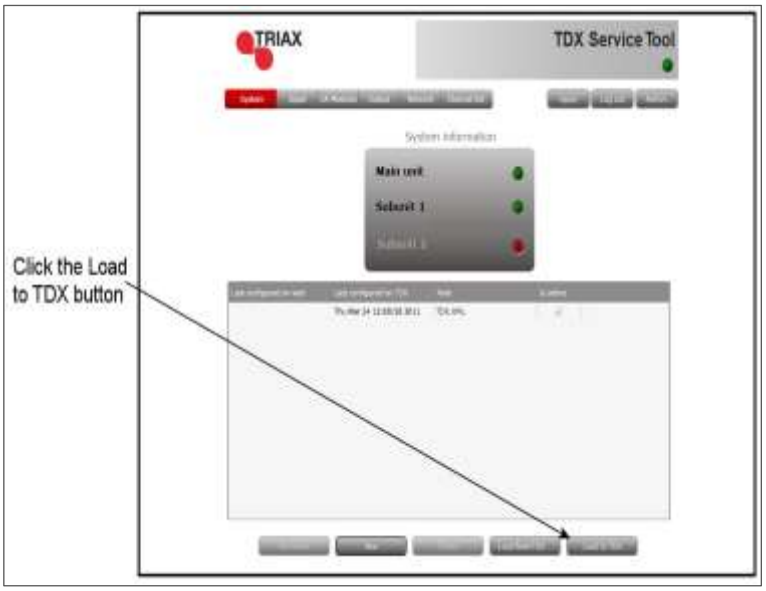
1. Select the **System** tab.
2. Press the **Load from TDX** button.

3. Navigate to where the configuration file is to be saved.
4. Enter a name for the configuration file.
5. Select ‘XML’ in the **File type** field.
6. Press the **Save** button to save.

Uploading

Configuration files previously saved on a computer can be transferred to the system tool to simplify the configuration process.

Any module differences will need to be manually configured.



1. Select the **System** tab.

2. Press the **Load to TDX** button.

3. Navigate to the folder where the configuration file to be uploaded is located.
4. Select the file.
5. Press the **Open** button.

The configuration file will now be listed in the configuration list area. A number in brackets, e.g. (1), is added to the name of the new file if an identically named configuration file is already present.

IP Input configurations

The headend system includes basic IPTV functionality which enables service delivery over a packet-switched network infrastructure. To handle IP input through the Link sockets the following requirements must be satisfied:

- IP multicast streaming (UDP streaming)
- Possibility of RTP
- IGMP version 2
- SPTS or MPTS including PAT, PMT, CAT

Important:

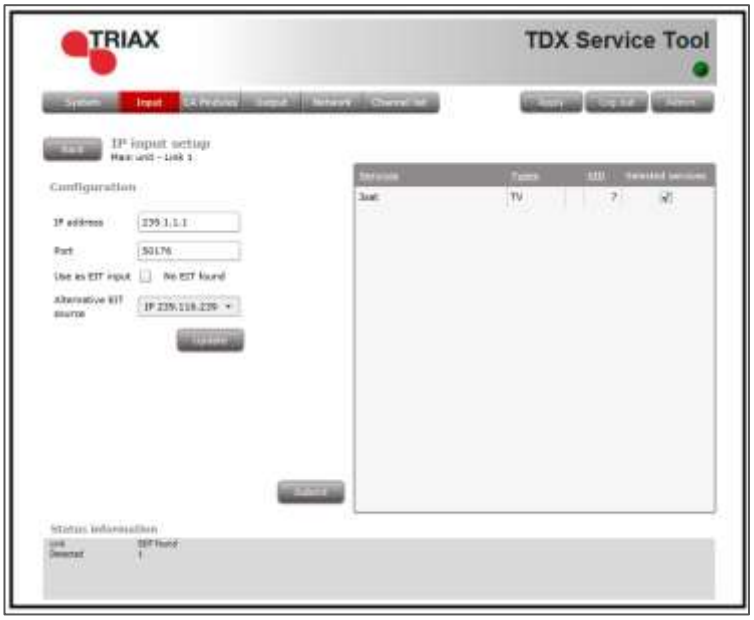
- The TDX headend system supports up to 7 TS packets per IP packet at IP inputs.
- The TDX headend system does not support IP fragmentation at IP inputs, which may occur if the IP packets are transmitted over a network with a Maximum Transmission Unit (MTU) less than approximately 80 + N*188 bytes, where N is the number of packets per IP packet..
- Recommended settings are 7 TS packets per IP packet and a minimum MTU of 1500 bytes in the entire network path.

Note:

Licenses for IP input are required to be able to use the IPTV functionality in the headend. The licenses can be purchased from Triax Sales, and need to be activated, see “Activating licenses”.

Creating

1. Select the **Input** tab.
2. Select the **IP inputs** sub-tab.
3. Press the **Setup** button for the link socket that processes IP input.
4. Specify the desired IP address and associated IP port number in the corresponding fields.



5. Press the **Update** button.
6. Check the **Selected services** checkbox for one or more services to select the service(s) you want to use.

Important:

If the IP input uses MPTS streams, then each stream can contain one or more services. An MPTS stream may use the same PID (Package ID) for two or more of the services that it contains.

However, the headend system cannot output services with the same PID. To discover services with the same PID is NOT possible until you have selected the services with identical PIDs in order to output them using an output module or a Link socket.

If you attempt to output services with identical PIDs:

- the System Status LED turns red on the unit that tries to output the IP services,
- the System icon of the affected headend unit turns red on the System tab in the Service Tool,
- the System Status LED and System icon turn red on the main unit in a multi-unit installation.

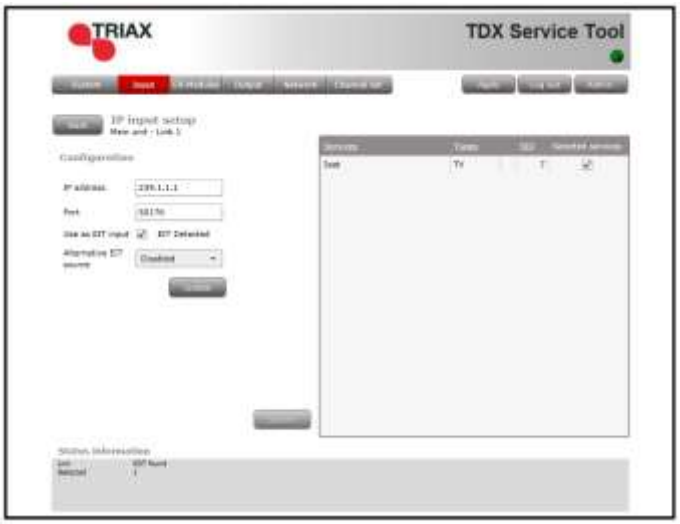
See “Duplicated PIDs” for further information.

7. View the **Status information** area to ensure that IP data is being sourced through the Link socket.
8. Press the **Submit** button.

The selected service is now available in the headend service pool.

9. Press the **Apply** button to save the new settings in the configuration.

Specifying EIT/EPG source



One input on each link per headend can be configured to carry Event Information Table (EIT) data.

1. Specify the desired IP address and associated IP port number in the corresponding fields.
2. Check the **Use as EIT input** checkbox.
3. Press the **Update** button.
4. Check the **Selected services** checkbox for one or more services to select the service(s) you want to use
5. View the **Status information** area to ensure that IP data is being sourced through the Link socket.

Press the **Submit** button.

IP Input Configurations

Specifying Alternative EIT/EPG source

1. Specify the desired **IP address** and associated **IP port number** in the corresponding fields.
2. Open the **Alternative EIT source** drop-down list.
3. Select the **EIT source** to be used.
4. Press the **Update** button.
5. Check the **Selected services** checkbox for one or more services to select the service(s) you want to use
6. View the **Status information** area to ensure that IP data is being sourced through Link 1 or 2 on the socket.
7. Press the **Submit** button.

Modifying

To modify an existing IP input configuration:

1. Press the **Setup** button associated with the IP input configuration.
2. Make the required modifications as when creating an IP input configuration.
3. Press the **Submit** button.
4. Press the **Apply** button when the modifications have been made.

Deleting

1. Press the **Delete** button of the IP input to be removed.

2. Confirm that the selected IP input is to be removed.
3. Press the **Apply** button.

IP Output configurations

Creating

The headend system offers the following possibilities when you output IPTV services through the Link sockets.

- IP multicast streaming (UDP streaming)
- No RTP option
- IGMP version 2
- SPTS or MPTS including SDT, PAT, PMT, CAT
- Packet ratio of 1 TS packet per IP packet
- Not possible to change service ID (SID)

Note:

Licenses for IP output are required to be able to use the IPTV functionality in the headend. The licenses can be purchased from Triax Sales, and need to be activated, see “Activating licenses”.

1. Select the **Output** tab.
2. Select the **IP outputs** sub-tab.
3. Press the **Setup** button for the link socket that will process IP output.

4. Specify the desired **IP address** and associated **IP port number** in the corresponding fields.
5. Press the **Services** button.

The **Select Services** window displays services from input that has entered the headend system through the same unit which contains the Link socket(s) being used for service distribution.

6. Select the services to be distributed through the link.
7. Press the **OK** button.

Notes:

Services selected for one output on a Link will not be selectable for other outputs on the same Link.

Re-scrambled and/or descrambled services cannot be distributed

using the Link sockets. They can, however, be distributed using an IP output module and the AUX sockets. See the IP output module user guide for further information.

8. View the **Status information** area to see the following:
- The link's RTP status
- The transfer bitrate
- The number of license services used.
- The total number of purchased service licenses
9. Press the **Submit** button.

10. Press the **Apply** button.

License limitations

The following message is displayed if more services have been selected than are permitted by the current licenses.

Modifying

To modify and existing IP output configurations:

1. Press the **Setup** button associated with the IP output configuration.
2. Make the required modifications as when creating an IP output configuration.
3. Press the **Submit** button on the IP output setup window.
4. Press the **Apply** button when the modifications have been made.

Deleting

1. Press the **Delete** button for the IP output to be removed.

2. Confirm that the selected IP output is to be removed.
3. Press the **Apply** button.

EIT/EPG output

If you want to distribute EIT information in connection with your IP output, you can choose between:

- distributing EIT information with every single IP service, or
- use a barker channel for carrying all EIT information for the IP output.

The EIT barker channel can be output in two ways depending on how you distribute your IP output:

IP output method		Barker channel distribution method
IP output is distributed through the Link sockets.	→	EIT barker channel is output through Link 2 on the main unit
IP output is distributed through an IP output module	→	EIT barker channel is output through the AUX socket on the first IP output module in the headend system

EIT – every IP service

1 Select the **Network** tab in the Service Tool.

2. Open the **EIT** drop-down list.
3. Select “Full Actual – No other”.
4. Press the **Submit** button.

A message window is displayed confirming that the configuration has been submitted.

5. Press the **Apply** button.

EIT – barker channel

1. Select the **Network** tab in the Service Tool.
2. Open the **EIT** drop-down list.
3. Select “Barker channel”.
4. Specify the IP address for the EIT barker channel in the **EIT barker IP address** field.
5. Specify the associated port number in the **EIT barker IP port** field.
6. Press the **Submit** button.

Note:

The IP address used for the barker channel must not conflict with any of the IP addresses used for service distribution.

A message window is displayed confirming that the configuration has been submitted.

7. Press the **Apply** button.

The **Network** window now contains a single line of information stating which unit and socket is used by the EIT barker channel.

SNMP traps

PowerUp OID: 1.3.6.1.4.1.41359.1.1.1.1

Trap generated when the TDX will be power cycled.

Login OID: 1.3.6.1.4.1.41359.1.1.1.2

Trap generated when the web configurator is logged on.

Logout OID: 1.3.6.1.4.1.41359.1.1.1.3

Trap generated when the web configurator is logged out.

TimeOut OID: 1.3.6.1.4.1.41359.1.1.1.4

Trap generated when the web configurator is timed out.

FailedLogin OID: 1.3.6.1.4.1.41359.1.1.1.5

Trap generated when the web configurator login has failed.

Restart OID: 1.3.6.1.4.1.41359.1.1.1.6

Trap generated when TDX is restarted.

InputError OID: 1.3.6.1.4.1.41359.1.1.1.7

Trap generated when an input module has an error, e.g. module no longer locked to frequency, missing module etc,

CIInsertion OID: 1.3.6.1.4.1.41359.1.1.1.8

Trap generated when a CI module is inserted in the TDX.

CIRemoval OID 1.3.6.1.4.1.41359.1.1.1.9

Trap generated when a CI module is removed from the TDX.

ModuleInsertion OID 1.3.6.1.4.1.41359.1.1.1.10

Trap generated when an input or output module is inserted.

ModuleRemoval OID 1.3.6.1.4.1.41359.1.1.1.11

Trap generated when an input or output module is removed.

CIDescramblingError OID 1.3.6.1.4.1.41359.1.1.1.12

Trap generated when a service descrambling has an error.

CICommunicationDown OID 1.3.6.1.4.1.41359.1.1.1.13

Trap generated when communication with CI module fails.

VideoDecodingError OID 1.3.6.1.4.1.41359.1.1.1.14

Trap generated when video decoding of a service in a PAL output module fails.

InterlinkDisconnect OID 1.3.6.1.4.1.41359.1.1.1.15

Trap generated when main unit loses connection to a subunit.

ConfigurationChangeApplied OID 1.3.6.1.4.1.41359.1.1.1.16

Trap generated when the user applies changes in the web configurator.

InputOK OID 1.3.6.1.4.1.41359.1.1.1.17

Trap generated when an input module error disappears, e.g. errors that can disappear are input module no longer locked to frequency, missing module etc,

CIDescramblingOK OID 1.3.6.1.4.1.41359.1.1.1.18

Trap generated when a service descrambling error disappears.

CICommunicationUP OID 1.3.6.1.4.1.41359.1.1.1.19

Trap generated when communication with the CI module no longer fails.

VideoDecodingOK OID 1.3.6.1.4.1.41359.1.1.1.20

Trap generated when a video decoding of a service in PAL output module no longer fails.

InterlinkConnect OID 1.3.6.1.4.1.41359.1.1.1.21

Trap generated when a main unit is connected to a subunit

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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DECLARATION OF CONFORMITY

TRIAX confirms that the product conforms to relevant EEC harmonised standards and consequently can carry the CE-mark.

Relevant harmonised standards:

DE/EN 60728-2 2010, DS/EN 60728-11 2010 and DS/EN 50083-2 2006

This document is only valid with the signature of the person responsible for CE-marking by Triax

Date: October 2012 Signature: