





# **User Manual**

TDcH & TDmH – Compact Headend & Mini Headend

Article		Article no.	Article		Article no.
TDcH 16S-I-Q		492780	TDmH IP		492770
TDcH 16S-I		492781	TDmH 8S		492772
TDcH 22STC-I	Compact Headend	492782	TDmH 8S-I	Mini Headend	492773
TDcH 16S-Q		492790	TDmH 14STC-I		492774
TDcH 16S		492791			

Version	V1.7	Date	2024-04-18	EN

## triax.com



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0 Contents



## 1 Safety regulations and notes

#### ATTENTION

- Failure to comply with the specified precautionary measures may cause serious injury to persons or damage to property.
- The assembly, installation, additional electrical wiring, servicing installation and commissioning may only be performed by suitably qualified persons, technicians, or installers in compliance with safety regulations.
- Damage due to improper installation and commissioning, defective connectors on cables or any other incorrect handling will void the warranty.

#### CAUTION

- The device meets the EU directives 2011/65/EU, 2014/30/EU and 2014/35/EU.
- The safety requirements are according to the standards EN 62368-1 resp. EN 60728-11 and must be observed, especially concerning equipotential bonding and earthing.
- Observe the relevant country-specific standards, regulations and guidelines on the installation and operation of antenna systems.
- Before starting installation or service work disconnect the receiving system from mains.
- Installation or service work should NEVER be undertaken during electrical / thunderstorms.
- Avoid short circuits!
- To ensure electromagnetic compatibility, make sure all connectors are tightly mounted, and that cables and connectors are of the right quality / screening.
- Prior to linking the T/C input port with a terrestrial antenna, it's imperative to ensure that a RED-compliant filter or amplifier is installed between the antenna and the headend to adhere to the directive.
- Take action to prevent static discharge when working on the device!
- Due to the risk of fires caused by lightning strikes, we recommend that all mechanical parts (e.g. distributor, equipotential bonding rail, etc.) be mounted on a non-combustible base. Wood panelling, wooden beams, plastic covered panels and plastic panels are all examples of combustible bases.



#### Back up battery:

The unit includes a preinstalled Lithium battery (CR2032) as backup power source for the clock.

Type: Panasonic BR-2032/BN, Battery, Coin Cell, Single Cell, 3 V, 2032, 225 mAh

Do not attempt to replace the non-rechargeable coin-cell battery. Replacement of the battery must only be done by a special trained technician.

There is a danger of an explosion if the coin-cell battery is incorrectly placed. The lithium battery contains lithium and can explode if it is not properly handled or disposed of. Replace only with a battery of the same type. To avoid possible injury or death, do not: (1) Throw or immerse into water, (2) allow it to heat more than 100°C (212°F) or (3) attempt to repair of disassemble it. Dispose of it as required by local ordinance or regulations and your company's safety standards.



## To prevent fire, short circuit or shock hazard

- Do not expose the unit to rain or moisture.
- Install the unit in a dry location without infiltration or condensation of water. In case of the formation of condensation wait until the system is completely dried.
- Do not expose it to dripping or splashing.
- If any liquid should accidentally fall into the cabinet, disconnect the power plug.
- Install the head-end station where it is protected from direct exposure to sunlight.
- Install the head-end station not within the immediate vicinity of heat sources.
- Do not install the head end in cabinets or recesses which are not ventilated.
- Do not place any vessels containing liquids on the head-end station.
- Do not place anything on the head-end station which could initiate fires.

## To avoid any risk of overheating

- Install the unit in a well aired location and keep a minimum distance around the apparatus for sufficient ventilation.
- Do not place anything on the unit that might cover the ventilation holes.
- Do not install the product in a dusty place.
- Use the apparatus only in moderate climates (not in tropical climates)
- Respect the minimum and maximum temperature specifications.
- Ensure that the headend station is adequately ventilated.

#### To avoid any risk of electrical shocks

- Controller must be correctly grounded according to applicable national regulations.
- For a complete disconnection from the mains, the mains plug must be pulled out of the mains socket. Ensure that the mains plug can be pulled out without difficulties.
- Pull out power plug when making connections of cables.
- To avoid electrical shock, do not open the housing.

## To avoid interferences with LTE services in Europe

- Do not select a channel higher than UHF 48 in countries with LTE II / 700 operation.
- Do not select a channel higher than UHF 60 in countries with LTE I / 800 operation.
- Use coaxial cables with screening effectiveness of >85dB (Class A) at least or >95dB (Class A+)

## 

#### WEEE disposal



Electronic devices should never be disposed of in the household rubbish. In accordance with directive 2011/65/EU of the European Parliament and the European Council from June 8, 2011 which addresses old electronic and electrical devices, such devices must be disposed of at a designated collection facility. At the end of its service life, please take your device to one of these public collection facilities for proper disposal.



## 2 Revision history

Revision	Date	Changes
1.0		TDcH Compact Headend user manual - First release
1.1		Management Port description added
1.2		New Compact Headend Version TDcH 16S-I and TDcH 22STC-I added
1.3		SCR (Satellite Channel Router) description added
1.4		IP-out functionality added
1.5		IP-in functionality added
1.6	2023-12-07	<ul> <li>Besides updating screen dumps and general updating, feature description added for</li> <li>VSecure scrambling</li> <li>Alternative EIT (EIT Barker) for all RF inputs (DVB-S2/C/T2).</li> <li>Alias for naming input connections.</li> <li>Rename a service at the output page</li> <li>Payload indication at CAM page added</li> <li>8 days EIT option added to existing 4 days EIT option for schedule EIT.</li> <li>Document based on features in SW version 2.6.0.</li> </ul>
1.7	2024-04-17	Added TDmH variants 492770, 492772, 492773, and 492774.

## 3 TDcH Compact Headend & TDmH Mini Headend

## 3.1 Introduction

TRIAX offers two series of headend variants.

The TDcH Compact Headend was the first series introduced in the market. This highly reliable headend series offers many stable features and is flexible in variants and licenses.

Years later, the TDmH Mini Headend was introduced as a miniature series based on the highly reliable TDcH. This headend series was introduced to offer even more variants for different applications.

This user manual is for both headend series. Some of the features listed are only available in TDcH or in specific variants.



## 3.2 Description

TDcH and TDmH Headend supports DVB-S2X, DVB-T2, DVB-C and IP-in receiving and conversion to IPTV and/or QAM / COFDM modulation with the possibility to decrypt and/or scramble services centrally in the headend.

Built for wall- as well as 19" racks mounting and equipped with up to 4 DVB-S2X inputs, 1 DVB-T2/C input and 1 IP input, 16 DVB-S2X tuners, 6 DVB-T2/C tuners, 16 QAM or COFDM modulators and 8 CI slots.

The TDcH and TDmH Headends are optimized and engineered to meet specific TV distribution requirements in hospitality, multi-dwelling units and related sectors.

Our brand new, intuitive platform smoothly integrates easy installation, an intuitive and elegant graphical user interface, central decryption, remote access, and straightforward TV service updates with LCN.

#### 3.2.1 TDcH variants

TDcH 16S-Q	4 x SAT IF inputs with integrated multiswitch
[492790]	16 x DVB-S2 tuners
	1 x IP (RJ45 or SFP LC duplex)
	16 x QAM full band modulators
TDcH 16S-I-Q	4 x SAT IF inputs with integrated multiswitch
[492780]	16 x DVB-S2X tuners
[]	1 x IP (RJ45 or SFP LC duplex)
	8 x Cl interfaces
	16 x QAM full band modulators
TDcH 16S	4 x SAT IF inputs with integrated multiswitch
[492791]	16 x DVB-S2 tuners
	1 x IP (RJ45 or SFP LC duplex)
	16 x QAM or COFDM full band modulators
TDcH 16S-I	4 x SAT IF inputs with integrated multiswitch
[492781]	16 x DVB-S2 tuners
	1 x IP (RJ45 or SFP LC duplex)
	8 x CI interfaces
	16 x QAM or COFDM full band modulators
TDcH 16S-I	Identical to TDcH 16S-I [492781], but with the option for buying licence for Pro:Idiom
Pro:ldiom (LG) ready [492787]	(LG) scrambling
TDcH 22STC-I	4 x SAT IF inputs with integrated multiswitch
[492782]	1 x Terr / Cable input with integrated splitter
	16 x DVB-S2 tuners
	6 x DVB-T/T2/C tuners
	1 x IP (RJ45 or SFP LC duplex)
	8 x CI interfaces
	16 x QAM or COFDM full band modulators



TDcH 22STC-I	Identical to TDcH 22STC-I [492782], but with the option for buying licence for Pro:Idiom
Pro:Idiom (LG) ready	(LG) scrambling
[492788]	

3.2.2 TDmH variants	
TDmH IP	48 x IPTV inputs SPTS and MPTS UDP/RTP
[492770]	1 x IP (RJ45 or SFP LC duplex)
	8 x QAM or COFDM full band modulators
TDmH 8S	4 x SAT IF inputs with integrated multiswitch
[492772]	8 x DVB-S2X tuners
	1 x IP (RJ45 or SFP LC duplex)
	8 x QAM or COFDM full band modulators
TDmH 8S-I	4 x SAT IF inputs with integrated multiswitch
[492773]	8 x DVB-S2 tuners
	1 x IP (RJ45 or SFP LC duplex)
	4 x CI interfaces
	8 x QAM or COFDM full band modulators
TDmH 8S-I	Identical to TDmH 8S-I [492773], but with the option for buying licence for Pro:Idiom
Pro:Idiom (LG) ready [492775]	(LG) scrambling
TDmH 14STC-I	4 x SAT IF inputs with integrated multiswitch
[492774]	1 x Terr / Cable input with integrated splitter
	8 x DVB-S2 tuners
	6 x DVB-T/T2/C tuners
	1 x IP (RJ45 or SFP LC duplex)
	4 x CI interfaces
	8 x QAM or COFDM full band modulators
TDmH 14STC-I	Identical to TDmH 14STC-I [492774], but with the option for buying licence for Pro:Idiom
Pro:Idiom (LG) ready [492776]	(LG) scrambling



#### 3.2.3 Common Features

#### 4 x SAT IF inputs

Integrated multi switch

SCR (Satellite Channel Router) support DiSEqC support

LNB LOF configuration

#### 1 x Terr – Cable input (TDcH 22STC-I, TDmH 14STC-I) Integrated splitter

#### **1 x Connections**

#### **IP input**

SID and TSID management, PID management XSPF supported

#### **RF** input

#### 16/8 x DVB-S2 tuners (except TDmH IP)

#### 6 x DVB-T/T2/C tuners (TDcH 22STC-I, TDmH 14STC-I)

#### 8/4 x CI interfaces

(all variants with "I" include in the name)

#### 16 x QAM full band modulators

(TDcH 16S-Q, TDcH 16S-I-Q)

- Electronically adjustable output level
- Suitable for adjacent channels, option for disabling individual channels
- Adjustable Symbol rates and modulation

#### 16 x QAM or COFDM full band modulators

(all variant except TDcH 16S-Q and TDcH16S-I-Q)

- Electronically adjustable output level
- Suitable for adjacent channels, option for disabling individual channels
- For QAM adjustable Symbol rates and modulation, and for COFDM adjustable modulation, FEC and Guard Interval

#### Service Multiplexing

- Service Multiplexing at each output transponder to optimize available bandwidth
- Service Multiplexing at the CA modules to reduce amount of needed CAM's
- Service routable from any input to any output

#### SID, TSID and ONID management

- To handle conflicts during multiplexing
- To carry out changes if required
- To replace a service with another service without any need for re-tuning the TVsets.

#### HTML user interface via self-signed HTTPS

#### **PID** management

- To handle PID conflicts
- PID filtering, for example to reduce audio channels from a TV service
- Distribute the same TV service multiple times with different languages
- To replace a service with another service without any need to re-tune the TVsets

#### Service naming

- Distribute the same TV service multiple times with different language and different name
- Give the service an alternative name
- If a service has no original name, an optional service name can be configured
- If multiple services have the same original name, unique service names can optionally be configured.

#### **EPG management**

EPG handling to manage the amount of EPG-data distributed in an output transponder

#### **Transport Stream Processing**

- Network Information Table (NIT) for complete head-end station
- LCN (Logical Channel Numbering)

#### **Transparent Transport Stream routing**

- A whole untouched transponder can be routed to CAM to ensure all metadata are intact and present for the CA module
- A whole untouched transponder can be routed to an output to ensure all metadata is present or just for debug

#### Payload measurement

- Realtime payload measurement at CI slot to monitor transport stream to CAM is fine and not overloaded with services
- Realtime payload measurement at RF output to monitor transport at output is fine and not overloaded with services
- Realtime payload measurement at CI slot, RF output and IP output to monitor if data exists at all

#### **SNMP traps**

- To remotely monitor changes
- Supported traps described in the MIB



#### Upgrade Features (license based) 3.2.4

#### IP-in

The IP-in functionality requires an activation license key.

Additional to common features, supported functionalities for IP-in:

- Receive up to 96 x UDP or RTP MPEG-TS \_ multicast streams
- Specify source address and port to ensure correct source
- Licenses comes in
  - 4 x IP SPTS or MPTS inputs
  - 16 x IP SPTS or MPTS inputs
  - 48 x IP SPTS or MPTS inputs
  - 96 x IP SPTS or MPTS inputs

#### Block diagram PC, Notebook СІ SAT-IF SAT-IF DRM Server etc TDmH / TDcH RF DVB-T RF-tes RF In Measurement RF DVB-C RF QAM **RF** out RF COFDM IP DP/RTF IP in/out IP Network or Server: Live TV. 1000 Base-T

#### 3.2.5

#### Note:

IP-in license-based function IP-out license-based function

#### 3.3 Packing contents

- 1 piece TDcH Compact headend or TDmH Mini headend
- 1 piece Mains cable
- 2 pieces Wall mounting brackets
- 4 pieces Screws

EIT for current service inside the SPTS streamed via UDP/RTP multicast direct to the TV set

#### **IP-out**

The IP-out functionality requires an activation license key.

Additional to common features, supported functionalities for IP-out:

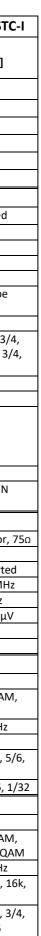
- Stream up to 100 UDP MPEG-TS multicast streams
- Supported Service Discovery protocols: M3U, M3Ue, M3Uepp, XSPF
- EPG for all IP out services in Samsungs XML format for SINC or REACH server

TV. PC. Notebook.



## 3.4 Technical data

Туре	TDcH 16S-Q	TDcH 16S	TDcH 16S-I-Q	TDcH 16S-I	TDcH 22STC-I	TDmH IP	TDmH 8S	TDmH 8S-I	TDmH 14STC
Art. number [Pro:Idiom (LG) Ready]	492790	492491	492780	492781 [492787]	492782 [492788]	492770	492772	492773 [492775]	492774 [492776]
Interfaces									
Management Interface					1 x 1000 Base-T (RJ 45)				
SimulCrypt / DRM				1 x 1000 Base-T (RL	15) not supported with curr	ent software releas	e		
Ip-in and –out				1 x 1000 base 1 (15	1 x 1000 Base-T (SFP)				
CI slots	-	-	x	x PCMCIA (front acce		_	-	4 x PCMCI	A (front access)
USB			additional storage,) no	•		-	-	-	-
	ОЗВ 2.0, Туре	A conin (Data transier,	additional storage,) no	i supported currents	Software release	-	-	-	
DVB-S2X input	1								
Satellite inputs		4 x F connectors	s, 75 Ω, 400 mA per input	t LNB power feed		-	4 x F connectors	, 75 Ω, 400 mA per inp	out LNB power feed
Number of transponders			16			-		8	
Frequency range			950 – 2150 MHz			-		950-2150 MHz	
Level range			44 – 90 dBμV > 10dB			-		44 – 90 dBμV > 10dB	
Return loss DVB-S modulation		SK 1640SK 3740SK (1	6APSK and 32APSK will b	e sunnorted in later 9	SW version)	-		PSK, 32APSK (16APSK	and 32APSK will be
DVB-S modes			2PSK 1/2, 2/3, 3/4, 5/6, 7					ported in later SW ve 1/2, 2/3, 3/4, 5/6, 7/	rsion)
DVB-S modes DVB-S2 modes			1/2, 2/3, 3/4, 5/6, 7 8PSK 3/5, 2/3, 3/4, 5/6, 8		2/1 1/5 5/6 9/0 0/10	-	ODSK 1/2 2/5 2/2		
DVB-52 modes	QP3K 1/2, 3/3, 2/3, 3/		APSK 3/4, 4/5, 5/6, 8/9, 9	3/4, 4/3, 5/0, 8/9, 9/10	-		, 3/4, 4/5, 5/6, 8/9, 9/1 PSK 2/3, 3/4, 4/5, 5/6, 4/5, 5/6, 8/9, 9/10	8/9, 9/10 32APSK 3/4	
Multistream			Supported			-		Supported	
Symbol rate DVB-S		QPS	K: 1 – 45 MSy	/mb/s		-	QPS	K: 1 – 45 M	Symb/s
Symbol rate DVB-S2		QPSK 8PSK 16AP 32AP	: 4.5 – 45 MS SK: 4.5 – 39 MS	-	QPSK:       4.5 - 45 MSymb/s         8PSK:       4.5 - 45 MSymb/s         16APSK:       4.5 - 39 MSymb/s         32APSK:       4.5 - 32 Msymb/s				
Max. data rate / tuner		02/	83 Mbit/s	1		-	02/11	83 Mbit/s	
Input selection	DiSEqC 1.0 Control 13/18VDC, 22kHz and SCR via JESS (EN 50607:2015)					-	DiSEqC 1.0 Control 13/18VDC, 22kHz and SCR via JESS (EN 50607:2015)		
DVB-T/T2/C input	•				I.		1	,	
Terrestrial / Cable input	-	-	-	-	1 x F connector, 75Ω	-	-	-	1 x F connector, 7
Tuners	-	-	-	-	6	-	-	-	6
Supply voltage DVB-T antenna	-	-	-	-	Not supported	-	-	-	Not supported
Input frequency range	-	-	-	-	47 – 862 MHz	-	-	-	47 – 862 MHz
Channel bandwidth	-	-	-	-	7/8 MHz	-	-	-	7/8 MHz
Level range	-	-	-	-	40 – 95 dBμV	-	-	-	40 – 95 dBμV
Input noise	-	-	-	-	< 7 dB	-	-	-	< 7 dB
Return loss	-	-	-	-	> 10 dB	-	-	-	> 10 dB
DVB-T	1		1	I	1			1	1
Demodulator type Modulation DVB-T	-	-	-	-	COFDM QPSK, 16QAM,	-	-	-	COFDM QPSK, 16QAM,
					64QAM				64QAM
Channel bandwidth	-	-	-	-	6/7/8 MHz	-	-	-	6/7/8 MHz
FFT modes Code rate	-	-	-	-	2k, 8k 1/2, 2/3, 3/4, 5/6,	-	-	-	2k, 8k 1/2, 2/3, 3/4, 5/
Guard interval	-	-	-	-	7/8 1/4, 1/8, 1/16, 1/32	_		-	7/8
	-	-	-	-	1/4, 1/0, 1/10, 1/32	-	-	-	⊥/ <del>``</del> , 1/0, 1/10, 1/
DVB-T2	T1		1	[			1	T	
Demodulator type Modulation DVB-T2	-	-	-	-	COFDM QPSK, 16QAM,	-	-	-	COFDM QPSK, 16QAM,
Channel handwidth					64QAM, 256QAM				64QAM, 256QAI 6/7/8 MHz
Channel bandwidth FFT modes	-	-	-	-	6/7/8 MHz	-		-	
					1k, 2k, 4k, 8k, 16k, 32k	-			1k, 2k, 4k, 8k, 16 32k
Code rate	-	-	-	-	1/2, 3/5, 2/3, 3/4, 4/5, 5/6	-	-	-	1/2, 3/5, 2/3, 3/- 4/5, 5/6





#### TDcH & TDmH - Compact and Mini Headend

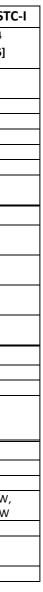
TDcH & TDmH - Compact ar	nd Mini Headend			IRIAZ	<b>\</b>				
Туре	TDcH 16S-Q	TDcH 16S	TDcH 16S-I-Q	TDcH 16S-I	TDcH 22STC-I	TDmH IP	TDmH 8S	TDmH 8S-I	TDmH 14STC
Art. number [Pro:Idiom (LG) Ready]	492790	492491	492780	492781 [492787]	492782 [492788]	492770	492772	492773 [492775]	492774 [492776]
Guard interval	-	-	-	-	1/4, 19/128, 1/8, 19/256, 1/16, 1/32, 1/128	-	-	-	1/4, 19/128, 1/8 19/256, 1/16, 1/3 1/128
DVB-C				-					
Demodulator type	-	-	-	-	QAM	-	-	-	QAM
Modulation	-	-	-	-	16QAM, 64QAM, 128QAM, 256QAM	-	-	-	16QAM, 64QAM 128QAM, 256QA
Symbol rate	-	-	-	-	1 - 7,2 MS/s	-	-	-	1 - 7,2 MS/s
IP-Input									
Number of IP input streams		4, 16 or 9	96 x SPTS/MPTS (license			48 x SPTS/MPTS	4, 16 or	48 x SPTS/MPTS (licens	se required)
Data interface				1 x 1000 Base-T S	SFP or Fibre SFP ; 1000Ba	seX (SerDes) mode			
Protocols				MPTS Streaming	IEEE802.3 Ethernet (VBR) including PAT, SDT, (VBR) including PAT, SDT I RTP MPEG Transport St	, PMT, CAT and EIT			
IP packet format				050 M	MPEG				
IP-Bitrate				max. 950 Mb	it/s at SFP interface for a	III SPIS streams			
Cl interfaces			Acton Neation CMA			1		Acton Nection CM	
Supported CAM vendors Supported modules and cards	-	-	Aston, Neotion, SMAR		and) T Home	-	-	Aston, Neotion, SM/ Conax: Canal Digital	
			Conax: Canal Digital (Nordic), Telewizja (Poland), T Home (Hungary) Cryptoworks: ORF (Austria), UPC Direct (Hungary) Irdeto: ORF (Austria) Nagravision: Canal Digital (NL), Canal + (France), Cyfra (Poland), Cyfrowy (Poland), Multicanal (Spain), UPC, NDS, Viasat (Nordic +					(Poland), T Home (H Cryptoworks: ORF (/ (Hungary) Irdeto: Ol Nagravision: Canal D (France), Cyfra (Pola	lungary) Austria), UPC Direct RF (Austria) Digital (NL), Canal + Ind), Cyfrowy (Poland
			Baltic) Viaccess: Fransat (France), Eurosport (Poland)					Multicanal (Spain), UPC, NDS, Viasat (Nordic + Baltic) Viaccess: Fransat (France), Eurosport (Poland)	
Bitrate	-	-	Configurable: 50, 72,			-	-	Configurable: 50, 72	
PID and service limit	-	-	PID and service limit i			-	-		t is given by the CAM
Supply voltage	-	-		5V		-	-		5V
RF output					1 x F connector				
HF measuring output					1 x F connector, -20 dB				
Frequency range					306 – 862 MHz	·			
Channels					S 21 – C 69				
Channel settings		16 channels in a	row, single channels ca	n be switched off		8 cha	annels in a row, single	channels can be switch	ned off
Return loss					> 10 dB				
Output impedance					75 Ω				
QAM modulation Output level range					85 – 95 dBμV				
Modulation scheme					QAM 16, 32, 64, 128, 25	6			
Dynamic phase error					< 0.3				
MER					> 43 dB				
Symbol rate					3.5 – 7.2 MS/s				
COFDM modulation									
Output level range	-	83 – 93 dBμV	-			83 - 93			
Carrier to spurious ratio:	-	> 60 dB	-			> 60			
Modulation scheme:	-	QPSK, 16 QAM, 64 QAM	-			QPSK, 16 QA			
MER Output model	-	>=40dB 2k	-			>=4			
Output mode: Guard intervals:	-	2K 1/4, 1/8, 1/16, 1/32	-			2 1/4, 1/8, 1			
IPTV Output	-	<u> </u>	-	1		1/4, 1/0, 1	L/ 10, 1/ JZ		
Number of IP output streams		10	00 x SPTS (license require	ed)			<u> 48 х SPTS ( );</u>	cense required)	
Data interface		10	is a state (incense reguin		SFP or Fibre SFP ; 1000Ba	seX (SerDes) mode			
Protocols					IEEE802.3 Ethernet	,			
				SPTS Streaming	(VBR) including PAT, SDT,	, PMT, CAT and EIT			





#### TDcH & TDmH - Compact and Mini Headend

Туре	TDcH 16S-Q	TDcH 16S	TDcH 16S-I-Q	TDcH 16S-I	TDcH 22STC-I	TDmH IP	TDmH 8S	TDmH 8S-I	TDmH 14STC	
Art. number	492790	492491	492780	492781	492782	492770	492772	492773	492774	
[Pro:Idiom (LG) Ready]				[492787]	[492788]			[492775]	[492776]	
			1	Multicast UDP and	I RTP MPEG Transport St	ream via IP Protocol	1	1	1	
				7 TS	S packets pr. Ethernet pa	acket				
IP packet format					MPEG					
IP-Bitrate				max. 950 Mbi	it/s at SFP interface for a	II SPTS streams				
PID-Filtering and Remapping					Yes					
TTL		1-255 (default 16)								
EIT				Ins	side SPTS for current ser	vice				
XML EPG	EPG data in XML format as specified by Samsung									
				Configurable langua	age and Maturity Rating	Country for XML EPG				
Scrambling										
VSecure (Philips)	-	-	-	License	e required	-	-	License	e required	
[Philips TV + special CAM]					18 x			48 x		
Pro:Idiom (LG)	-	-	-	License required		-	-	License required		
[Special hardw. variants required]				2	24 x			24 x		
LYNK (Samsung)	-	-	-	License req	uired (future)	-	-	License required (future)		
					18 x			48 x		
Simulcrypt (128bit AES)	-	-	-	License req	uired (future)	-	-	License req	License required (future)	
				4	18 x			4	18 x	
Features										
SNMP				SN	NMP traps (license requir	red)				
Common NIT/SDT/EIT			Option via license			-	-	-	-	
Stackable			Option via license			-	-	-	-	
(common GUI plus feature to										
Common NIT/SDT/EIT)										
General										
Mains supply					100 - 264 VAC, 50/60 H	Z				
Ground connection					Ground clamp					
Power consumption	*typ. 35 W,	*typ. 32 W,	*typ. 39 W,	*typ. 36 W,	*typ. 46 W,	typ. 20W,	typ. *30 W,	typ. *33 W	typ. *40 W,	
* Without CAM and LNB power	max. 90 W	max. 90 W	max. 90 W	max. 90 W	max. 90 W	max. 25W	max. 65 W	max. 73 W	max. 80 W	
Ambient temperature					-10°C to +50°C					
Dimensions in mm			(W x D x H)				(W x	DxH)		
			434 x 220 x 90	-	-		434 x	168 x 45		
Weight	3.8 kg	3.8 kg	4.0 kg	4.1 kg	4.1 kg	2.6 kg	2.8 kg	3.0 kg	3.1 kg	





## 4 Mounting the unit

## 4.1 Installing the device

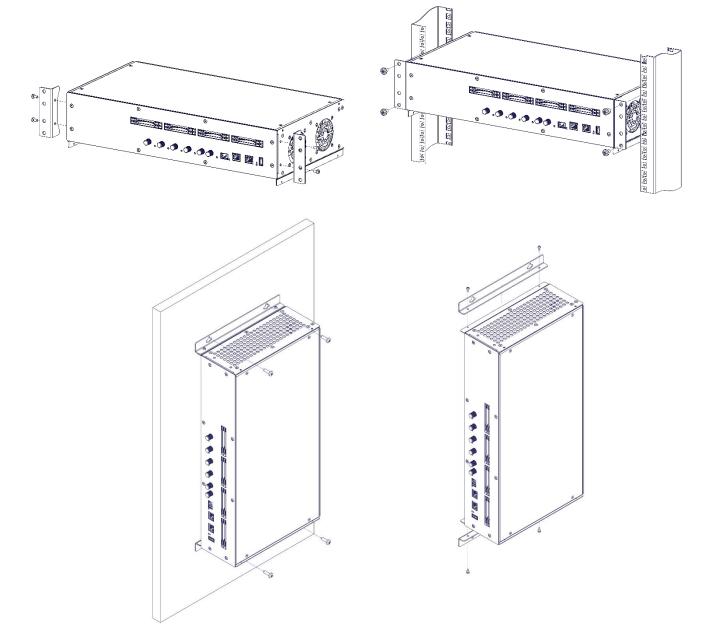
The TDcH & TDmH can be mounted in a 19" rack or wall mounted in any direction needed.

Ensure that the unit is correctly grounded, according to applicable national regulations.

Ensure that min. 4 cm ventilation space is available on both sides of the equipment, so that the fans and ventilation holes are not covered!

#### 4.1.1 Example of mounting options for the TDcH

#### An example of mounting options for the TDcH similar option can also be applied to TDmH.





#### 4.1.2 Example of mounting options for the TDmH

The positioning of the TDmH brackets when installing the headend in either a rack or wall mount configuration. The 19" rack mounting is the default position of the brackets, but the installer can change to wall mount installation, by removing the 2\*4 screws and turn the brackets, and mount the 2\*4 screws again.



#### 4.1.3 Potential equalisation

Equalise the potential (PE) in accordance with IEC/EN/DIN EN 60728.

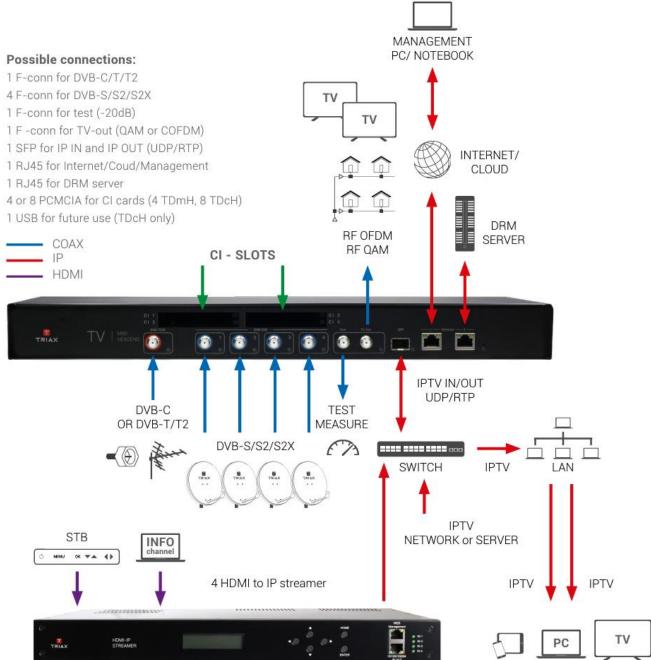
Connect the PE connection terminal to a PE rail (supplied by customer) using the PE wire (Cu 4 mm<sup>2</sup> - 9 mm<sup>2</sup>).



#### 4.2 Device overview







## 4.3 Connecting the device

Connect the SAT IF inputs to the corresponding outputs of an LNB or multi switch. Make sure that all inputs have the same level and are in the required level range!

Connect the Terr/Cable input to the corresponding output of a terrestrial or cable distribution. Make sure that the input level is in the required level range!

Connect the included mains cable to the IEC connector.

Connect the mains cable to a mains socket with protective conductor connection. Note the voltage specified on the device.

This device has no power switch and starts immediately after connecting the operating voltage.

Configure the device as described in the chapter "Installation & Easy Setup"

Once the programming is finished, connect the RF output to the cable network.



#### 5.1 Installation

#### 5.1.1 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.

#### 5.1.2 Physical connection to headend

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

#### Note:

Please use Ethernet port 1 to connect your PC to the headend

Ethernet port 2 is reserved for future use. Currently the management GUI can't be reached at this port. The port is configured to get the IP address via DCHP.

#### 5.1.3 Starting service tool

Open a web browser window. Recommended browser:

- Google Chrome version 90.x.x.x
- Mozilla Firefox version 88.x.x

- Microsoft Edge 90.x.x.x

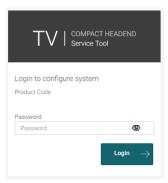
Enter **http://192.168.0.100** in the web address field. Press **Enter**. Enter the password. Press the **Login** button.

#### Note:

Password = **triax1234** when the service tool is opened on each headend for the first time. At the first login to the unit, the password must be changed to a unique password, as described in the section "Change password".

Up to 10 sessions can be opened and logged in to the same units user interface! If the user does not log out, the session will be kept open. When the 11<sup>th</sup> session is opened the first login session will be closed.







# TDcH & TDmH - Compact and Mini Headend 5.1.4 System status LED

Input LED indications

Below the reset button there is a general system status LED. The following status LED indications are available:



Off:	The system is turned off
Flashing green:	The system is starting up
Flashing orange (green+red):	Software update in progress
Steady green:	System is up and running OK. No error seen within the last 24 hours. All demodulators using this input is OK (tuned/locked). CA modules are descrambling OK. No packages dropped at outputs.
Steady red:	At least one error has occurred in the system within the last 24 hours. E.g. one or more demodulator(s) using this input indicate(s) ERROR (not locked/tuning lost), descrambling fails at one or more CA modules, or packages dropped at a least one output.
5.1.5 Input LEDs Input LEDs indication	1         2         0/05 S2X         4         Test         TV Out         SFP         Ebbernet         2         USB           (a)         (b)         (c)         (c)
Black (Off):	This input is not in use by any demodulator
Amber (Green+Red):	One or more demodulator(s) using this input, indicates WARNING (bad signal (C/N to high, level to low, etc)
Red:	One or more demodulator(s) using this input, indicates ERROR (not locked)

5.1.6 Output LED

**Output LED indications** 

1 2 DVB-S2X 4 Test TV Out SFP 1 Ethernet 2 USB

Green:

All outputs are OK

Red:

One or more output(s) indicates ERROR (overload)



The following Reset functions are available:



When the reset button is pressed (during startup)

until the LED flashes green, then the system resets to factory defaults.

When the reset button is pressed (during startup) until the LED flashes red, then the system starts in recovery mode.



## TDcH & TDmH - Compact and Mini Headend 5.2 TDcH & TDmH web interface (GUI)

← → C ▲ Not secure   https://172.27.64.112/#/sett	tings				🖻 🖈 🖪 🕕 🥵 Relaum	ich to update
					Cashboard Admin	Logout
	. Settings 2. Connections 3. Inputs		LCN 8. Overview		Save Config	uration
Settings (B)						
Please configure the main information in order to proceed the	e device setup.				(E)	
	* Ethernet port 1 interface	* Subnet Mask	* Default Gateway			
	192.168.0.100	255.255.255.0				
- 7	MAC Address: 30:1f:9a:70:72:e7	Status: 🛑		Submit		
	DHCP      Manual					
(A)	* Ethernet port 2 interface	* Subnet Mask				
$\bigcirc$	172.27.64.112	255.255.255.192				
	MAC Address: 30:1f:9a:70:72:e8	Status: 🔵		Submit		
	* SFP interface	* Subnet Mask				
	169.254.1.1	255.255.0.0				
	MAC Address: 30:1f:9a:70:72:e9	Status:		Submit		
	Device Name	Output Modulation	Channel Plan			
	LTT112 (Setup B)	QAM -	B/G	•		
	Language	Timezone	Country		( D	)
	ENG	Europe/Copenhagen -	Denmark	-		
	Device Description				K	
© TRIAX A/S					← Previous Step Continue	$\rightarrow$

- A. Information window
- B. Navigation bar
- C. Administrator and Dashboard menu

- D. Installation wizard function to continue or go one step back
- E. Save Configuration

When logged in, you will be met by 8 panes:

- 1. Settings basic settings of the system (TDcH & TDmH setup)
- 2. Connections assign input cables to available tuners
- 3. Inputs configure to desired provider and services
- 4. CAM assign services to CAMs (only shown if the model supports it)
- 5. Scrambler assign services to scrambler (only shown if the model supports it)
- 6. Outputs assign services to outputs
- 7. LCN assign services to required LCN number and configure the network settings
- 8. Overview see the complete assignment from inputs to outputs

Less than 8 panes might be shown if the TDcH & TDmH model does not support the feature. E.g. CAM and Scrambler panes are not shown for TDcH & TDmH models without CI slots.



#### 5.2.1 Error indication



If there is an error in any part of the configuration, the user interface indicates this with a symbol in the relevant sector of the navigation menu. In other parts of the user interface the error symbol is also used to indicate an error or configuration failure.



Any warnings are indicated by a  $\triangle$  symbol.

#### 5.2.2 Save configuration

TRIAX							Dashboard Admin Logout
TV   COMPACT HEADEND Service Tool	<ul> <li>1. Settings</li> <li>2. Connections</li> <li>3. In</li> </ul>		$\rightarrow$	LCN 8. Overview			Save Configuration
Connections	to the device, which you need to configure in this step. Once this is done you	can set the tuners, in order to connect so	me service provider.				
INPUT							
DVB-T2/C							
INPUT	DESCRIPTION/ALIAS	SATELLITE BAND	0V/OFF	13V/VERTICAL	18V/HORIZONTAL	LOW BAND	HIGH BAND
• 1. DVB-S2	19,2_VER_LOW	Ku -	0	۲	0	۲	○ ▼
• 2. DVB-S2	2J_19,2_HOR_LOW	Ku 👻	0	0	۲	۲	• ▼
3. DVB-S2	2K_SCR_19,2+13	SCR -					•
• 4. DVB-S2	2L_DISEqC_1W_VER_LOW	Ku -	0	۲	0	۲	• •

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

Whenever you have made changes in your configuration, the "Save Configuration" button turns red to tell you that you have unsaved changes that need to be saved.

Click the "Save Configuration" button to save the changes. When changes have been saved, the "Save Configuration" button loses the red colour.

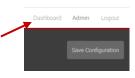
#### 5.2.3 Admin options

To enter the Admin options you need to Login. At the top right you can switch between the Dashboard and the Configuration.

#### 5.2.4 Dashboard

There are two possibilities to open the Dashboard overview of a TDcH or TDmH unit.

- a) When logged in, it is possible to open the Dashboard by pressing the Dashboard in the Administrator menu at the top right corner.
- b) You can open the Dashboard from the login page at the top right corner.







TRIAX	Dashbi	bard
	TV   COMPACT HEADEND Service Tool	
	Login to configure system Product Code	
	Password  Password	
	Login $\rightarrow$	

#### Note:

For the Dashboard, it is not required to log in and to know the password.

The entered password can be seen if you press the eye.

This Dashboard can be used by hotel employees to see an overview during a failure analysis or report an issue to the installer.

In the Dashboard view you will find the overall TV Status. The window is divided in two sectors. The left side shows all notifications of the last 24 hours and the right side shows a status on TV service level.

$\leftrightarrow$ $\rightarrow$ G	A Nicht sicher   10.43.1.198/#/dashboard					* 🔒 :
TRIAX					Configuration Adm	nin Logout
	OMPACT HEADEND arvice Tool			]	Report Issue Save Con	nfiguration
	Overall TV Status		Serial:	NFORMATION 492782012021180048 TDcH 22STC-I-Q v1.4.0-alpha7		
NOTIFICAT	TONS 24H		CHANNEL	LIST		
STATUS	DESCRIPTION		STATUS	CHANNEL		STATUS 24H
All 🗸	Q Search		All 🗸	Q Search		All 🗸
	sys Sysconf saved now	25/4/2021 9:30:31		Radio Horeb		
<b>A</b>	sys Sysconf cap update now	25/4/2021 9:30:24		Sky News Intl		
	Output 11 Output OK now	25/4/2021 9:30:18		RTL RADIO		
	Output 11 Output overloaded			WDR Aachen		
-	now	25/4/2021 9:30:17		Fashion TV HD		
	Output 11 Output OK now	25/4/2021 9:30:08		HGTV		
▲	Output 11 Output overloaded now	25/4/2021 9:30:07		TOGGO plus		
	Output 11 Output OK 3 minutes ago	25/4/2021 9:27:57		ATV		
A	Output 11 Output overloaded 3 minutes ago	25/4/2021 9:27:56		ORF2 V		
	Output 11 Output OK 3 minutes ago	25/4/2021 9:27:52		Crime + Investigation HD 0E2 0		



#### 5.2.5 Channel Status Details

TRIAX				Cc	onfiguration Admin Logout
	MPACT HEADEND rvice Tool			Report Issue	Save Configuration
	Overall TV Status		Serial: Product Code:	<b>VFORMATION</b> v0.31.0	
NOTIFICAT	IONS 24H		CHANNEL I	LIST	
STATUS	DESCRIPTION		STATUS	CHANNEL	STATUS 24H
All 🗸	Q Search		All 🗸	Q Search	All 🗸
	Cam 1 Descrambling OK now	5/9/2020 9:15:32		ORF1 HD	<b>A</b>
	Cam 1 Descrambling OK now	5/9/2020 9:15:32		ORF2W HD	▲
	Sys Sysconf saved now	5/9/2020 9:15:32		ServusTV HD Oesterreich	<b>A</b>
<b>A</b>	Cam 1 Descrambling failed now	5/9/2020 9:15:30		ServusTV HD Deutschland	<b>A</b>

When you are in the Dashboard mode and click on the error indication on the right side, a Channel Status Details window will pop up.

In this window you can find the status over the last 24 hours.

The window also shows where the failure has occurred, such as the tuner, CAM or output.

This also helps to evaluate where the errors took place and the possible reasons for the failure.

#### 5.2.6 Report Issue

By pressing the report issue button, a window opens where you can download the log file. Please send us the log file together with your issue explanation.

Channel Sta	tus Detai	ils					Rej	port Issue
Channel: ORF1 HD	)							
Tuner 1								
CAM 1 Output 1								
	4/10/2020 h12:27	4/10/2020 h15:27	4/10/2020 h18:27	4/10/2020 h21:27	5/10/2020 h0:27	5/10/2020 h3:27	5/10/2020 h6:27	5/10/2020 h9:27
							0K 📕 Warnii	ng 📕 Error
							Cle	ose

Send an ema	il to the insta	ller explaini	ng the prot	olem:	
Installer:	Email: Tel:				
Attach to the	email the file	es you will g	et by clicki	ng on Downl	oad Log File
Download I	Log Files				

#### 5.2.7 Admin menu

In the Admin Menu you have the option to Export the current configuration, import a configuration file, and clear the configuration.

#### **Export Configuration**

Export the configuration from the TDcH & TDmH system to the download folder on the connected PC.

#### Note:

The configuration file is not human readable!

#### **Import Configuration**

Import a configuration file from the connected PC to the TDcH & TDmH system.

#### Note:

Configuration files can only be loaded from the same TDcH & TDmH model! As an example:

- TDcH22STC-I config can be loaded at a TDcH22STC-I system

- TDcH22STC-I config can NOT be loaded at a TDcH16S-I

#### Note:

A configuration file from a system with a license required feature activated can be loaded to a system that does not have this feature activated via a license. The system however will show an error message indicating the missing license. There are then two options: a) buy and install the missing license, or b) delete the configuration for the current feature e.g. IPin, IPout, SNMP or Scrambling.

#### **Clear Configuration**

Clear the configuration at the system.

#### Note:

The function "Clear Configuration" will delete the configuration, set the IP address to the default IP address and also set the password to the default password!

#### **Download Log Files**

Function to download the log file of the compact headend.

#### **Download Equipment File**

Function to download the Equipment file of the compact headend.

#### Note:

The Equipment file is needed to generate a license in the PRT tool (Product Registration Tool).



#### Licenses

Licenses can be ordered. To order a license the equipment file is needed.

After the order process, the user receives a license file which will have to be loaded to the compact Headend the License was generated for.

#### Note:

The license cannot be used for any other compact headend with a different serial number

#### **Update Software**

It is possible to update the software. The system will automatic reboot after update.

#### Reboot

*Note:* During reboot any unsaved configuration will be lost.

Licenses	
Installed licenses	
TDcH - IP out license	
New license System will restart automatically to activate a configuration will be lost.	ew license. Any unsaved
	Close

Update Software						
Software running on system:						
Software version v2.0.0-alpha1						
Select file for update           Datei auswählen         Keine ausgewählt           System will restart automatically to activate new software           Licenses and Legal Information						
Cancel						



## 5.3 Settings

Start with the folder "Settings" to set up the general settings and information of the TDcH & TDmH headend.

← → C ▲ Not secure   https://172.27.64.112/#/sett	ings			🖻 🛧 🗯 🖬 🕕 🥂 Relaunch to update 🗄
TRIAX				Dashboard Admin Logout
$TV \mid \overset{\text{compact Headend}}{\text{service Tool}}$	<ul> <li>i. Settings</li> <li>2. Connections</li> <li>3. Inputs</li> </ul>	4. CAM 5. Scrambler 6. Outputs 7. L	CN B. Overview	Save Configuration
Settings Please configure the main information in order to proceed the	e device setup.			
	* Ethernet port 1 interface 192.168.0.100	* Subnet Mask 255.255.255.0	* Default Gateway	
	MAC Address: 30:1f:9a:70:72:e7	Status: ●		Submit
	DHCP O Manual     * Ethernet port 2 Interface     172.27.64.112	* Subnet Mask 255.255.255.192		
	MAC Address: 30:1f:9a:70:72:e8	Status: ●		Submit
	* SFP interface 169.254.1.1	* Subnet Mask 255.255.0.0		
	MAC Address: 30:1f:9a:70:72:e9	Status: 🔵		Submit
	Device Name	Output Modulation	Channel Plan	
	LTT112 (Setup B)	QAM •	B/G	•
	Language	Timezone	Country	
	ENG •	Europe/Copenhagen •	Denmark	•
© TRIAX A/S				$\leftarrow$ Previous Step Continue $\rightarrow$

### 5.3.1 Ethernet Port 1 (Management Port)

#### Ethernet port 1 interface

This is the IP address of the Management port (Ethernet 1) of the compact Headend.



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

#### Note:

If a PC is connected direct to the Management port with an Ethernet cable, the network address of the PC has to be in the same range as the compact headend.

The TDcH & TDmH management port IP addresses can be reset to factory default settings if required. This is done via the reset button on the headend unit.

#### Subnet Mask

This is the Subnet Mask for the network the Management Port is connected to.

#### **Default Gateway**

This is the Default Gateway in the network the Management Port is connected to.



#### **MAC Address:**

MAC address of this interface.

#### Status:

Green indicates this interface is connected.

#### 5.3.2 System reset

The following reset functions are available:

1. Factory defaults:



When the reset button is pressed (during start up) and until the LED flashes green, then the system resets to factory defaults.

2. Recovery mode:

When the reset button is pressed (during start up) even longer until the LED flashes red, then the system starts in recovery mode. The system can be accessed at Ethernet port 1 at the default address.

#### 5.3.3 Ethernet port 2

This is the IP address of the Ethernet port 2 of the compact Headend.

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

#### Note:

The Port 2 can be managed manual and as DHCP server!

#### Subnet Mask

This is the Subnet Mask for the network the Port 2 is connected to.

#### MAC Address:

MAC address of this interface.

#### Status:

Green indicates this interface is connected.

#### 5.3.4 SFP interface

This is the IP address of the SFP interface of the compact Headend.

#### Subnet Mask

This is the Subnet Mask for the network the SFP interface is connected to.

#### MAC Address:

MAC address of this interface.

#### Status:

Green indicates this interface is connected.





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#### TDcH & TDmH - Compact and Mini Headend

#### 5.3.5 Device Name

Description field to give the compact Headend or project any name.

#### 5.3.6 Output Modulation

The TDcH & TDmH (except TDcH 16S-I-Q and TDcH 16S-Q models) support QAM and COFDM modulation. With this menu it is possible to switch between the QAM and COFDM output modulation.

It is important to ensure the modulation is set correct before continuing.

#### Note:

If the output modulation is changed all configuration will be deleted and a restart is needed! A Warning message will be shown.

#### 5.3.7 Channel Plan

Click on the "Channel Plan" field to open the drop down and select the Channel Plan you would like to use.

#### Channel Plan description:

:	System B/G		System I	:	System D/K	System L		System B/G New Zealar	
Name	Centre frequency	Name	Centre frequency	Name	Centre frequency	Name	Centre frequency	Name	Centre frequency
S-21	306,00	S-21	306,00	S-21	306,00	S-21	306,00	CH21	474,00
S-22	314,00	S-22	314,00	S-22	314,00	S-22	314,00	CH22	482,00
S-23	322,00	S-23	322,00	S-23	322,00	S-23	322,00	CH23	490,00
S-24	330,00	S-24	330,00	S-24	330,00	S-24	330,00	CH24	498,00
S-25	338,00	S-25	338,00	S-25	338,00	S-25	338,00	CH25	506,00
S-26	346,00	S-26	346,00	S-26	346,00	S-26	346,00	CH26	514,00
S-27	354,00	S-27	354,00	S-27	354,00	S-27	354,00	CH27	522,00
S-28	362,00	S-28	362,00	S-28	362,00	S-28	362,00	CH28	530,00
S-29	370,00	S-29	370,00	S-29	370,00	S-29	370,00	CH29	538,00
S-30	378,00	S-30	378,00	S-30	378,00	S-30	378,00	CH30	546,00
S-31	386,00	S-31	386,00	S-31	386,00	S-31	386,00	CH31	554,00
S-32	394,00	S-32	394,00	S-32	394,00	S-32	394,00	CH32	562,00
S-33	402,00	S-33	402,00	S-33	402,00	S-33	402,00	CH33	570,00
S-34	410,00	S-34	410,00	S-34	410,00	S-34	410,00	CH34	578,00
S-35	418,00	S-35	418,00	S-35	418,00	S-35	418,00	CH35	586,00
S-36	426,00	S-36	426,00	S-36	426,00	S-36	426,00	CH36	594,00
S-37	434,00	S-37	434,00	S-37	434,00	S-37	434,00	CH37	602,00
S-38	442,00	S-38	442,00	S-38	442,00	S-38	442,00	CH38	610,00
S-39	450,00	S-39	450,00	S-39	450,00	S-39	450,00	CH39	618,00
S-40	458,00	S-40	458,00	S-40	458,00	S-40	458,00	CH40	626,00
S-41	466,00	S-41	466,00	S-41	466,00	S-41	466,00	CH41	634,00
CH21	474,00	CH21	474,00	CH21	474,00	CH21	474,00	CH42	642,00
CH22	482,00	CH22	482,00	CH22	482,00	CH22	482,00	CH43	650,00
CH23	490,00	CH23	490,00	CH23	490,00	CH23	490,00	CH44	658,00
CH24	498,00	CH24	498,00	CH24	498,00	CH24	498,00	CH45	666,00
CH25	506,00	CH25	506,00	CH25	506,00	CH25	506,00	CH46	674,00



Channel Plan

Zealand B/0



EN



	System B/G		System I		System D/K		System L	System	B/G New Zealand
Name	Centre frequency	Name	Centre frequency						
CH26	514,00	CH26	514,00	CH26	514,00	CH26	514,00	CH47	682,00
CH27	522,00	CH27	522,00	CH27	522,00	CH27	522,00	CH48	690,00
CH28	530,00	CH28	530,00	CH28	530,00	CH28	530,00	CH49	698,00
CH29	538,00	CH29	538,00	CH29	538,00	CH29	538,00	CH50	706,00
CH30	546,00	CH30	546,00	CH30	546,00	CH30	546,00	CH51	714,00
CH31	554,00	CH31	554,00	CH31	554,00	CH31	554,00	CH52	722,00
CH32	562,00	CH32	562,00	CH32	562,00	CH32	562,00	CH53	730,00
CH33	570,00	CH33	570,00	CH33	570,00	CH33	570,00	CH54	738,00
CH34	578,00	CH34	578,00	CH34	578,00	CH34	578,00	CH55	746,00
CH35	586,00	CH35	586,00	CH35	586,00	CH35	586,00	CH56	754,00
CH36	594,00	CH36	594,00	CH36	594,00	CH36	594,00	CH57	762,00
CH37	602,00	CH37	602,00	CH37	602,00	CH37	602,00	CH58	770,00
CH38	610,00	CH38	610,00	CH38	610,00	CH38	610,00	CH59	778,00
CH39	618,00	CH39	618,00	CH39	618,00	CH39	618,00	CH60	786,00
CH40	626,00	CH40	626,00	CH40	626,00	CH40	626,00	CH61	794,00
CH41	634,00	CH41	634,00	CH41	634,00	CH41	634,00	CH62	802,00
CH42	642,00	CH42	642,00	CH42	642,00	CH42	642,00	CH63	810,00
CH43	650,00	CH43	650,00	CH43	650,00	CH43	650,00	CH64	818,00
CH44	658,00	CH44	658,00	CH44	658,00	CH44	658,00	CH65	826,00
CH45	666,00	CH45	666,00	CH45	666,00	CH45	666,00	CH66	834,00
CH46	674,00	CH46	674,00	CH46	674,00	CH46	674,00	CH67	842,00
CH47	682,00	CH47	682,00	CH47	682,00	CH47	682,00	CH68	850,00
CH48	690,00	CH48	690,00	CH48	690,00	CH48	690,00	CH69	858,00
CH49	698,00	CH49	698,00	CH49	698,00	CH49	698,00		
CH50	706,00	CH50	706,00	CH50	706,00	CH50	706,00		
CH51	714,00	CH51	714,00	CH51	714,00	CH51	714,00		
CH52	722,00	CH52	722,00	CH52	722,00	CH52	722,00		
CH53	730,00	CH53	730,00	CH53	730,00	CH53	730,00		
CH54	738,00	CH54	738,00	CH54	738,00	CH54	738,00		
CH55	746,00	CH55	746,00	CH55	746,00	CH55	746,00		
CH56	754,00	CH56	754,00	CH56	754,00	CH56	754,00		
CH57	762,00	CH57	762,00	CH57	762,00	CH57	762,00		
CH58	770,00	CH58	770,00	CH58	770,00	CH58	770,00		
CH59	778,00	CH59	778,00	CH59	778,00	CH59	778,00		
CH60	786,00	CH60	786,00	CH60	786,00	CH60	786,00		
CH61	794,00	CH61	794,00	CH61	794,00	CH61	794,00		
CH62	802,00	CH62	802,00	CH62	802,00	CH62	802,00		
CH63	810,00	CH63	810,00	CH63	810,00	CH63	810,00		
CH64	818,00	CH64	818,00	CH64	818,00	CH64	818,00		
CH65	826,00	CH65	826,00	CH65	826,00	CH65	826,00		
CH66	834,00	CH66	834,00	CH66	834,00	CH66	834,00		
CH67	842,00	CH67	842,00	CH67	842,00	CH67	842,00		
CH68	850,00	CH68	850,00	CH68	850,00	CH68	850,00		
CH69	858,00	CH69	858,00	CH69	858,00	CH69	858,00		
						CH70	866,00		
						CH71	874,00		
						CH72	882,00	1	



#### 5.3.8 Language

Possibility to change the language of the user interface between English, German and French.

#### 5.3.9 Timezone

Click on the "Timezone" field to open the drop down and select the time zone where the compact headend is installed.

The time zone is important because this sets ups the time offset which is added to the UTC time received with the service and sent out in the TOT to the TV.

#### Note:

Please test after the final installation if the time shown on the TV or in the EPG menu of the TV corresponds to the local time.

#### 5.3.10 Country

Define the country in which the headend is installed.

#### Note:

This setting is also important to have the right time zone settings!

#### 5.3.11 Device Description

Text field for project description and notes.

#### 5.3.12 Installer

Text field for the installer or company name who is responsible for the installation.

#### 5.3.13 Installer Email and Phone

Text field for the email address and phone number of the installer.

#### Note:

Please note that this information is used in the report Issue window which can be accessed from the Dashboard.

#### 5.3.14 SNMP

Option to enable SNMP and set address port to the SNMP monitor.

#### 5.3.15 Change Password

The first time you login to the headend, you must change the password to a unique password by following these steps:

- 1. Specify a new password in the "Change Password" field.
- 2. Re-specify the new password in the "Confirm New Password" field.
- 3. Press submit to change the password.

Europe/Vienna	~
Europe/Paris	
Europe/Podgorica	
Europe/Prague	
Europe/Riga	
Europe/Rome	
Europe/Samara	
Europe/San_Marino	
Europe/Sarajevo	
Europe/Saratov	
Europe/Simferopol	
Europe/Skopje	
Europe/Sofia	
Europe/Stockholm	
Europe/Tallinn	
Europe/Tirane	
Europe/Ulyanovsk	
Europe/Uzhgorod	
Europe/Vaduz	
Europe/Vatican	
Europe/Vienna	-

end an ema	il to the installer explaining the problem:
Installer:	Email: support@triax.com Tel: +00 123456789
ttach to the	email the files you will get by clicking on Download Log File
Download	Log Files



## 5.4 Input connections

#### 5.4.1 DVB-T2/C input

The TDcH 22STC-I and TDmH 14STC-I headends have 1 Terrestrial / Cable input marked with DVB-T2/C and a red colour ring.

#### Note:

The Input has an LED indicator.

Black (off) indicates no tuners configured to use this input.

Green indicates OK for all tuners configured to use this input.

Red indicates error for one or more tuners configured to use this input.

#### 5.4.2 DVB-S2X inputs

The TDcH & TDmH headend (except the TDmH IP model) has 4 SAT-IF inputs marked with DVB-S2X and a blue colour ring.

Note:

The Inputs have an LED indicator.

Black (off) indicates no tuners configured to use this input.

Green indicates OK for all tuners configured to use this input.

Red indicates error for one or more tuners configured to use this input.

#### 5.4.3 Connections in GUI

Open the folder "Connections" to set up the DVB-S2X input configuration.

TRIAX							Dashboard Admin Logo			
TV   COMPACT HEADEND Service Tool	★ -  1. Settings 2. Connections 3. Input	s 4. CAM 5. Scramb		7. LCN 8. Overview			Save Configuration			
Connections You can plug one or more input cables	Connections ou can plug one or more input cables to the device, which you need to configure in this step. Once this is done you can set the tuners, in order to connect some service provider.									
INPUT OVB-T2/C										
INPUT	DESCRIPTION/ALIAS	SATELLITE BAND	0V/OFF	13V/VERTICAL	18V/HORIZONTAL	LOW BAND	HIGH BAND			
• 1. DVB-S2	19,2E_VER_LOW	Ки	• 0	۲	0	۲	0			
• 2. DVB-S2	19,2E_HOR_LOW	Ки	• 0	0	۲	۲	0			
3. DVB-S2	SCR_19,2E+13E	SCR	•				•			
• 4. DVB-S2	DISEqC_1W_VER_LOW	Ки	• 0	۲	0	۲	0			







#### 5.4.4 Description/Alias

The DVB-S2X inputs can be configured with an alias. This alias is shown in other panes in the GUI, thus it is possible to give the input an alias that describes the source for the input.

E.g. "19,2E\_VER\_LOW" could describe the 19,2° East – Vertical polarisation – Low band.

TRIAX										Dashboard Admin	Logout
	IPACT HEADEND ice Tool	1. Settings	2. Connections		S T	bler 6. Outputs	7. LCN 8. Ove			Save Config	guration
Connection											
INPUT	or more input cables to the device, wh	iich you need to configure in this s	step. Once this is done	you can set the tur	ers, in order to conne	ect some service pro	vider.				
DVB-T2	2/C										
INPUT	1	DESCRIPTION/ALIAS			SATELLITE BAN	D OV/OF	F 13V/VERTI	AL 18V/HORIZONTAL	LOW BAND	HIGH BAND	
• 1. DVB-	-S2	19,2E_VER_LOW			Ки	• 0	۲	0	۲	0	•
• 2. DVB-	-52	19,2E_HOR_LOW			Ки	• 0	0	۲	۲	0	•
3. DVB-	-S2	SCR_19,2E+13E			SCR	•					•
• 4. DVB-	-S2	DiSEqC_1W_VER_LOW			Ки	• 0	۲	0	۲	0	•

#### 5.4.5 Single Satellite Reception

Select the required parameters for each DVB-S2X input:

Satellite Band	Ku, K, C or SCR (See multi satellite reception)
13/18V	for Vertical or Horizontal polarisation
LOW/HIGH	for the Band

#### Note:

The input colour shows the setting following the same colour codes TRIAX uses on LNBs and multi-switches.

INPUT		Yellow:	Horizontal, High Band
•	1. DVB-S2 2. DVB-S2	Red:	Vertical, High Band
•	3. DVB-S2 4. DVB-S2	Green:	Horizontal, Low Band
		Black:	Vertical, Low Band

TRIAX									Dashboard Admin	Logout
TV   COMPACT HEADEND Service Tool		★   →     1. Settings   2. Connections     3. Input		SAM 5. Scrami		LCN 8. Overview			Save Conf	figuration
Connections										
You can plug one or more input cables to INPUT	the device, which you need to config	ure in this step. Once this is done you can	n set the tune	ers, in order to conne	ct some service provider.					
OVB-T2/C										
INPUT	DESCRIPTION/ALIAS			SATELLITE BANK	0 0V/OFF	13V/VERTICAL	18V/HORIZONTAL	LOW BAND	HIGH BAND	
• 1. DVB-S2	19,2E_VER_LOW			Ки	• 0	۲	0	۲	0	
LOF Low (MHz)		LOF High (MHz)			LOF Switch (MHz)			Satellite Position	/	× .
9750		10600			11700			DiSEqC off		-
• 2. DVB-S2	19,2E_HOR_LOW			Ки	• 0	0	۲	•	0	-
3. DVB-S2	SCR_19,2E+13E			SCR	•					•
• 4. DVB-S2	DiSEqC_1W_VER_LO	W		Ки	• 0	۲	0	۲	0	•



When you press the expand button you can open the DiSEqC settings:

INPUT	DESCRIPTION/ALIAS	3	SATELLITE BA	ND	0V/OFF	13V/VERTICAL	18V/HORIZONTAL	LOW BAND	HIGH BAND	
• 1. DVB-S2	19,2E_VER_LOW		Ки	•	0	۲	0	۲	0	
LOF Low (MHz)		LOF High (MHz)		LOF	Switch (MHz)			Satellite Position		
9750		10600		11	700			DISEqC off		*
								DISEqC off 1/A		
• 2. DVB-S2	19,2E_HOR_LOW		Ku	-	0	0	۲	2/B 3/C		
• 3. DVB-S2	SCR_19,2E+13E		SCR	•				4/D		-
• 4. DVB-S2	DISEqC_1W_VER_LO	W	Ки	•	0	۲	0	۲	0	•

DiSEqC supports four satellite positions. Please select the desired position if required.

Note:

Configure DiSEqC to 1/A, 2/B, 3/C or 4/D will result in DiSEqC commands at the DVB-S2X input describing the position.

Configure DiSEqC to "DiSEqC off" will result in no commands at all, hence no change at the multiswitch. So, changing e.g. 2/B position to "DiSEqC off" will result in the multiswitch still set to 2/B - after a general power failure resulting in both the multiswitch and the TDcH & TDmH power cycling then the multiswitch will start up in default e.g. 1/A resulting in wrong position  $\rightarrow$  no signal at the TDcH & TDmH!

In addition to the DiSEqC settings, the menu also shows the (default) values of the (Local-Oscillator-Frequency)

LOF Low:	Local Oscillator Frequency for the low band Frequencies
LOF High:	Local Oscillator Frequency for the high band Frequencies
LOF Switch:	Border frequency between low and high band

Note:

The LOF frequencies can be adjusted to the requirements of the LNB.



#### 5.4.6 Multiple satellite reception

To support SCR from the Satellite reception and distribution we recommend to use the following TRIAX products:

#### SCR LNB:

304847SCR 21 SCR out4 User bandsThis LNB's can be directly connected to one of the TDcH & TDmH DVB-S2X inputs and allows reception<br/>of 4 transponders from one satellite independent from the polarization.

#### SCR Multi switch:

- 307356TMU 1743C4 SCR out12 User bands eachThis multi switch supports up to 4 satellite positions with up to 16 polarizations using 4 Quattro LNB's.The Quattro LNBs must support the LOF frequencies 9.75 / 10.6 GHz.
- 307348TMU 943C4 SCR out12 User bands eachThis multi switch supports up to 2 satellite positions with up to 8 polarizations using 2 Quattro LNB's.The Quattro LNBs must support the LOF frequencies 9.75 / 10.6 GHz.
- 318190TdSCR 906C6 SCR out10 User bands eachThis multi switch supports up to 2 satellite positions with up to 8 polarizations using 4 Quattro LNB's.The Quattro LNBs must support the LOF frequencies 9.75 / 10.6 GHz.Or up to 4 satellite positions with up to 16 polarizations using Wide Band LNB's.

#### Note:

The TDcH & TDmH support the following SCR standards:

- EN50494
- EN50607

If you set the DVB-S2X input to SCR the TDcH & TDmH supports SCR (Satellite Channel Router) functionality and can receive one satellite with up to four polarizations on this input. Each DVB-S2X input can be individually configured.

	* - 🚺 - 🔁	) — 😫 — 🖬	$ \rightarrow $				Save Configur
	1. Settings 2. Connections 3. Inpu	uts 4. CAM 5. Scramble	er 6. Outputs 7	. LCN 8. Overview			
onnections							
	s to the device, which you need to configure in this step. Once this is done you ca	an set the tuners, in order to connect	some service provider.				
DVB-T2/C							
DVB-T2/C							
UT	DESCRIPTION/ALIAS	SATELLITE BAND	0V/0FF	13V/VERTICAL	18V/HORIZONTAL	LOW BAND	HIGH BAND
-	DESCRIPTION/ALIAS 19,2E,VER_LOW	SATELLITE BAND	0V/0FF	13V/VERTICAL	18V/HORIZONTAL	LOW BAND	HIGH BAND
JT 1. DVB-S2							
1. DVB-S2 2. DVB-S2	19,2E_VER_LOW	Ки	• 0	۲	0	۲	0
1. DVB-S2 2. DVB-S2	19.2E_VER_LOW 19.2E_HOR_LOW	Ku Ku	• 0	۲	0	۲	0



When you press the expand button you can open the SCR and LOF settings:

NPUT		DESCRIPTION/ALIAS		SATELLITE BAND	0V/OFF	13V/VERTICAL	18V/HORIZONTAL	LOW BAND	HIGH BAND
• 1. DVB-S	S2	19,2E_VER_LOW		Ки	• •	۲	0	۲	• •
• 2. DVB-S	S2	19,2E_HOR_LOW		Ки	• •	0	۲	۲	○ ▼
3. DVB-S	S2	SCR_19,2E+13E		SCR	•				
LOF Low (MHz)		LOF High (MHz)			LOF Switch (MHz)				
9750		10600			11700				
Pres	set 1	Preset 2 Pre	eset 3						
Center Frequenc									
UB 1:	1210	UB 9:	1340		UB 17:			UB 25:	
UB 2:	1420	UB 10:	1485		UB 18:			UB 26:	
UB 3:	1680	UB 11:	1550		UB 19:			UB 27:	
UB 4:	2040	UB 12:	1615		UB 20:			UB 28:	
UB 5:	985	UB 13:	1745		UB 21:			UB 29:	
UB 6:	1050	UB 14:	1810		UB 22:			UB 30:	
UB 7:	1115	UB 15:	1875		UB 23:			UB 31:	
UB 8:	1275	UB 16:	1940		UB 24:			UB 32:	
~									
• 4. DVB-S	S2	DISEqC_1W_VER_LOW		Ки	• •	۲	0	۲	• •

The TDcH & TDmH SCR functionality supports up to 32 User bands per SCR input. The centre frequencies can be entered on the table as shown in the screen shot.

The Frequencies the SCR distribution equipment supports can be found on the product label or in the user manual of the used product.

In addition to the SCR user band settings, the menu also shows the (default) values of the (Local-Oscillator-Frequency)

LOF Low:	Local Oscillator Frequency for the low band Frequencies
LOF High:	Local Oscillator Frequency for the high band Frequencies
LOF Switch:	Border frequency between low and high band

Note:

The LOF frequencies can be adjusted to the requirements of the used LNB. Starting a new configuration the LOF frequencies are set to the default values.



# 5.5 RF inputs

/

Click the "Inputs" folder in the Compact Headend Service Tool to display the RF Inputs window.

V   COMPACT HEADEND Service Tool		1. Settings 2. 0			S CAM	5. Scram				Save Configu
F Input IP Input							Service List	TYPE	SID TSID OF	
figure Tuners to connect to the desired prov	ders and get their services.						Q. Search	ITPE	310 1310 01	All
errestrial and Cable							Syd	AVC TV	1004 1111 84	
INER DEMODULATION		CHANNEL	BANDWIDTH	PLP	TUNE		DR1	AVC HDTV	10000 1111 84	
DVB-T2	•	CH41 (634 MHz	8 MHz 👻	0	C	•	DR1Syn	AVC HDTV	10005 1111 84	
DVB-T2		0 MHz	8 MHz 👻			•	DR2	AVC HDTV	10010 1111 84	00 Tuner TC1
DVB-12	•	UMHZ	8 MHZ •	U		•	DR2Syn	AVC HDTV	10015 1111 84	00 Tuner TC1
DVB-T2	•	0 MHz	8 MHz 🔹	0	S	•	DR Ramasjang	AVC HDTV	10020 1111 84	00 Tuner TC1
DVB-T2	•	0 MHz	8 MHz 🗸	0	C	•	TV SYD	AVC HDTV	10034 1111 84	00 Tuner TC1
DVB-T2		0 MHz	8 MHz -	0		•	FOLKETINGET	AVC HDTV	10040 1111 84	00 Tuner TC1
DVB-12	•		o WHZ *			· ·	DR Test	AVC HDTV	10090 1111 84	00 Tuner TC1
DVB-T2	-	0 MHz	8 MHz 👻	0	S	•	rbb Brandenburg HD	AVC HDTV	10350 1061	Tuner S1
							rbb Berlin HD	AVC HDTV	10351 1061	Tuner S1
	EDEO (		ATION DOCITIO		TE TUNE		MDR Sachsen HD	AVC HDTV	10352 1061	Tuner S1
		MHz) POLARIZ	ATION POSITIO				MDR S-Anhalt HD	AVC HDTV	10353 1061	Tuner S1
S1 19,2E_HOR_LOW	• 1089	1		22000	S	•	MDR Thüringen HD	AVC HDTV	10354 1061	Tuner S1
S2 19,2E_HOR_LOW	• 1105	3		22000	S	-	hr-fernsehen HD	AVC HDTV	10355 1061	Tuner S1
S3 19,2E_VER_LOW	• 1134	7		22000	S	-	hr1	AC RADIO	10465 1061	Tuner S1
							hr2	AC RADIO	10466 1061	Tuner S1
S4 19,2E_HOR_LOW	• 1136	2		22000	S	•	hr3	AC RADIO	10467 1061	Tuner S1
s5 19,2E_HOR_LOW	- 1149	4		22000	S	-	hr4	AC RADIO	10468 1061	
					S		YOU FM	AC RADIO	10469 1061	Tuner S1

The "Inputs" page shows all RF input tuners. The colour of the tuner number shows the status of each tuner.

Grey:	Tuner is not used	Satellite TUNER INPUT SI 1. DVB-S2	FREQ (MHz)	SYMBOL RATE	•
Red:	Tuner is not set up correctly or input signal is missing.	Satellite TUNER INPUT S1 1. DVB-S2 ~	FREQ (MHz)	SYMBOL RATE	•
Green:	Tuner is locked and working.	Satellite TUNER INPUT 1. DVB-S2	FREQ (MHz)	SYMBOL RATE	•

The first time the Compact Headend Service Tool displays the tuner configuration window in a new configuration, the configuration fields and the list of services will be empty or display default values.



V	COMPACT HEAD		*-•	· (#) – ( I	\$	Ð					Sav	e Configu	urati
			1. Settings 2. Connections	3. Inputs 4. C	CAM	5. Outp	rts 6. LCN 7. Overview						
onfigure <b>uner</b>		he desired p	roviders and get their services.				Service List						
	INPUT		FREQ (MHZ)	SYMBOL RATE	TUNE		NAME	TYPE	SID	TSID	ONID	SOURCE	E
	Input 1	*	0	0	$\square$	*	Q Search					All	
2	Input 1	~	0	0	0	Ŧ							
3	Input 1	*	0	0	C	*							
4	Input 1	~	0	0	C	*							
5	Input 1	~	0	0	C	*							
6	Input 1	~	0	0	C	*							
7	Input 1	~	0	0	C	Ŧ							
8	Input 1	~	0	0	C	*							
9	Input 1	~	0	0	C	*							
10	Input 1	~	0	0	C	*							
D	Input 1	~	0	0	C	Ŧ							
12	Input 1	~	0	0	C	*							
13	Input 1	~	0	0	C	*							
14)	Input 1	~	0	0	C	*							
15	Input 1	~	0	0	C	Ŧ							
16	Input 1	~	0	0	C	*							

# 5.5.1 Terrestrial and Cable tuner setup

Note:

This functionality is only available on the Version TDcH 22STC-I and TDmH 14STC-I.

To set up a tuner you must follow the following steps:

# 1. Select the "Demodulation":

Terrestrial and Cable					
TUNER DEMODULATION	CHANNEL	BANDWIDTH	PLP	SYMBOL RATE	TUNE
TC1 DVB-T2 -	CH41 (634 MHz	8 MHz 🗸	0		<b>C</b> -
DVB-T2	(	] [			
TC2 DVB-C	0 MHz	8 MHz -	0		<i>C</i> •
TC3 DVB-T2	0 MHz	8 MHz -	0		<b>C</b> •
TC4 DVB-T2	0 MHz	8 MHz -	0		
TC5 DVB-C -	0 MHz			6900	6
TC6 DVB-C	0 MHz			6900	<b>C</b> •
	U WI 12			0900	

To select the required demodulation, click on the demodulation field to open the drop-down list with demodulations you can choose from.

Select the demodulation you want to use.



2. Enter the desired frequency in MHz in the channel field or select the corresponding channel from the dropdown list:

	strial and C							
TUNER	DEMODULATION	CHANN	EL	BANDWIDTH	PLP	SYMBOL RATE	TUNE	
тст	DVB-C	✓ 308 M	Hz			6900	C	•
TC2	DVB-C		06 MHz) 14 MHz)			6900	C	•
тсз	DVB-C		22 MHz) 30 MHz)			6900	C	•
TC4	DVB-C		38 MHz) 46 MHz)			6900	C	Ŧ
TC5	DVB-C		54 MHz) 62 MHz)			0	C	*
TC6	DVB-C	<ul> <li>C MHz</li> </ul>	70 MHz)			0	C	*

3. If the tuner is used as DVB-T/T2 then please select the required channel bandwidth and PLP number:

Terre	strial and C	ab	le							
TUNER	DEMODULATION		CHANNEL		BANDWIDTH		PLP	SYMBOL RATE	TUNE	
TC1	DVB-C	~	308 MHz					6900	2	•
TC2	DVB-C	~	S22 (314 MHz)					6900	C	•
тсз	DVB-C	~	S23 (322 MHz)					6900	C	•
TC4	DVB-C	~	S24 (330 MHz)					6900	$\square$	•
TC5	DVB-T2	~	0 MHz	4	8 MHz 🗸	]	0		C	•
TC6	DVB-T2	~	0 MH12	]	6 MHz 7 MHz 8 MHz		0		C	*

4. If the tuner is used as DVB-C then please select the required symbol rate:

	strial and C		e Channel	BANDWIDTH		PLP	SYMBOL RATE	TUNE	
TC1	DVB-C	•	308 MHz				6900	C	•
TC2	DVB-C	•	S22 (314 MHz)		•		6900	C	•
тсз	DVB-C	*	S23 (322 MHz)				6900	C	•
TC4	DVB-C	~	S24 (330 MHz)				6900	C	•
TC5	DVB-T2	~	0 MHz	8 MHz 🗸		0		C	Ŧ
<b>TC6</b>	DVB-T2	*	0 MHz	6 MHz 7 MHz 8 MHz	1	0		C	*

5. If an alternative EIT to the internal EIT in the current transport stream, press expand for the tuner and choose the alternative EIT source:

Terrestrial and Cable	CHANNEL	BANDWIDTH	PLP	SYMBOL RATE	TUNE
TC1 DVB-T2	✓ CH41 (634 MH;	z 8 MHz 👻	0		
Carrier Noise Ratio: 34.8 dB	Standard: DVB-T2		EIT source	. /	
Signal Level: 46 dBµV	Modulation: 256-QAM	И	Use inte	rnal EIT	-
Status: Locked					Delete 🗙
TC2 DVB-T2	• 0 MHz	8 MHz •	0		C .
TC3 DVB-T2	• 0 MHz	8 MHz 🔹	0		C
TC4 DVB-T2	▼ 0 MHz	8 MHz -	0		C
TC5 DVB-C	• 0 MHz			6900	
TC6 DVB-C	- 0 MHz			6900	C.



6. Click the "TUNE" button to activate the setting into the headend system:

Terres	strial and C	ab	le				
TUNER	DEMODULATION		CHANNEL	BANDWIDTH	PLP	SYMBOL RATE	TUNE
TC1	DVB-C	*	308 MHz			6900	<b>*</b> C •
TC2	DVB-C	*	S22 (314 MHz)			6900	<b>C</b> •
тсз	DVB-C	~	S23 (322 MHz)			6900	<b>S</b> •
TC4	DVB-C	~	S24 (330 MHz)			6900	<b>C</b> •
ТС5	DVB-T2	*	0 MHz	8 MHz 🗸	0		
TC6	DVB-T2	~	0 MHz	6 MHz 7 MHz 8 MHz	0		2 -

# By clicking on the expand button, information details from the selected transponder will be shown:

	strial and Cable		CHANNEL	BANDWIDTH	PLP		SYMBOL RATE	TUNE
тс1	DVB-T2	-	CH41 (634 MHz	8 MHz 👻	0			C .
	r Noise Ratio: 34.8 dB Level: 46 dBµV		Idard: DVB-T2 Iulation: 256-QAM			EIT source Use interr	nal EIT	-
Status	: Locked						•	Delete 🗙
тс2	DVB-T2	•	0 MHz	8 MHz 🗸	0			<b>C</b> •
тсз	DVB-T2	•	0 MHz	8 MHz 👻	0			<i>C</i> •
TC4	DVB-T2	•	0 MHz	8 MHz 🗸	0			<b>C</b> •
тс5	DVB-C	•	0 MHz				6900	<i>C</i> •
ТС6	DVB-C	•	0 MHz				6900	<b>C</b> •

Carrier Noise Ratio:	Shows the carrier to noise ratio of the input signal
Signal Level:	Displays the actual signal level
Standard:	Shows the standard of the input signal
Modulation:	Shows the modulation of the input signal
Status:	Shows the status of the tuner



# To delete the tuner input, press the "Delete **x**":

JNER DEMODULATION	CHANNEL	BANDWIDTH	PLP		SYMBOL RATE	TUNE
DVB-T2	← CH41 (634 MH	z 8 MHz -	•			$\square$
Carrier Noise Ratio: 34.8 dB	Standard: DVB-T2			EIT source		
Signal Level: 46 dBµV	Modulation: 256-QAI	N		Use interr	nal EIT	
Status: Locked						Delete
	- 0 MHz	8 MHz 🗸	. 0			
DVB-T2						
C2 DVB-T2 C3 DVB-T2	• 0 MHz	8 MHz -	• •			S
	O MHz     O MHz	8 MHz -				C C
C3 DVB-T2					6900	

# A warning will appear:





# 5.5.2 Satellite tuner setup

To set up a satellite tuner you must follow the following steps:

1. Select the "Input":

S1 19,2E_HOR_LOW	▼ 10891	22000
PLS M 19,2E_VER_LOW 19,2E_HOR_LOW	PLS Code	Stream ID
ROO SCR_19,2E+13E > DiSEqC_1W_VER_LOW	• 0	0
Carrier Noise Ratio: 12.2 dB	Standard: DVB-S2	EIT source
Signal Level: 66 dBµV	Modulation: 8-PSK	Use internal EIT
Status: Locked		Delete
Status: Locked  S2  19,2E_HOR_LOW	- 11053	22000 S
	• 11053 • 11347	
S2 19,2E_HOR_LOW		22000
S2         19,2E_HOR_LOW           S3         19,2E_VER_LOW	• 11347	22000 <b>2</b> 22000 <b>2</b>

To select the required input / SAT-IF signal, click on the input field to open the drop-down list with the inputs you can choose from.

Select the input you want to use.

# 2. Enter the desired frequency in MHz in the frequency field:

		· · ·
atellite		
UNER INPUT	FREQ (MHz)	POLARIZATION POSITION SYMBOL RATE TUNE
S1 19,2E_HOR_LOW	• 10891	22000
S2 19,2E_HOR_LOW	• 11053	22000
S3 19,2E_VER_LOW	▼ 11347	22000
S4 19,2E_HOR_LOW	▼ 11362	22000
S5 19,2E_HOR_LOW	▼ 11494	22000
S6 SCR_19,2E+13E	▼ 11494	H • 1/A • 22000

#### 3. Enter the desired symbol rate:

Satellite		
TUNER INPUT	FREQ (MHz) POLARIZATION POSITION	SYMBOL RATE TUNE
S1 19,2E_HOR_LOW	• 10891	22000
S2 19,2E_HOR_LOW	▼ 11053	22000 📿 🗸
S3 19,2E_VER_LOW	▼ 11347	22000 📿 🗸
S4 19,2E_HOR_LOW	• 11362	22000 🖌 🗸
S5 19,2E_HOR_LOW	▼ 11494	22000 📿 🗸
S6 SCR_19,2E+13E	▼ 11494 H ▼ 1/A ▼	22000 📿 🗸



4. If the input source is DVB-S2X Multistream, expand the tuner settings and enter the PLS Mode, PLS Code and Stream ID.

Satellite	5550 (AUL) - 501 A	
TUNER INPUT		RIZATION POSITION SYMBOL RATE TUNE
PLS Mode	PLS Code	Stream ID
ROOT	• 0	0
Carrier Noise Ratio: 12.4 dB	Standard: DVB-S2	EIT source
Signal Level: 67 dBµV	Modulation: 8-PSK	Use internal EIT
Status: Locked		Dele
S2 19,2E_HOR_LOW	▼ 11053	22000
S2         19,2E_HOR_LOW           S3         19,2E_VER_LOW	<ul><li>11053</li><li>11347</li></ul>	22000 <b>2</b> 2000 <b>2</b>
S3 19,2E_VER_LOW	▼ 11347	22000

5. If the input source is SCR (Satellite Channel Router)

UNER I	NPUT			FREQ (MHz)	POLARIZATION	POSITION	SYMBOL RATE	TUNE
S1	19,2E_HOR_LOW		•	10891			22000	S
S2	19,2E_HOR_LOW		•	11053			22000	C
<b>S</b> 3	19,2E_VERLOW	2E_VER_LOW •					22000	$\square$
<b>S4</b>	19,2E_HOR_LOW		•	11362			22000	$\square$
S5	19,2E_HOR_LOW	/B-S2.1	•	11494			22000	C
S6	SCR_19,2E+13E		•	11494	н -	1/A •	22000	C
PLS M	19,2E_VERLOW 19,2E_HOR_LOW		PLS Code			Stream ID		
RG	SCR_19,2E+13E +	UB 1				0		
Я	DiSEqC_1W_VER_LOW	UB 5						
Carrier	Noise Ratio: 16.0 dB	UB 6 UB 7	I: DVI	3-S2		EIT source		
Signal L	Level: 74 dBµV	UB 8	on: 8	-PSK		Use internal	EIT	
Status:	Locked	UB 9 UB 10 UB 11						Delete
S7	SCR_19,2E+13E	UB 12 UB 13	•	11566	н -	2/B •	29900	C
S8	SCR_19,2E+13E	UB 14 UB 15	•	11766	V -	2/B •	29900	C
S9	SCR_19,2E+13E	UB 16		12399	н -	2/B •	29700	C

You must select the SCR user band and the Polarisation and Satellite position.



6. If an alternative EIT to the internal EIT in the current transport stream, press expand for the tuner and choose the alternative EIT source:

JNER INPUT		FREQ (MHZ)	POLARIZATION	POSITION	SYMBOL RAI	E IUNE	
S1 19,2E_HOR_LOW	-	10891			22000	$\square$	
PLS Mode	PLS Code			Stream ID			
ROOT	• 0			0	/		
Carrier Noise Ratio: 12.4 dB	Standard: DVB	3-S2		EIT source			
Signal Level: 67 dBµV	Modulation: 8-	PSK		Use internal EIT			
Status: Locked						Delete	
S2 19,2E_HOR_LOW	•	11053			22000	S	
	•	11347			22000	$\square$	
S3 19,2E_VER_LOW							
S3         19,2E_VER_LOW           S4         19,2E_HOR_LOW	•	11362			22000	$\mathcal{C}$	
	•	11362 11494			22000	2 2	

7. Click the "TUNE" button to activate the setting into the headend system:

UNER INPUT	FREQ (MHz)	SYMBOL RATE TUNE
S1 1. DVB-S2	✓ 11303	22000  📿 -
S2 1. DVB-S2	▶ 11273	22000
53 1. DVB-S2	✓ 11244	22000
54 2. DVB-S2	✔ 12304	27500
5 1. DVB-S2	✓ 11494	22000





# By clicking on the expand button, information details from the selected transponder will be shown:

Satellite		
TUNER INPUT	FREQ (MHz) POLARIZA	TION POSITION SYMBOL RATE TUNE
S1 19,2E_HOR_LOW	▼ 10891	22000 🧲 🔺
PLS Mode	PLS Code	Stream ID
ROOT	0	0
Carrier Noise Ratio: 12.4 dB	Standard: DVB-S2	EIT source
Signal Level: 67 dBµV	Modulation: 8-PSK	Use internal EIT -
Status: Locked		Delete 🗙
S2 19,2E_HOR_LOW	▼ 11053	22000 📿 🗸
<b>S3</b> 19,2E_VER_LOW	▼ 11347	22000 📿 🗸
S4 19,2E_HOR_LOW	▼ 11362	22000 📿 🗸
S5 19,2E_HOR_LOW	▼ 11494	22000 📿 🗸
S6 SCR_19,2E+13E	▼ 11494 H	<ul> <li>▼ 1/A</li> <li>▼ 22000</li> <li>♥</li> </ul>

Carrier Noise Ratio:	Shows the carrier to noise ratio of the input signal
Signal Level:	Displays the actual signal level
Standard:	Shows the standard of the input signal
Modulation:	Shows the modulation of the input signal
Status:	Shows the status of the tuner



To delete the tuner input, press the "Delete **x**":

Satellite				
TUNER INPUT	FREQ (MHz)	POLARIZATION POSITION	SYMBOL RATE	TUNE
S1 19,2E_HOR_LOW	▼ 10891		22000	
PLS Mode	PLS Code	Stream ID		
ROOT	0	0		
Carrier Noise Ratio: 12.4 dB	Standard: DVB-S2	EIT source		
Signal Level: 67 dBµV	Modulation: 8-PSK	Use internal	EIT	•
Status: Locked				Delete 🗙
S2 19,2E_HOR_LOW	▼ 11053		22000	
S3 19,2E_VER_LOW	▼ 11347		22000	<b>C</b> •
S4 19,2E_HOR_LOW	▼ 11362		22000	<b>C</b> •
S5 19,2E_HOR_LOW	◄ 11494		22000	<b>C</b> •
S6 SCR_19,2E+13E	◄ 11494	H • 1/A •	22000	<b>C</b> •

# A warning will appear:

Warning		
When deleting Tuner configuration, th Pool and all the related configuration		wed from the Servic
of and an increated comigaration	in de deleted.	
	Cancel	Confirm



# 5.5.3 Service List

In the Source field, select the tuner number to see available streams with name, type, SID, TSID and ONID:

First Click

 $\rightarrow$  sort rising

Second click at same type  $\rightarrow$  sort falling

COMPACT HEADEND		<b>*</b> -	🏓 –		<u>5</u> –	-	$)-\ominus-\blacksquare$				Save Configurat
		1. Settings 2. 0	Connections	3. Inputs 4. 0	CAM	5. Scran	bler 6. Outputs 7. LCN 8. Overview				
Input IP Input							Service List				
gure Tuners to connect to the desired provi	lers and get their services						NAME	TYPE	SID TSID	ONID	SOURCE
							Q Search				All
rrestrial and Cable							Syd	AVC TV	1004 1111	8400	All Tuner TC1
NER DEMODULATION	CHANNEL		PLP	SYMBOL RATE			DR1	AVC HDTV	10000 1111	8400	Tuner S1 Tuner S2
DVB-T2	- CH41 (634 MHz	8 MHz 👻	0		S	•	DR1Syn	AVC HDTV	10005 1111	840	Tuner S3 Tuner S4
DVB-T2	• 0 MHz	8 MHz 🔹	0		C	•	DR2	AVC HDTV	10010 1111	·	Tuner S5 Tuner S6
DVB-T2	• 0 MHz	8 MHz 👻	0		C		DR2Syn	AVC HDTV	10015 1111		Tuner S7
						· ·	DR Ramasjang	AVC HDTV	10020 1111		Tuner S8 Tuner S9
DVB-T2	• 0 MHz	8 MHz 🔻	0		S	•	TV SYD	AVC HDTV	10034 1111		Tuner S10 Tuner S11
DVB-C	▼ 0 MHz			6900	C	•	FOLKETINGET	AVC HDTV	10040 1111		
DVB-C	• 0 MHz			6900	C		DR Test rbb Brandenburg HD	AVC HDTV	10090 1111		Tuner TC1 Tuner S1
							rbb Brainteinburg HD	AVC HDTV	10350 1061		Tuner S1
tellite							MDR Sachsen HD	AVC HDTV	10352 1061		Tuner S1
NER INPUT	FREQ	(MHz) POLARIZ	ATION POSI	TION SYMBOL RAT	E TUNE		MDR S-Anhalt HD	AVC HDTV	10353 1061		Tuner S1
1 19,2E_HOR_LOW	• 1089	1		22000	S		MDR Thüringen HD	AVC HDTV	10354 1061		Tuner S1
LS Mode	PLS Code		Stream	ID		_	hr-fernsehen HD	AVC HDTV	10355 1061	1	Tuner S1
ROOT	0		0				hr1	AC RADIO	10465 1061	1	Tuner S1
							hr2	AC RADIO	10466 1061	1	Tuner S1
arrier Noise Ratio: 13.2 dB	Standard: DVB-S2		EIT sou	irce			hr3	AC RADIO	10467 1061	1	Tuner S1
ignal Level: 68 dBµV	Modulation: 8-PSK		Use i	nternal EIT		•	hr4	AC RADIO	10468 1061	1	Tuner S1
tatus: Locked					Delet	te x	YOU FM	AC RADIO	10469 1061	1	Tuner S1

# Name: Name of the TV or radio service

#### Note:

If you enter a string in the search field of the service name all services which contain the string are listed in the service list.

- Type: Audio and video type of service
- SID: Service Identifier
- TSID: Transport Stream Identifier
- ONID: Original Network Identifier
- Source: Tuner number where the service is received



# 5.6 IP input

# 5.6.1 Physical connectivity

The TDcH & TDmH headends have 1 IP input for IPTV-in, marked with SFP label, and without a specific colour ring



Note:

The TDcH & TDmH headends system must be connected to a Gigabit network switch to receive and deliver IP services. The network switch must support IGMP version 2 / 3 and contain an adequate number of ports.

Cat 5e shielded or better network cables must be used.

#### **Optional hardware:**

A fibre-optic transceiver can be used instead of an RJ45 SFP transceiver. This is especially relevant for pre-existing optical installations, or for installations with high levels of interference and/or total cable lengths exceeding 100m. The fibre-optic transceiver must be ordered separately.

Item No.:	492086	SFP RJ45
Item No.:	492087	SFP Fiber 850nm EOLS-8512-MXX (500m)
Item No.:	492088	SFP Fiber 1310nm EOLS-1324-02XX (2km)

# 5.6.2 IP-in licenses

IP input licenses need to be purchased from TRIAX to be able to receive IP services through the TDcH & TDmH headend system.

Required license numbers:

Item No.:	418745	TDcH 4 x IP-in streams license
Item No.:	418746	TDcH 16 x IP-in streams license
Item No.:	418747	TDcH 96 x IP-in streams license
Item No.:	418752	TDmH 48 x IP-in streams license
Item No.:	418753	TDmH 16 x IP-in streams license
Item No.:	418754	TDmH 4 x IP-in streams license

Licenses are activated using License handling in the Administration window.



# 5.6.3 Requirements

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 Possibility of IGMP version 2 and version 3 If no source address is configured, then is IGMPv2 used If a source address is configured, then is IGMPv3 used with SSM (Source Specific Multicast) SPTS or MPTS including PAT, PMT, CAT, optional SDT

The TDcH & TDmH supports both SPTS and MPTS. With MPTS an inbound stream can contain multiple programmes. The license limits the number of IP-in streams. It does not limit the number of services, thus receiving MPTS can carry more services than the value of the license limit.

# Important:

The TDcH & TDmH headend system supports up to 7 TS packets per IP packet at the IP input.

The TDcH & TDmH headend system does not support IP fragmentation at the IP input, 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

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".



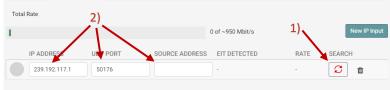


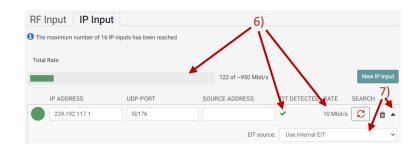
# 5.6.4 Configuration in GUI

Receive an IP stream by following the steps below:

- 1) Select the *Inputs* tab in the panes.
- 2) Select the *IP Input* sub-tab.
- 3) Press the New IP input button for a new IP input option.
- 4) Specify the desired IP address and associated UDP port number, and if necessary, the Source address in the corresponding fields.
- 5) Press the Search button C to receive the IP stream
- 6) System will automatically update if EIT detected and the rate [Mbit/s] for the stream plus total rate. By default, the EIT is inside each multicast stream is used.
- 7) An alternative EIT can be configured by selecting the alternative source from the dropdown list among the configured IP inputs multicast addresses.

V   Service Tool		1. Settings		Inputs	4. CAM 5. Scrar					Save Configuratio
F Input IP Input			<b>ر</b> ب	5)		Service List	TYPE	SID TSID	ONID	SOURCE
Total Rate				5/	×	Q Search				All
3)*		0 of ~95	50 Mbit/s		New IP Input	Syd	AVC TV	1004 1111	8400	Tuner TC1
IP ADDRESS	UDP PORT	SOURCE ADDRESS	EIT DETECTED	RATE	SEARCH	DR1	AVC HDTV	10000 1111	8400	Tuner TC1
						DR1Syn	AVC HDTV	10005 1111	8400	Tuner TC1
						DR2	AVC HDTV	10010 1111	8400	Tuner TC1
						DR2Syn	AVC HDTV	10015 1111	8400	Tuner TC1
						DR Ramasjang	AVC HDTV	10020 1111	8400	Tuner TC1
						TV SYD	AVC HDTV	10034 1111	8400	Tuner TC1
						FOLKETINGET	AVC HDTV	10040 1111	8400	Tuner TC1
						DR Test	AVC HDTV	10090 1111	8400	Tuner TC1
						rbb Brandenburg HD	AVC HDTV	10350 1061	1	Tuner S1
						rbb Berlin HD	AVC HDTV	10351 1061	1	Tuner S1
						MDR Sachsen HD	AVC HDTV	10352 1061	1	Tuner S1
						MDR S-Anhalt HD	AVC HDTV	10353 1061	1	Tuner S1
						MDR Thüringen HD	AVC HDTV	10354 1061	1	Tuner S1
						hr-fernsehen HD	AVC HDTV	10355 1061	1	Tuner S1
						hr1	AC RADIO	10465 1061	1	Tuner S1
						hr2	AC RADIO	10466 1061	1	Tuner S1
						hr3	AC RADIO	10467 1061	1	Tuner S1
						hr4	AC RADIO	10468 1061	1	Tuner S1
						YOU FM	AC RADIO	10469 1061	1	Tuner S1
						hr-iNFO	AC RADIO	10470 1061	1	Tuner S1
RIAX UK Ltd						hriNFO				Tuner S1









Previously selected services can be refreshed when pressing the Search/Refresh

COMPACT HEAD		<b>*</b> -(			\$							
Input IP Inp		1. Settings 2. C	onnections 3. Inpu	ns 4	I. CAM	5. Scra	hbler 6. Outputs 7. LCN 8. Overview Service List NAME	ТҮРЕ	SID	TSID	0,410	SOURCE
e maximum number of 16	5 IP inputs has been reached						Q Search			•		IP-in
al Rate							HSE Extra HD	AVC HDTV	5501	108	117	All IP-in
		120 of ~950 Mbit/	3		New	r IP Input	1-2-3.tv HD	AVC HDTV	5502	109	117	Tuner TC1 Tuner TC2
_							QVC ZWEI HD	AVC HDTV	5504	110	117	Tuner TC3
IP ADDRESS	UDP PORT	SOURCE ADDRESS	EIT DETECTED	RATE	SEARCH	ł	tagesschau24 HD	AVC HDTV	10375	114	117	Tuner TC4 Tuner TC5
239.192.117.1	50176		×	8 Mbit/s	C	<b>1</b>	ONE HD	AVC HDTV	10376	115	117	Tuner S1 Tuner S2
		EIT cour	rce: Use internal El	т		~	ARD alpha HD	AVC HDTV	10377	116	117	Tuner S3 Tuner S4
		Elisou	ose internal El	1		•	SR Fernsehen HD	AVC HDTV	10378	117	117	Tuner S5
239.192.117.2	50176		×	11 Mbit/s	$\mathcal{C}$	<b>î</b> •	rbb Berlin HD	AVC HDTV	10351	11	117	Tuner S6 239.192.117.1:50
239.192.117.3	50176		×	9 Mbit/s	C	<b>î</b> -	MDR Sachsen HD	AVC HDTV	10352	12	117	239.192.117.2:50 239.192.117.3:50
239.192.117.7	50176		~	7 Mbit/s	C	<b>A</b> -	3sat	MPEG2 TV	28007		117	239.192.117.7:50
239.192.117.7	50176			7 MIDIT/S		Û T	KIKA	MPEG2 TV	28008		117	239.192.117.9:50 239.192.117.10:5
239.192.117.8	50176		×	7 Mbit/s	$\mathcal{C}$	<b>1</b> -	ZDF	MPEG2 TV	28006		117	200.102.117.40.001.
239.192.117.9	50176		~	4 Mbit/s	C	<u>î</u> -	zdf_neo	MPEG2 TV	28014			239.192.117.41:501
239.192.117.10	50176		~	7 Mbit/s	C	-	ZDFinfo	MPEG2 TV	28011			239.192.117.42:501
239.192.117.10	50176		•	7 MIDIU'S		Î T	ARD alpha HD	AVC HDTV	10377			239.192.117.94:501
239.192.117.11	50176		✓	12 Mbit/s	S	<b>Î •</b>	SR Fernsehen HD	AVC HDTV	10378	104	117	239.192.117.95:501
239.192.117.12	50176		×	15 Mbit/s	C	<b>1</b> -						
239.192.117.38	50176		~	6 Mbit/s	C	<b>1</b> •						
239.192.117.39	50176		<b>v</b>	6 Mbit/s	C	<b>î -</b>						

## List of found services

On the right hand in the GUI in the *Service List* you can filter the available services to display only the IP-in services. To highlight/sort the services received via "IP Input" select "IP-in" under "SOURCE" at the *Service List*. To see services from a specific IP-in stream select the actual Multicast address e.g. 239.192.117.1:50176.



# 5.7 CAM

#### Note:

This functionality is not available on the FTA Versions TDcH 16S-Q, TDcH 16S, TDmH IP, and TDmH S8.

Click the "CAM" tab in the TDcH & TDmH Service Tool to display the CA Modules and administration window.

									Dashboar	d Admin	Logout
TV   COMPACT HEADEND	*	- 🌶 -	$\rightarrow$	3	- 🗊 -	- [				Save Confiç	guration
	1. Settings	2. Connections	3. Inputs	4. CAM	5. Scrambler	6. Outputs	7. LCN	8. Overview			

The first time you display the CAM window in a new configuration the module list only displays the number and type of the CA modules that you have inserted in the TDcH & TDmH.

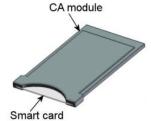
	COMPACT HEADEND Service Tool		1. Setti		2. Conn	<b>T</b>		5. Outputs	6. LCN 7. Overview	Dashboard	Admin Logou
iign servic Ervice		TYPE	SID	TSID	ONID	SOURCE	DESTINATION	CAM SLOT	CARD		USED PIDS
	Q Search						✓ All ✓		ORS MULTI PRO CAM		0 🔻
	<tuner tc1=""></tuner>			31	3	Tuner TC1		2			0 🔻
	BR Fernsehen Süd HD	AVC HDTV	10325	31	3	Tuner TC1	•	3	ORS MULTI PRO CAM		0 🔻
	NDR FS SH HD	AVC HDTV	10330	31	3	Tuner TC1	•	4			0 🔻
	PHOENIX HD	AVC HDTV	10331	31	3	Tuner TC1	•	6			0 🔻
	Welt der Wunder	MPEG2 TV	13103	31	3	Tuner TC1	•	6			0 🔻
	<tuner tc2=""></tuner>			13	3	Tuner TC2		0			0 🔻
	RTLplus Austria	AVC TV	325	13	3	Tuner TC2	•	8			0 🔻
	Fashion TV HD	AVC HDTV	425	13	3	Tuner TC2	•				
	HGTV	MPEG2 TV	426	13	3	Tuner TC2	•				
	TOGGO plus	MPEG2 TV	529	13	3	Tuner TC2	•				
	ATV	MPEG2 TV	10120	13	3	Tuner TC2	•				
	ORF2 V	MPEG2 TV	10128	13	3	Tuner TC2	•				
	ORF1	MPEG2 TV	13001	13	3	Tuner TC2	•				

You must configure the CA modules individually. When you open the Configuration window for a CA module in a new configuration, only default values are displayed.



# 5.7.1 CAM / Smart card





You can insert 4 or 8 Conditional Access Modules (CAM) into a TDmH & TDcH Headends

Each CA module can unscramble at least one service. The amount of services and which services depend on the service provider of the CA module and smart card.

# 5.7.2 CAM configuration

At the first step you must assign to a CA module the services the CA module should handle. To assign the services open the drop-down menu under SOURCE and choose the tuner you would like to select services for a CA module.

	COMPACT HEADEND Service Tool			*	)-	Ø	— <b>ļ</b> †ļ	)-[\$		-=-	Dashboard	Admin Lo
				1. Settin	ngs	2. Con	nections 3. Inp	uts 4. CA	M 5. Outputs	6. LCN 7. Overview		_
sign servi <b>ervice</b> TATUS		т	TYPE	SID	TSID	ONID	SOURCE	DESTINATI	CAM DN SLOT	CARD		USED PIDS
All 🗸	Q Search						Tuner S3	All	· 1	ORS MULTI PRO CAM		0
	<tuner s3=""></tuner>				1003	1	Tuner S3		2			0
	ORF SPORT+	\$ N	MPEG2 TV	13221	1003	1	Tuner S3		- 3	ORS MULTI PRO CAM		0
	Volksmusik	N	VIPEG2 TV	13222	1003	1	Tuner S3		• 4			0
	ATV2	\$ N	VIPEG2 TV	13223	1003	1	Tuner S3	CAM 3	- 5			0
	Bibel TV HD	A	AVC HDTV	13224	1003	1	Tuner S3		• 6			0
	Schau TV HD	A	AVC HDTV	13225	1003	1	Tuner S3		• 0			0
	Starparadies AT	N	MPEG2 TV	13226	1003	1	Tuner S3		- 8			0
	Hope TV	A	AVC HDTV	13227	1003	1	Tuner S3		•			
	ATV HD	Ŝ A	AVC HDTV	13228	1003	1	Tuner S3	CAM 3	•			
	RTLplus Austria	A	AVC TV	13229	1003	1	Tuner S3		•			
	Service 13232	M	MPEG2 TV	13232	1003	1	Tuner S3		•			
	Service 13233	N	MPEG2 TV	13233	1003	1	Tuner S3		•			



In the DESTINATION column you can now choose the services you would like to send to a CA module.

Note:

It is possible to send services from different transponders to the same CA modules, so that the number of CA modules can be reduced.

Please do not overload the CA module with services and please ensure that the supported amount of PIDs is not overloaded.

The supplier of the CA module can inform you about how many PIDs the CA module can support.

RIAX										Dashboard	Admin	Logo
	COMPACT HEADEND Service Tool		1. Setti	ngs 2	Connec	tions 3. Inpu		5. Outputs	6. LCN 7. Overview		Save Config	gurati
ssign servi Service STATUS		TYPE	SID	TSID	ONID	SOURCE	DESTINATION	CAM SLOT	CARD		USED PID	DS
All 🗸	Q Search					Tuner S3	✓ All ✓	1	ORS MULTI PRO CAM		0	۰.
	<tuner s3=""></tuner>			1003	1	Tuner S3		2			0	۰,
	ORF SPORT+	\$ MPEG2 TV	13221	1003	1	Tuner S3	•	3	ORS MULTI PRO CAM		0	,
	Volksmusik	MPEG2 TV	13222	1003	1	Tuner S3	•	4			0	
	ATV2	\$ MPEG2 TV	13223	1003	1	Tuner S3	CAM 3 -	5			0	,
	Bibel TV HD	AVC HDTV	13224	1003	1	Tuner S3	CAM 1				0	
	Schau TV HD	AVC HDTV	13225	1003	1	Tuner S3	CAM 2	6			0	
	Starparadies AT	MPEG2 TV	13226	1003	1	Tuner S3	CAM 4				0	
	Hope TV	AVC HDTV	13227	1003	1	Tuner S3	CAM 5 CAM 6					
	ATV HD	\$ AVC HDTV	13228	1003	1	Tuner S3	CAM 7 CAM 8					
	RTLplus Austria	AVC TV	13229	1003	1	Tuner S3	- TANI 0					
	Service 13232	MPEG2 TV	13232	1003	1	Tuner S3						
	Service 13233	MPEG2 TV	13233	1003	1	Tuner S3						
-												

# By clicking the expand button on the CA menu the detailed configuration menu opens.

CAM								
SLOT	CARD	LOAD				USED SERVICES	USED PIDS	
1	IRDETO CAM PRO				23 of 72 Mbit/s	3	6	•
2	Irdeto Access				11 of 72 Mbit/s	4	4	•
Card S	peed		Card: Running				Reset	C
72 M	lbit/s	•	Error Recovery					
	Common Interfa	ce						
Associa	ated Services			Sour	се			
	RF2 W \$			Tune			\$	Û
	RF2 N \$			Tune			•	Û
	RF2 B \$ RF1 \$			Tune Tune			¢ 0	Û
					0 of 0 Mbit/s	0	0	•
4	Irdeto Access				9 of 72 Mbit/s	4	4	•
5	IRDETO CIPLUS CAN	1			30 of 72 Mbit/s	6	24	•



## TDcH & TDmH - Compact and Mini Headend

# Card speed:

Open the drop-down list with the card speeds if you want to use a higher card speed than the default. Select the required card speed.

#### Load:

The load shows current used payload and how much is free of the accessible payload. Transport stream packages are dropped if the load bar turns red, in which case the amount of associated services must be reduced.

SLOT	CARD	LOAD			USED SERVICES	USED PIDS	
1	IRDETO CAM PRO			28 of 72 Mbit/s	3	6	•
2	Irdeto Access		-	11 of 72 Mbit/s	4	4	
Card S	peed		oard: Running			Rese	1 <i>C</i>
72 N	lbit/s	-	Error Recovery				
	Common Interfa	ce					
		ce					
	ated Services	ce		Source			
		ce		Source Tuner S1	_	\$	Û
<b>2</b> 0	ated Services	ce			-	0	Û
<ul> <li>✓ ● 0</li> <li>✓ ● 0</li> </ul>	ated Services RF2 W \$	ce	_	Tuner S1			
<ul> <li>✓ ● 0</li> <li>✓ ● 0</li> </ul>	ated Services RF2 W \$ RF2 N \$ RF2 B \$	ce		Tuner S1 Tuner S1	=	¢	Û
<ul> <li>0</li> <li>0</li> <li>0</li> <li>0</li> <li>0</li> </ul>	ated Services RF2 W \$ RF2 N \$ RF2 B \$	ce		Tuner S1 Tuner S1 Tuner S1	0	0	Û
<ul> <li>0</li> <li>0</li> <li>0</li> <li>0</li> <li>0</li> </ul>	ated Services RF2 W \$ RF2 N \$ RF2 B \$			Tuner S1 Tuner S1 Tuner S1 Tuner S1	0	0	Û

# Service list area (Associated Services)

Select the service(s) you want to descramble in the Service list area by clicking the service(s) at the selected button. Scrambled services are marked with a dollar sign - \$.

#### Note:

Please note that the services in the CAM menu have to be assigned with the check box to be descrambled!

#### **Used PIDs:**

This number shows how many PIDs the CAM is using for descrambling the TV services.

Please ensure that the CA module is not overloaded with used PIDs. The numbers of PIDs a CA-module can support depends on CA module. Please ask the CAM supplier or the program operator if you are unsure how many PIDs the CA module can support.

CAM									
SLOT	CARD	LOAD					USED	USED	
							SERVICES	PIDS	
1	IRDETO CAM PRO					23 of 72 Mbit/s	3	6	•
2	Irdeto Access					11 of 72 Mbit/s	4	4	
	d		Quel Burnley						
Card S	peed		Card: Running					Reset	$\mathcal{C}$
72 M	bit/s	-	🗹 Error Recover	у					
	Common Interface	e	7						
Associa	ated Services				Sourc	ce			
<b>2</b> • 0	RF2 W \$				Tune	r S1		¢	Û
<b>2</b> 0					Tune			•	Û
<b>2</b> • 0					Tune				Û
<b>2</b> 🔵 OI	RF1 \$				Tune	r S1		<b>\$</b>	Û
		I.				0 of 0 Mbit/s	0	0	•
4	Irdeto Access					9 of 72 Mbit/s	4	4	•
5	IRDETO CIPLUS CAM					30 of 72 Mbit/s	6	24	•

#### **Error Recovery**

If you select the "Error Recovery" checkbox then the automatic error recovery is enabled for all services assigned to this CA-module.

#### Note:

The Error Recovery function does a constant monitoring of the signal transmission status through the CA module. The CA module is automatically reset if the signal transmission fails. When a CA module is reset, the signal transmission is interrupted for all the services associated with that CA module. The "Error Recovery" checkbox should not be enabled for services where signals are not transmitted on a 24-hour basis.

#### **Filter options**

To change the Filter options for a service, click the Setup button of the service in question to open the Filter options window.



To descramble all PIDs that are not audio or video related, click the "Descramble non audio/video" PIDs checkbox.

By default, all audio PIDs (Packet Identifier) associated with the service are descrambled.

To descramble only selected audio PIDs you must deselect the Descramble all audio PIDs checkbox. Deselecting the Descramble all audio PIDs checkbox displays a field with a drop-down list below the checkbox.

Open the drop-down list and select the language of the audio PID you want to descramble.

An additional field with a language drop-down list is displayed every time you select a language. You can descramble as many audio PIDs as you need.

Irdeto Access

Card Speed

72 Mbit/s

ORF2 B

# 5.7.3 Common interface

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.

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

# 5.7.4 Reset CAM

If the CA module malfunctions, click the Reset CAM button to reboot the CA module. When a CA module is reset, the signal transmission is interrupted for all the services associated with that CA module.

EN

2 Irdeto Access			12 of 72 Mbit/s	4	4	•
ard Speed		Card: Running			Reset	G
72 Mbit/s	•	Error Recovery			1	$\sim$
Common Interface						
Associated Services			Source			
🗹 🌑 ORF2 W \$			Tuner S1		¢	Û
🗹 🔵 ORF2 N \$			Tuner S1		¢	Û
🖌 🔵 ORF2 B \$			Tuner S1		¢	Û
ORF1 \$			Tuner S1		¢	Û

Card: Running

Error Recovery

Descramble all	Cancel	Submit
	(`AM	

Descramble options for ORF1 HD



12 of 72 Mbit/s

Tuner S1

.

Reset 💭





# 5.8 RF Outputs

The Output Tab is for assigning services to the RF output channels and to the IPTV addresses.

Note:

In most models the output modulation can be changed between QAM and COFDM. Select the required output modulation before you start to configure the TDcH & TDmH.

For changing the output modulation, please see 5.3.6 Output Modulation.

	COMPACT HEADEND Service Tool	*-	,		444	- 🤶	- 🕞 -				
		1. Settings	2. Conne	tions	3. Inpu	ts 4. CAM	5. Outputs	6. LCN	7. Overview		
n servi	ces to Outputs.										
	List							RF O	utput IP Ou	itput	
	NAME	TYPE	SID	TSID	ONID S		DESTINATION	OUTPUT	CHANNEL	LOAD	
٣	Search				1	NI +	All 👻		S21 (306 MHz)		30 of 51 Mbit/s
	<cam 1=""></cam>			0	70 C	AM 1		2	S22 (314 MHz)		31 of 51 Mbit/s
	ORF1 HD	AVC HDTV	4911	0	70 Ca	AM 1	IP Output, 👻	3	S23 (322 MHz)		41 of 51 Mbit/s
	ORF2W HD	AVC HDTV	4912	0	70 C	AM 1	IP Output, *	4	S24 (330 MHz)	1	0 of 51 Mbit/s
	ServusTV HD Oesterreich	AVC HOTV	4913	0	70 C	AM 1	IP Output, 👻	6	S25 (338 MHz)		0 of 0 Mbit/s
	ORF2N HD	AVC HOTV	4916	0	70 C	AM 1	-	6	S26 (346 MHz)		0 of 0 Mbit/s
	<tuner s1=""></tuner>			1089	1 T.	uner S1		0	\$27 (354 MHz)		0 of 0 Mbit/s
	RTL Television	MPEG2 TV	12003	1089	1 T.	uner S1	Output 2 👻		S28 (362 MHz)	1	0 of 0 Mbit/s
	RTLZWEI	MPEG2 TV	12020	1089	1 T.	uner S1	Output 2 *	0	S29 (370 MHz)		0 of 0 Mbit/s
	SUPER RTL	MPEG2 TV	12040	1089	1 T.	uner S1	Output 2 🔹	0	S30 (378 MHz)	1	0 of 0 Mbit/s
	VOX	MPEG2 TV	12060	1089	1 Tu	uner S1	Output 2 -	0	S31 (386 MHz)		0 of 0 Mbit/s
	ntv	MPEG2 TV	12090	1089	1 T.	uner S1	Output 2 -	12	\$32 (394 MHz)		0 of 0 Mbit/s
	RTLup	MPEG2 TV	12080	1089	1 T.	uner S1	Output 2 -	13	S33 (402 MHz)		0 of 0 Mbit/s
	NITRO	MPEG2 TV	12061	1089	1 T.	uner S1	Output 2 *	14	S34 (410 MHz)	1	0 of 0 Mbit/s
	RTL HB NDS	MPEG2 TV	12005	1089	1 T.	uner S1	-	15	\$35 (418 MHz)		0 of 0 Mbit/s
	RTL Regional NRW	MPEG2 TV	12004	1089	1 T.	uner S1	-	6	S36 (426 MHz)	1	0 of 0 Mbit/s
	RTL Bayern	MPEG2 TV	12006	1089	1 T.	uner S1	•				
	TOGG0 plus	MPEG2 TV	12030	1089	1 Tu	uner S1	-				
	RTL HH SH	MPEG2 TV	12009	1089	1 T.	uner S1	-				
	TOGGO Radio	RADIO	12091	1089	1 T.	uner S1	-				

The first time the Service Tool displays the configuration window for the output in a new configuration, the fields in the window will display default values and/or be empty, and the output will be disabled.

# **Channel plan:**

Before starting the Output configuration please be sure that the channel plan is set in the Settings folder!



COMPACT HEADEND Service Tool	1. Settings 2. Connections 3. Inputs	4. CAM 5. Outputs 6. LCN 7. Over		
ings configure the main information in order to proceed the device set	φ.			
	* IP of this interface	* Subnet Mask	* Default Gateway	
	10.43.1.198	255.255.255.0	10.43.1.254	
	MAC Address: 30:1f:9a:70:72:d8		Sul	bmit
	DHCP O Manual     Ethernet port 2 interface	* Subnet Mask		
	MAC Address:		Sul	bmit
	* SFP interface	* Subnet Mask		
	192.168.100.200	255.255.255.0		
	MAC Address: 30:1f:9a:70:72:da		Sul	bmit
	Device Name	Output Modulation	Channel Plan	
		QAM	• B/G	•
	Language	Timezone	9 antry	
	ENG	• UTC	•	•
	Device Description			
	Installer	Installer Email	Installer Phone	70)

#### Select service:

Note:

Services can be assigned to an output channel in direct conversion or as a new multiplex. In the direct conversion a full input transponder is assigned to an output channel. If a new multiplex is made, single services can be chosen from independent input transponders.

# Direct channel conversion / Transparent mode:

Select under DESTINATION for each Input the output you would like to use the direct conversion function.

#### Note:

All services below this input will be shown as assigned to the selected outputs and cannot be used for other outputs!

Please note that services allocated in direct conversion to an output are not shown in the LCN table. Only services allocated in new multiplexes are shown in the LCN list!

Service STATUS	NAME	TYPE	SID	TSID	ONID	SOURCE		DESTINATI	ON
All 🗸	Q Search					All	~	All	~
	<tuner tc1=""></tuner>			31	3	Tuner TC1		Output 1	Ŧ
	BR Fernsehen Süd HD	AVC HDTV	10325	31	3	Tuner TC1			~
	NDR FS SH HD	AVC HDTV	10330	31	3	Tuner TC1		Output 2 Output 3	
	PHOENIX HD	AVC HDTV	10331	31	3	Tuner TC1		Output 4	
	Welt der Wunder	MPEG2 TV	13103	31	3	Tuner TC1		Output 5 Output 6	
	<tuner s1=""></tuner>			1007	1	Tuner S1		Output 7 Output 8	
	ORF1 HD	\$ AVC HDTV	4911	1007	1	Tuner S1		Output 9	
	ORF2W HD	\$ AVC HDTV	4912	1007	1	Tuner S1		Output 10 Output 11	
	ServusTV HD Oesterreich	\$ AVC HDTV	4913	1007	1	Tuner S1		Output 12	
	ServusTV HD Deutschland	AVC HDTV	4914	1007	1	Tuner S1		Output 13 Output 14	
	ORF2N HD	\$ AVC HDTV	4916	1007	1	Tuner S1		Output 15 Output 16	
	OE3.	RADIO	4920	1007	1	Tuner S1			-

#### New multiplex / Service mode:

If you would like to make a new output multiplex you can select individual services from different inputs for each output.

#### Note:

Please ensure that in both variations the output bandwidth is not overloaded!



# 5.8.1 QAM Modulation

## **Enable All RF Outputs**

You can quickly enable or disable all RF outputs by this setting.

# QAM output frequency:

You can configure a QAM output frequency by using the specifications of the channel plan or by entering a frequency manually.

# Using the channel plan definitions:

Open the drop-down list with the predefined channels and select the channel you want to use.

#### Note:

The Channel is only needed for Output 1 – all others are set automatically!

RF Ou	tput IP Out	put	
	II RF Outputs		
OUTPUT	CHANNEL	LOAD	
1	S21 (306 MHz)		32 of 51 Mbit/s 🛛 🔻
2	S21 (306 Mhz) S22 (314 Mhz)		37 of 51 Mbit/s 🔹 🔻
3	S23 (322 Mhz) S24 (330 Mhz)		33 of 51 Mbit/s
4	S25 (338 Mhz) S26 (346 Mhz)		39 of 51 Mbit/s 🔹 🔻
5	S27 (354 Mhz) S28 (362 Mhz)		31 of 51 Mbit/s 🗸 🔻
6	S29 (370 Mhz) S26 (346 MHz)		41 of 51 Mbit/s 🗸
0	S27 (354 MHz)		44 of 51 Mbit/s
8	S28 (362 MHz)		1 of 51 Mbit/s 🔹 👻
9	S29 (370 MHz)		37 of 51 Mbit/s
10	S30 (378 MHz)		7 of 51 Mbit/s
11	S31 (386 MHz)		33 of 51 Mbit/s
12	S32 (394 MHz)	1	0 of 51 Mbit/s
13	S33 (402 MHz)	1	0 of 51 Mbit/s
14	S34 (410 MHz)	I	0 of 51 Mbit/s 🔹 👻
15	S35 (418 MHz)	1	0 of 51 Mbit/s 🔹 🔻
16	S36 (426 MHz)		41 of 51 Mbit/s

# Enter a frequency manually:

Click into the frequency field and enter the frequency directly. Enter the desired frequency in MHz in the Frequency field.

#### Note:

The Channel is only needed for Output 1 all others are set automatically!



## TDcH & TDmH - Compact and Mini Headend

Open the detailed output configuration menu with the extend button.

# **Constellation:**

To select which QAM mode to use, open the dropdown list and select the QAM mode you want to use.

#### Symbol rate:

Enter the desired symbol rate (from 3150 to 7200 kS) in the Symbol rate field.

1 S23 (322 MHz)						37 of	51 Mbit/s
Constellation		Symbo	ol Rate		Level Corre	ection	1
QAM256	-	- 6900	D		0		
Transportstream ID		Manua	al SDT version				
1		auto	matic			PID Manager	nent
Associated Capiloon		Dutout CID	Time	Course			🗸 Enable Outp
		Dutput SID	Туре	Source	_	_	🖌 Enable Outp
DR1	10000	1	AVC HDTV	Tuner TC3	_	_	✓ Enable Outp
DR1 DR1Syn	10000 10005	1 2	AVC HDTV AVC HDTV	Tuner TC3 Tuner TC3		_	✓ Enable Outp
DR1 DR1Syn DR2	10000 10005 10010	1	AVC HDTV	Tuner TC3			✓ Enable Outp © ©
DR1 DR1Syn DR2 DR2Syn	10000 10005 10010 10015	1 2 3	AVC HDTV AVC HDTV AVC HDTV	Tuner TC3 Tuner TC3 Tuner TC3	=	=	✓ Enable Outp
DR1 DR1Syn DR2 DR2Syn DR Ramasjang	10000 10005 10010 10015 10020	1 2 3 4	AVC HDTV AVC HDTV AVC HDTV AVC HDTV	Tuner TC3 Tuner TC3 Tuner TC3 Tuner TC3	=	=	C Enable Out
DR1 DR1Syn DR2 DR2Syn DR Ramasjang TV SYD	10000 10005 10010 10015 10020 10034	1 2 3 4 5	AVC HDTV AVC HDTV AVC HDTV AVC HDTV AVC HDTV	Tuner TC3 Tuner TC3 Tuner TC3 Tuner TC3 Tuner TC3 Tuner TC3	=	=	C Enable Outp
Associated Services DR1 DR1Syn DR2 DR2Syn DR2 DR3sing TV SYD FOLKETINGET Syd	10000 10005 10010 10015 10020 10034 10040	1 2 3 4 5 6	AVC HDTV AVC HDTV AVC HDTV AVC HDTV AVC HDTV AVC HDTV	Tuner TC3 Tuner TC3 Tuner TC3 Tuner TC3 Tuner TC3 Tuner TC3		=	Enable Outp  Enable Outp  C  C  C  C  C  C  C  C  C  C  C  C  C

#### Level correction:

RF output level correction can be set in the first output channel for all output channels between 0 and -16 dB.

#### **Enable Output:**

If you want to enable this channel, click the Enable Output checkbox.

#### Note:

If the output is disabled, then there will be no transport stream or carrier present at this output. The services selected for this output will still be seen as configured in the system. The information about the services at this output will still exist via EIT\_other, SDT\_other and NIT\_other!

#### LOAD monitor

The payload monitor is a real time monitor, which visually indicates the amount of data currently being transmitted.

ITPUT CHANNEL	LOAD				
1 S23 (322 MHz)					37 of 51 Mbit/s
Constellation	1	Symbol Rate		Level Correction	
QAM256	-	6900		0	
Transportstream ID		Manual SDT version			
1		automatic		PID	Management
I		datomatic			
					<mark> /</mark> Enable Outpu
ssociated Services		put SID Type	Source		
	10000 1	put SID Type AVC HDTV	Source Tuner TC3	_	
ssociated Services		put SID Type		_	6
ssociated Services	10000 1	put SID Type AVC HDTV	Tuner TC3	_	
issociated Services DR1 DR1Syn	10000 1 10005 2	put SID Type AVC HDTV AVC HDTV	Tuner TC3 Tuner TC3	_	6
issociated Services DR1 DR1Syn DR2	10000 1 10005 2 10010 3	put SID Type AVC HDTV AVC HDTV AVC HDTV	Tuner TC3 Tuner TC3 Tuner TC3	=	
ssociated Services DR1 DR1Syn DR2 DR2Syn	10000         1           10005         2           10010         3           10015         4	put SID Type AVC HDTV AVC HDTV AVC HDTV AVC HDTV	Tuner TC3 Tuner TC3 Tuner TC3 Tuner TC3	=	
ssociated Services DR1 DR1Syn DR2 DR2Syn DR Ramasjang	10000         1           10005         2           10010         3           10015         4           10020         5	put SID Type AVC HDTV AVC HDTV AVC HDTV AVC HDTV AVC HDTV	Tuner TC3 Tuner TC3 Tuner TC3 Tuner TC3 Tuner TC3	=	
ssociated Services DR1 DR1Syn DR2 DR2Syn DR Ramasjang TV SYD	10000         1           10005         2           10010         3           10015         4           10020         5           10034         6	Put SID Type AVC HDTV AVC HDTV AVC HDTV AVC HDTV AVC HDTV AVC HDTV	Tuner TC3 Tuner TC3 Tuner TC3 Tuner TC3 Tuner TC3 Tuner TC3		



# 5.8.2 COFDM Modulation

#### CHANNEL

You can configure a COFDM output frequency by using the specifications of the channel plan or by entering a frequency manually.

#### Using the channel plan definitions:

Open the drop-down list with the predefined channels and select the channel you want to use.

#### Note:

The Channel is only needed for Output 1 – all others are set automatically!

## Enter a frequency manually:

Click into the frequency field and enter the frequency directly. Enter the desired frequency in MHz in the Frequency field.

#### Note:

The Channel is only needed for Output 1, all others are set automatically!

#### Constellation

To select which transmission mode to use, click the arrow to the right of the Transmission mode field to open the drop-down list with the modes you can choose from.

Select the transmission mode you want to use.

#### **Level Correction:**

RF output level correction can be set in the first output channel for all output channels between 0 and -16 dB.

#### FEC

To select which FEC rate to use, click the arrow to the right of the FEC field to open the drop-down list with the FEC rates you can choose from.

Select the FEC rate you want to use.

#### **Guard Interval**

To select which guard interval to use, click the arrow to the

right of the Guard interval field to open the dropdown list with the intervals you can choose from.

Select the guard interval you want to use.

Output:		LOAD		
	S21 (306 MHz)			0 of 51 Mbit/s
Constella	S21 (306 MHz) S22 (314 MHz)	ì	Level Correction	
QPSK		~	0	
FEC	S24 (330 MHz) S25 (338 MHz) S26 (346 MHz)		Guard Interval	
1/2	S27 (354 MHz) S28 (362 MHz) S29 (370 MHz)	•	1/4 ~	Enable Output
2	S22 (314 MHz)	1		0 of 51 Mbit/s
	S23 (322 MHz)			0 of 51 Mbit/s

1 S21 (306 MHz)			0 of 51 Mbit/s
Constellation		Level Correction	
QPSK	~	0	
QPSK QAM16 QAM64		Guard Interval	
1/2	*	1/4 ~	Enable Output
2 S22 (314 MHz)	I.		0 of 51 Mbit/s
3 S23 (322 MHz)			0 of 51 Mbit/s

DUTPUT CHANNEL	LOAD		
1 S21 (306 MHz)			0 of 51 Mbit/s
Constellation		Level Correction	
QPSK	~	0	
FEC		Guard Interval	
1/2	~	1/4 ~	
			Enable Output
2 S22 (314 MHz)	1		0 of 51 Mbit/s 🔹
3 S23 (322 MHz)			0 of 51 Mbit/s
4 S24 (330 MHz)	1		0 of 51 Mbit/s



#### **Enable Output:**

If you want to enable this channel, click the Enable Output checkbox.

# LOAD monitor

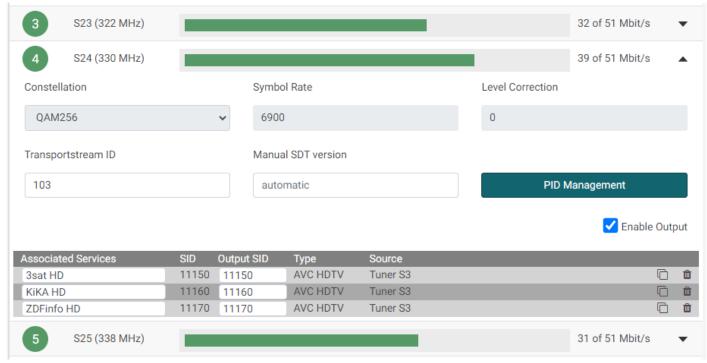
The payload monitor is a real time monitor, which visually indicates the amount of data that is currently being transmitted.

# 5.8.3 TSID and SID Management – RF Output

# Manual SDT version

The SDT version will stay fixed to the configured value if the "Manual SDT version" is set.

The SDT version will automatically be increased by one if this configuration is not set and other configuration changes affect the SDT.



#### **Transport stream ID**

In the field Transport stream ID you will find the actual used Transport stream ID.

If you would like to change this you can type a new value into the field.

Note:

If there is a conflict with another Transport stream using the same ID, the field and the ID number will have a red indication!

#### **Output SID**

In the field Output SID you will find the actual used Output SID.

If you would like to change this, you can type a new value into the field.

Note:

If there is a conflict with another Output using the same ID, the field and the ID number will have a red indication!



# 5.8.4 PID Management – RF Output

Pressing the PID Management button opens the PID management menu.

In PID Management window you will find the following information:

Service Name Output SID Stream Type Details like CAS ID, Audio type, etc. Original PID Selected YES/NO Conflicts FIXED PID Output PID

# Filter PID's

By deselecting the filter check box you can deselect (filter) PID's.

This can be used if you would like to reduce audio or other information from the service.

#### **Fixed PID**

If you enter a PID in the "FIXED PID" field the PID will be changed to this setting.

#### Note:

If a PID is used twice there will be an error indication shown and the PID with the same value will be highlighted.

PID Manager	nent							
SERVICE	OUTPUT SID	STREAM TYPE	DETAILS	ORIGINAL PID	SELECTED	CONFLICT	FIXED PID	OUTPUT PID
ORF1 HD	4911	PMT		107				107
ORF1 HD	4911	ECM	CAS ID: 1608	120		A	122	120
ORF1 HD	4911	ECM	CAS ID: 1616	122		A		122
ORF1 HD	4911	ECM	CAS ID: 3477	270				270
ORF1 HD	4911	ECM	CAS ID: 3480	272				272
ORF1 HD	4911	ECM	CAS ID: 1762	320				320
ORF1 HD	4911	ECM	CAS ID: 1280	461				461
ORF1 HD	4911	ECM	CAS ID: 2445	470				470
ORF1 HD	4911	ECM	CAS ID: 2500	480				480
ORF1 HD	4911	ECM	CAS ID: 2444	490				490
ORF1 HD	4911	H264 Video (PCR)	AVC	1920				1920
ORF1 HD	4911	Private data	deu, AC3	1921				1921
ORF1 HD	4911	Private data	mis, AC3	1922				1922
ORF1 HD	4911	Teletext		1925				1925
	4011	Ann Cinneline		7010				7010
								Close



# 5.8.5 Multiple services – RF Output

The TDcH & TDmH support sending out services multiple times.

This functionality can be used to send out the service with different audio languages.

This has the advantage that the services are available multiple times in the service list, so the customer can choose the service with the desired audio language by simply changing the channel. They do not have to use the audio function of the television.

4 S24 (330 MHz)						39 of 51 Mbit/s
Constellation		Symbol	Rate		Level Correction	
QAM256	~	6900			0	
ransportstream ID		Manual	SDT version			
103		autom	natic		PID	Management
						Enable Outr
						Enable Outp
ssociated Services	SID Out	put SID	Туре	Source		Enable Outp
ssociated Services 3sat HD		put SID 150	Type AVC HDTV	Source Tuner S3	_	Enable Out
	11150 11				_	
3sat HD	11150 11 11160 11	150	AVC HDTV	Tuner S3	_	G

With this function it is also possible to make language packages in the channel plan so the services with the same languages are in one block in the channel list.

If you press the copy button the service will be added as a copy.

#### Note:

The common elements will only exist once in the stream, so this is not a one-to-one increase in the payload! Payload is only effected by the extra PMT and different elements like different audio languages.

## 5.8.6 Rename services – RF Output

The service name for any service, like a duplicated service, can be renamed. A service is renamed via the field below Associated Services.

# 5.8.7 Configure service type – RF Output

If the service is originating from a stream without SDT from an IP-input, then the service type will be unknown due to the missing SDT. The missing SDT will result in the service name being shown as "Unknown" in the *Type* field and it is possible to configure it. If you are in doubt then set the type to "MPEG 2 TV" for a TV service and "Radio" for a radio service.



# 5.9 IP Output

# 5.10 License

IP output licenses need to be purchased from TRIAX to enable the distribution of IP services through the TDcH & TDmH headend system.

Required license numbers:

Item No.:	418740	TDcH IP-out license
Item No.:	418751	TDmH IP-out 48 license

Licenses are activated using License handling in the Administration window.

# 5.11 Requirements

The TDcH & TDmH streams Multicast UPD/RTP SPTS streams out with 7 transport streams packets per IP packet.

Note:

The TDcH & TDmH headends system must be connected to a Gigabit network switch to receive and deliver IP services. The network switch must support IGMP version 2 / 3 and contain an adequate number of ports.

Cat 5e shielded or better network cables must be used.

# 5.12 Hardware

# **Optional hardware:**

A fibre-optic transceiver can be used instead of an RJ45 SFP transceiver. This is especially relevant for pre-existing optical installations, or for installations with high levels of interference and/or total cable lengths exceeding 100m. The fibre-optic transceiver must be ordered separately.

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Item No.:	492086	SFP RJ45
Item No.:	492087	SFP Fiber 850nm EOLS-8512-MXX (500m)
Item No.:	492088	SFP Fiber 1310nm EOLS-1324-02XX (2km)



# 5.13 IPTV out configuration in GUI

Enter the configuration for IPTV out in the GUI by entering the *Output* tab in the panes and the *IP Output* sub-tab.

COMPACT HEADEND		×	*)-	-(		)-(	<u>\$</u>	•	—	[→ – (E					Save Config
Service Tool		1. Sett	tings	2. Conr	ections 3. Inp			5. Scrambl		Outputs 7. LCN					
									1						
services to Outputs.									RF (	Output IP C	Dutput				
									TTL	1		Total Rate			
US NAME	TYPE	SID	TSID	ONID	SOURCE	(	DESTINATI	DN	16			Total Nate	-		59 of ~95
- Q Search					All	Ŧ	All	· .			1	-			3901-93
<tuner s1=""></tuner>		1	1055	1	Tuner S1			_/		IP ADDRESS	UDP PORT	RTF	NAME	RATE	
Disney Channel HD	\$ AVC HDTV	5500	1055	1	Tuner S1			•		239.192.116.1	50176		Das Erste HD	16 Mbit/s	ť
HSE Extra HD	AVC HDTV	5501	1055	1	Tuner S1		Output 1	•		239.192.116.2	50176		ZDF	6 Mbit/s	ť
1-2-3.tv HD	AVC HDTV	5502	1055	1	Tuner S1		Output 1	•		239.192.116.3	50176		NDR FS SH	9 Mbit/s	ť
Deluxe Music HD	\$ AVC HDTV	5503	1055	1	Tuner S1			•		239.192.116.11	50176		Bremen Eins	0.8 Mbit/s	ť
QVC ZWEI HD	AVC HDTV	5504	1055	1	Tuner S1		Output 1	-		239.192.116.12	50176		Bremen Zwei	0.8 Mbit/s	ť
SPORT1 HD	\$ AVC HDTV	5505	1055	1	Tuner S1			•		239.192.116.13	50176		Bremen Vier	0.8 Mbit/s	ť
Disney Channel HD Austria	\$ AVC HDTV				Tuner S1			•		239.192.200.1	50176		NDR FS MV	9 Mbit/s	ť
Deluxe Music HD Austria	\$ AVC HDTV				Tuner S1			•		239.192.200.2	50176		NDR FS HH	9 Mbit/s	ť
<tuner s2=""></tuner>			1039		Tuner S2				Ŏ	239.192.200.3	50176		NDR FS NDS	9 Mbit/s	ť
tagesschau24 HD	AVC HDTV	10375	1039	1	Tuner S2		Output 2	•							
ONE HD	AVC HDTV	10376	1039	1	Tuner S2		Output 2	•							
ARD alpha HD	AVC HDTV	10377	1039	1	Tuner S2		Output 2	•							
SR Fernsehen HD	AVC HDTV	10378 1	1039	1	Tuner S2		Output 2	•							

# TTL

Time to live (TTL) or hop limit is a mechanism which limits the lifespan or lifetime of data in a computer or network. TTL may be implemented as a counter or timestamp attached to or embedded in the data. Once the prescribed event count or timespan has elapsed, data is discarded or revalidated. In computer networking, TTL prevents a data packet from circulating indefinitely. In computing applications, TTL is commonly used to improve the performance and manage the caching of data. Standard value is 16.

# **TOTAL RATE (LOAD monitor)**

The payload monitor is a real time monitor, which visually indicates the amount of data that is currently being transmitted. The figure shows the total bandwidth of all IP-out services!



# Assign service to streaming at IPTV output:

Services can be assigned to an IPTV output.

Receive an IP stream by following the few steps below:

- 1) Select the *Outputs* tab in the panes.
- 2) Select the *IP Output* sub-tab.
- 3) Press the New IP output button for streaming a new IPTV out.
- 4) Specify the desired IP address and associated UDP port number.
- 5) System will automatically update the rate [Mbit/s] for the stream plus the total rate.

RIAX						Ua.	shboard Admin Log
	* – *						Save Configuration
	1. Settings 2. Connect	ons 3. Inputs 4. C/	AM 5. Scrambler	6. Outputs 7. LCN 8. Overvie	<b>*</b>		
ssign services to Outputs.			3)				
ervice List			3)	RF Output IP Outpu	t		
TATUS NAME	TYPE SID TSID O		DESTINATION		Total Rate		
All - Q Search	TTPE SID TSID O	CAM 2	✓ All ✓	<sup>16</sup> 2)	1		0 of ~950 Mb
CAM 2>	0 1	0 CAM 2		IP ADDRESS	UDP PORT	RTP NAME	RATE
ORF2 W	MPEG2 TV 13003 0 1	0 CAM 2	Output 2 -				
ORF2 N	MPEG2 TV 13004 0 1	10 CAM 2	New IP output Output 1				
ORF2 B	MPEG2 TV 13005 0 1	1)	Output 2 🗸 Output 3				
ORF1	MPEG2 TV 13001 0 1	10 CAM 2	Output 4 Output 5				
			Output 6				
sign services to Outputs.							
ervice List				RF Output IP Outpu	t		
				TTL	Total Rate		
ATUS NAME	TYPE SID TSID OF	ID SOURCE CAM 2	All	16	1		4 of ~950 N
CAM 2>	0 10	0 CAM 2		IP ADDRESS UDP	PORT RTP NAME	RATE	
ORF2 W	MPEG2 TV 13003 0 10	0 CAM 2	IP Output, •	239.0.1.0 501	176 ORF2 W	4 Mbit/s	Û
ORF2 N	MPEG2 TV 13004 0 10	0 CAM 2	Output 2 -	1 1			
ORF2 B	MPEG2 TV 13005 0 10	0 CAM 2	Output 2 •	4) 5)			
ORF1	MPEG2 TV 13001 0 10	0 CAM2	Output 2 •				

#### Note:

Start the IP-out configuration by assigning the first services which should be sent out as IPTV service. Administrate the IP address. All following IPTV services will follow the IP address range by increasing the last number by 1.

#### **IP ADDRESS**

Specifies the IP Address of an IPTV service. Enter a multicast IP address between 224.0.0.0 and 239.255.255.255 in the IP address field.

#### **UDP PORT**

Enter the desired IP port number in the Port field within the range '1025 to '65535'.

#### RTP

Select the RTP check box to enable Real-Time.



Open the detailed output configuration menu with the extend button.

RF Output IP (	Dutput			
π.		Total Rate		
16		-		58 of ~950 Mbit,
IP ADDRESS	UDP PORT	RTP NAME	RATE	
239.192.116.1	50176	Das Erste HD	14 Mbit/s	ŵ 4
Transportstream ID				1
4			PID Man	agement
Associated Services		It SID Source		
Das Erste HD	10301 103	AVC HDTV Tuner S7		
239.192.116.2	50176	□ ZDF	7 Mbit/s	÷ t

# 5.13.1 TSID and SID Management – IP Output

# **Transport stream ID**

In the field Transport stream ID you will find the actual used Transport stream ID. If you would like to change this you can type a new value into the field.

# Note:

If there is a conflict with another Transport stream using the same ID, the field and the ID number will have a red indication!

# **Output SID**

In the field Output SID you will find the actual used Output SID. If you would like to change this, you can type a new value into the filed.

Note:

If there is a conflict with another Output using the same ID, the field and the ID number will have a red indication!

# 5.13.2 Rename Service – IP Output

# **Rename Service**

The service name for any service can be renamed. A service is renamed via the field below "Associated Services".

# 5.13.3 Configure service type – IP Output

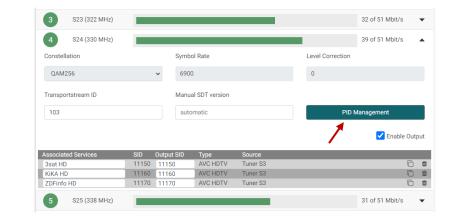
If the service has originated from a stream without SDT from an IP-input, then the service type will be unknown due to the missing SDT. The missing SDT will result in the service name being shown as "Unknown" in the *Type* field and it is possible to configure it. If in doubt then set the type to "MPEG 2 TV" for a TV service and "Radio" for a radio service.



# 5.13.4 PID Management – IP Output

Pressing the PID Management button opens the PID management menu. In the PID Management window you will find the following information:

> Service Name Output SID Stream Type Details like CAS ID, Audio type, etc. Original PID Selected YES/NO Conflicts FIXED PID Output PID



# Filter PID's

By deselecting the filter check box you can deselect (filter) PID's.

This can be used if you would like to reduce audio or other information from the service.

# **Fixed PID**

If you enter a PID in the "FIXED PID" field the PID will be changed to this setting.

Note:

If a PID is used twice there will be an error indication shown and the PID with the same value will be highlighted.

# 5.13.5 Multiple services – IP Output

The TDcH & TDmH support sending out IPTV services multiple times.

This functionality can be used to send out the service with different audio languages.

This has the advantage that the services are available multiple times in the service list, so the customer can choose the service with the desired audio language by simply changing the channel. They do not have to use the audio function of the television.

With this function it is also possible to make language packages in the channel plan so the services with the same languages are in one block in the channel list.

To have a service multiple time as IPTV out select the services and generate a new IP address.



# 5.14 LCN page

At the LCN page it is possible to set the Network Settings parameters and administer the LCN (Local Channel Number) numbers.

٢V	COMPACT		1. Settings 2. Connec	tions 3. Inputs		5. Outputs	6. LCN	7. Overview			Save Configura
letwo	ork Settir	ngs									
NETWOR	RK ID		ORIGINAL NETWORK ID				NETWORK N	IAME	EIT		
0			70				TRIAX-NET		Full ac	ctual - P/F other	
IT STAI	NDARD						STATIC NIT \	VERSION	NIT OTH	HER NETWORK ID	
Nordig							- automatic		disable	ed	
Private D	escriptor		LCN Size (Bit)				-				
Servio	ce Discov	very					EPG				
PORT 1			PORT 2				PORT 1		PORT 2		
http://10.43.1.198/service.info/m3u http://10.43.1.198/service.info/m3ue http://10.43.1.198/service.info/m3uepp http://10.43.1.198/service.info/m3uepp		http:///serviceinfo/m3u http:///serviceinfo/m3ue http:///serviceinfo/m3uepj http:///serviceinfo/xspf	,			http://10.43.1	.198/epg/samsung	http:///ej	pg/samsung		
							Preferred Lan	guage		y Rating Country	
							deu		- Germa	uny	
							Alternative La	inguage			
							eng		•		
LCN		umbers associated to each service.									
RF	IN and HULCN I	sumbers associated to each service.					IP				
	HDLCN	NAME		OUTPUT SID	DESTINATION	SOURCE	LCN	NAME		OUTPUT SI	D DESTINATION SOURCE
0	0	ORF1 HD		4911	Output 1	CAM 1	1	ORF1 HD		4911	239.0.1.1:1234 CAM 1
0	0	ORF2W HD		4912	Output 1	CAM 1	2	ORF2W HD		4912	239.0.1.2:1234 CAM 1
	0	ServusTV HD Oesterreich		4913	Output 1	CAM 1	3	ServusTV HD Oesterreich		4913	239.0.1.3:1234 CAM 1

# 5.14.1 Network Settings

TV COMPACT HEADEND Service Tool	<ul> <li>★ - ★ - ↓↓↓ - ↓↓ - ↓↓</li> <li>1. Settings 2. Connections 3. Inputs 4. CAM 5. Outputs</li> </ul>	6.LCN 7. Civerifeew	Save Configuration
Network Settings			
NETWORK ID	ORIGINAL NETWORK ID	NETWORK NAME	EIT
0	70	TRIAX-NET	Full actual - P/F other
NIT STANDARD		STATIC NIT VERSION	NIT OTHER NETWORK ID
Nordig		automatic	disabled
Private Descriptor 41	LCN Size (Bit) 14 -		

#### **Network ID**

Enter the required network ID in the Network ID field. If it is an open network, the network ID must follow the "ETSI TR 101 211" guidelines. If it a closed network you can determine the ID yourself.

## **ORIGINAL NETWORK ID**

Enter the required original network ID in the Original Network ID field.

#### **NETWORK NAME**

Enter a network name in the Network name field. The maximum number of characters you can enter in the field is 255.



# **EIT (EPG Management)**

The Event Information Table (EIT) dropdown list enables you to change the EIT settings for both DVB-T and DVB-C.

		Save Configuration
Scrambler 6. Outputs 7. LO	CN 8. Overview	
NETWORK NAME	EIT	
TRIAX-NET-LTT12	8 days full actual - Full o	ther 👻
STATIC NIT VERSION	8 days full actual - Full ot 8 days full actual - P/F ot 8 days full actual - No ott 4 days full actual - Full ot	ther her
automatic	4 days full actual - P/F ot 4 days full actual - P/F ot 4 days full actual - No ot	ther
	P/F actual - P/F other P/F actual - No other No actual - No other	

#### Note:

Please note that the TDcH & TDmH EPG management function supports 4 or 8 days EPG information per service independent of whether the EPG is set to "Full" or "P/F". That the EPG is available at the input source is of course a general requirement.

The following settings can be set up:

- Full Actual - Full Other (4 or 8 days)

All outputs will have all EIT information available, so all actual present/following, actual schedule, other present/following and other schedule EIT are sent out with all muxes.

- Full Actual P/F Other (4 or 8 days)
   All outputs will have actual present/following and actual schedule EIT information, but only other present/following EIT information.
- Full Actual No Other (4 or 8 days)
   All outputs will have actual present/following and actual schedule EIT information, and no other EIT information.
- P/F Actual P/F Other

All outputs will have actual present/following EIT information and other present/following EIT information only.

P/F Actual - No Other

All outputs will have actual present/following EIT information.

# No Actual - No Other

No EIT information is output.



#### **NIT STANDARD**

Select which standard you want to use, DVB or NorDig. By default, DVB is selected.

# STATIC NIT VERSION ("Freeze" NIT)

If programs in a transponder change, then the NIT is recreated. In most countries, the end user does not notice, because the receivers automatically read in the new NIT. However, in some countries (ex. France) end users are asked to start a channel search.

If it comes to the case that one or more stations have weak reception, then the NIT changes frequently and the end users are always unnecessarily prompted to start a channel search. In this case, the NIT version can be "frozen" (recommended for use in France).

Under "Static NIT version" enter a version between 1 and 31.

#### Note:

If the service list really changes, the channel search must be done manually.

#### NIT OTHER NETWORK ID

Enter the required NIT other network ID in the Network ID field.

In some countries TV's requires a Network ID in the "NIT OTHER NETWORKD ID" field to support a network search when connected to the local CATV provider. If the headend is used for such TV's it is also required to send the required NIT OTHER NETWORK ID in the EIT table.



# 5.14.2 Service Discovery

The TDcH & TDmH support different formats for external devices and end user devices to automatically get the actual service list.

It is possible to get the list of IP Out services in the following formats:

XSPF
M3U
Extended M3U
Extended++ M3U

ORT 1	PORT 2	
ttp://10.43.1.198/serviceinfo/m3u	http:///serviceinfo/m3u	
ttp://10.43.1.198/serviceinfo/m3ue	http:///serviceinfo/m3ue	
ttp://10.43.1.198/serviceinfo/m3uepp	http:///serviceinfo/m3uepp	
ttp://10.43.1.198/serviceinfo/xspf	http:///serviceinfo/xspf	

The service lists are available at Ethernet Port 1 and 2. How to

get access to the data is noted in the user interface. To validate the service list, right click at the URL and select "Go to ..." and the list will pop up at another window in your browser.

# XSPF

Sample: <?xml version="1.0" encoding="UTF-8"?> <playlist version="1" xmlns="http://xspf.org/ns/0/"> <trackList> <track<title>DR1</title><location>udp://@239.194.0.1:50172</location> <extension application="http://www.triax.com"><poolserviceid>4</poolserviceid></extension></track> <track><title>Syd</title><location>udp://@239.194.0.2:50172</location> <extension application="http://www.triax.com"><poolserviceid>4</poolserviceid></extension></track> <track><title>Syd</title><location>udp://@239.194.0.2:50172</location> <extension application="http://www.triax.com"><poolserviceid>6</poolserviceid></extension></track> </trackList> </playlist>

# M3U

This service list contains

IP addresses and port numbers

Sample: udp://239.194.0.1:50172 udp://239.194.0.2:50172



#### Extended M3U

This service list is compliant to SAT>IP Protocol Specification (ver. 1.2.2) and is defined as "extended M3U channel list" In the standard under appendix A2.1

This service list contains

IP address and port number Service name LCN

Sample: #EXTM3U #EXTINF:0,1. DR1 udp://239.194.0.1:50172 #EXTINF:0,3. Syd udp://239.194.0.2:50172

#### Extended++ M3U

This service list is based on the Extended M3U with further extensions. This service list can be used for TV sets. Panasonic is one TV set vendor that supports this service list as service discovery.

This service list contains

IP address and port number Service name, transport stream ID, original network ID LCN Service type (1=TV, 2=Radio)

Sample: #EXTM3U #EXTINF:0,1. DR1 udp://239.194.0.1:50172?stype=1&onid=43962&tsid=0&svcid=4 #EXTINF:0,3. Syd udp://239.194.0.2:50172?stype=1&onid=43962&tsid=0&svcid=6



# 5.14.3 EPG

EPG for IPTV output can be pulled from the TDcH & TDmH.

The TDcH & TDmH have an integrated EPG server to support external devices with EPG data. This could be a middleware server or a TV management server or end user devices directly.

The service lists are available at Ethernet Port 1 and 2. How to get access to the data is noted in the user interface.

EPG	
PORT 1	PORT 2
http://10.43.1.198/epg/samsung	http:///epg/samsung
Preferred Language	Maturity Rating Country
deu	- Germany -
Alternative Language	
eng	•

# 5.14.4 LCN

Assign LCN numbers to desired services. LCN and HD-LCN numbers in the range 0 - 1023 can be set.

LCN	ad UDLON a	umbers associated to each service.								
RF	nd HULCN N	umbers associated to each service.				IP				
LCN	HDLCN	NAME	OUTPUT SID	DESTINATION	SOURCE	LCN	NAME	OUTPUT SID	DESTINATION	SOURCE
0	0	ORF1 HD	4911	Output 1	CAM 1	1	ORF1 HD	4911	239.0.1.1:1234	CAM 1
0	0	ORF2W HD	4912	Output 1	CAM 1	2	ORF2W HD	4912	239.0.1.2:1234	CAM 1
0	0	ServusTV HD Oesterreich	4913	Output 1	CAM 1	3	ServusTV HD Oesterreich	4913	239.0.1.3:1234	CAM 1
TRIAX A/S								Previous Ster	Conti	

The LCN numbers can be administered for the RF outputs (QAM and COFDM) on the left side and at the right side for the IPTV services (IP Output).

When Continue is pressed, the next menu pane is shown.

#### LCN auto arrange

When inserting an already existing number, the number automatically increases for that number and all higher values.

TRIAX				Deselv			2		
			1. Settings 2. Con	All numbers	e conflict aut			incrementing all equal an	id larger
	HDLCN	NAME					N	Yes	
0				1004		Tuner TC1			
1									
0						Tuner TC1			
2							4		



# 5.15 Overview

The overview page is a fast and easy overview with a "sort" and "search" function. By pressing the underlined links there is also the option to navigate direct to specific information and settings if needed. Please see mouse over description below.

T RIAX											Dashboard	Admin Log
				*	- 🏓	(-)						
				1. Settings	2. Conne	ections 3. Inputs 4. CA	M 5. Scrambler 6. O	utputs 7. LCN 8. Ov	erview			
<b>Overview</b> SERVICE		TYPE	SID	TSID	ONID	SOURCE	CA MODULE	SCRAMBLER	OUTPUT	OUTPUT SID	LCN	HDLCN
Q Search						Q Search	Q Search	Q Search	Q Search	Q Search	Q Search	Q Search
MTV 80s	s	AVC TV	7825	25	70	HOR_LOW 11325H 25000	CAM 8	VSECURE	239.192.111.10:50176	7825	0	0
TV 2 HD (D)	s	AVC HDTV	7327	71	70	HOR_LOW 10716H 25000	CAM 1	VSECURE	239.192.111.1:50176	7327	0	0
TV 2 SPORT HD	s	AVC HDTV	7271	71	70	HOR_LOW 10716H 25000	CAM 1	VSECURE	239.192.111.2:50176	7271	0	0
TV 2 / Østjylland	s	AVC TV	4703	63	70	HOR_LOW 10841H 25000	CAM 2	VSECURE	239.192.111.3:50176	4703	0	0
TV3 HD (D)	s	AVC HDTV	7957	2	70	VER_LOW 11309V 25000	CAM 3	VSECURE	239.192.111.4:50176	7957	0	0
/ film premiere HD	\$	AVC HDTV	4053	2	70	VER_LOW 11309V 25000	CAM 4	VSECURE	239.192.111.5:50176	4053	0	0
/ film action HD	s	AVC HDTV	7947	35	70	VER_LOW 11372V 25000	CAM 5	VSECURE	239.192.111.6:50176	7947	0	0
/ film hits HD	s	AVC HDTV	7950	35	70	VER_LOW 11372V 25000	CAM 6	VSECURE	239.192.111.7:50176	7950	0	0
/ sport ultra HD	s	AVC HDTV	7988	35	70	VER_LOW 11372V 25000	CAM 7	VSECURE	239.192.111.8:50176	7988	0	0
CNN International	s	AVC TV	7907	25	70	HOR_LOW 11325H 25000	CAM 8	VSECURE	239.192.111.9:50176	7907	0	0
Syd		AVC TV	1004	1111	8400	DVB-T2 634 PLP:0			306.000 MHz	1004	23	23
DR1		AVC HDTV	10000	1111	8400	DVB-T2 634 PLP:0			306.000 MHz	10000	1	1
DR1Syn		AVC HDTV	10005	1111	8400	DVB-T2 634 PLP:0			306.000 MHz	10005	31	31
DR2		AVC HDTV	10010	1111	8400	DVB-T2 634 PLP:0			306.000 MHz	10010	4	4
DR2Syn		AVC HDTV	10015	1111	8400	DVB-T2 634 PLP:0			306.000 MHz	10015	32	32
DR Ramasjang		AVC HDTV	10020	1111	8400	DVB-T2 634 PLP:0			306.000 MHz	10020	5	5
TV SYD		AVC HDTV	10034	1111	8400	DVB-T2 634 PLP:0			306.000 MHz	10034	24	24
FOLKETINGET		AVC HDTV	10040	1111	8400	DVB-T2 634 PLP:0			306.000 MHz	10040	21	21
V film premiere HD		AVC HDTV	4053	2	70	VER_LOW 11309V 25000	CAM 4		322.000 MHz	4053	6	6
V film action HD		AVC HDTV	7947	35	70	VER_LOW 11372V 25000	CAM 5		322.000 MHz	7947	7	7
V film hits HD		AVC HDTV	7950	35	70	VER_LOW 11372V 25000	CAM 6		322.000 MHz	7950	8	8
√ sport ultra HD		AVC HDTV	7988	35	70	VER_LOW 11372V 25000	CAM 7		330.000 MHz	7988	12	12
MTV 80s		AVC TV	7825	25	70	HOR_LOW 11325H 25000	CAM 8		330.000 MHz	7825	18	18

Service	Name of the TV or Radio Service
Туре	Type of the Service (HD, SD, TV, Radio,)
SID	Service identifier of the service used at the output
TSID	Transport stream identifier used at the output
ONID	Original network identifier of the service
SOURCE	Location from where the service is received
CA MODULE	The CA module used to descramble the service
SCRAMBLER	The Scrambler used to scramble the service
OUTPUT	Output channel information of a Service
OUTPUT SID	SID at the output
LCN	Local Channel number of the Services
LCN HD	Local Channel number of the HD Services



#### Alphabetic order

With a click on the Column description, for example "SERVICE", the corresponding column will be sorted in alphabetical order. With a second click the alphabetical order is reversed.

#### Search

In the Search fields it is possible to search for specific text. Start typing and the list will show only names with the characters included in the same row as in the search field.

#### Mouseover

Mouseover entries can be clicked to switch to the main table of this entry.

## 5.15.1 Export to Excel

The Export to excel is not available with the current software. But it is easy to copy the information from the Overview page.

#### Step 1. Mark the information in the overview and copy the information with Ctrl+C

Overview											
SERVICE	- L.	TYPE	SID	TSID	ONID	TUNER	CA MODULE	OUTPUT	OUTPUT SID	LCN	HDLCN
Q Search						Q Search	Q Search	Q Search	Q Search	Q Search	Q Search
BR Fernsehen Süd HD		AVC HDTV	10325	31	3	DVB-C 306		306.000 MHz	10325		
NDR FS SH HD		AVC HDTV	10330	31	3	DVB-C 306		306.000 MHz	10330		
PHOENIX HD		AVC HDTV	10331	31	3	DVB-C 306		306.000 MHz	10331		
Welt der Wunder		MPEG2 TV	13103	31	3	DVB-C 306		306.000 MHz	13103		
RTLplus Austria		AVC TV	325	13	3	DVB-C 314		NaN MHz	325		
Fashion TV HD		AVC HDTV	425	13	3	DVB-C 314		NaN MHz	425		
HGTV		MPEG2 TV	426	13	3	DVB-C 314		NaN MHz	426		
TOGGO plus		MPEG2 TV	529	13	3	DVB-C 314		NaN MHz	529		
ATV		MPEG2 TV	10120	13	3	DVB-C 314		NaN MHz	10120		
ORF2 V		MPEG2 TV	10128	13	3	DVB-C 314		NaN MHz	10128		
ORF1		MPEG2 TV	13001	13	3	DVB-C 314		NaN MHz	13001		
ProSieben Austria		MPEG2 TV	20002	13	3	DVB-C 314		NaN MHz	20002		
SAT.1 A		MPEG2 TV	20005	13	3	DVB-C 314		NaN MHz	20005		
ORF1 HD	S	AVC HDTV	4911	1007	1	DVB-S2 11303H 22000	CAM 1	NaN MHz	4911		

## Step 2. Open a new Excel Sheet and paste the information with Ctrl+V

	🗄 🔊 ँ 🖒 🖻 দি	J 63 62							N	1appe2 - Excel		
D	atei Start Einfüger	n Seitenlay	yout Forme	eln Daten	Überprüfen	Ansicht	Hilfe Por	wer Pivot 🤇	) Was möcht	en Sie tun?		
E2	7 • : ×	$\checkmark f_x$										
	А	В	С	D	E	F	G	н	I.	J	к	L
1												
2	SERVICE		TYPE	SID	TSID	ONID	TUNER	CA MODULE	OUTPUT	OUTPUT SID	LCN	HDLCN
3												
4	BR Fernsehen Süd HD		AVC HDTV	10325	31		3 DVB-C 306		306.000 MHz	10325		
5	NDR FS SH HD		AVC HDTV	10330	31		3 DVB-C 306		306.000 MHz	10330		
6	PHOENIX HD		AVC HDTV	10331	31		3 DVB-C 306		306.000 MHz	10331		
7	Welt der Wunder		MPEG2 TV	13103	31		3 DVB-C 306		306.000 MHz	13103		
8	RTLplus Austria		AVC TV	325	13		3 DVB-C 314		NaN MHz	325		
9	Fashion TV HD		AVC HDTV	425	13		3 DVB-C 314		NaN MHz	425		
10	HGTV		MPEG2 TV	426	13		3 DVB-C 314		NaN MHz	426		
11	TOGGO plus		MPEG2 TV	529	13		3 DVB-C 314		NaN MHz	529		
12	ATV		MPEG2 TV	10120	13		3 DVB-C 314		NaN MHz	10120		
13	ORF2 V		MPEG2 TV	10128	13		3 DVB-C 314		NaN MHz	10128		
14	ORF1		MPEG2 TV	13001	13		3 DVB-C 314		NaN MHz	13001		
15												
16												
17												



#### Note:

To paste the information into Excel please use the function only Text so that no format is taken over.

⊟∽∼	· <> 🖻 🖓	5 <b>0</b> 72 ≠		
Datei S	Start Einfügen	Seitenlayout	Formeln	Dat
F 1 2 3 4	ibri • 11 • A' K ≣ ⊉ • ▲ Ausschneiden Kopieren Einfügen(m) Inkelste sinfügen Einfügen (m) mengenne guche			

# 5.16 Direct access via URL

Following functions can be accessed directly via an URL:

URL	Function	Description
x.x.x.x/epg/samsung	EPG in Samsung XML format	Offers EPG for all IPTV out services in Samsung XML format
x.x.x.x/serviceinfo/m3u	List of IPTV out services in m3u format.	See section "Service Discovery"
x.x.x.x/serviceinfo/m3ue	List of IPTV out services in m3u extended format.	See section "Service Discovery"
x.x.x.x/serviceinfo/m3uepp	List of IPTV out services in m3u extended++ format.	See section "Service Discovery"

# 5.17 Direct file download via URL

Following files can be downloaded directly to browser "Default Download" via an URL:

URL	File	Description
x.x.x.x/logfile	tdch_logfile.zip	Zipped log files
x.x.x.x/mib	TRIAX-TDCH_MIB.txt	MIB file as txt file. Some SNMP managers support importing in other file formats like *.mib. If your SNMP manager doesn't support the txt file, then rename it to e.g. *.mib.



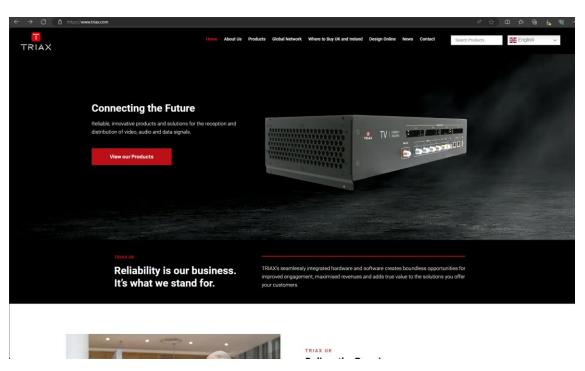


# 6 Support

Contact your local sales representative for support information in your language, or alternatively

Go to <u>www.triax.com</u>.

for English support.



Below the *Contact* menu you will find additional help and support information.



CO	NTACT
Т	RIAX UK Ltd.
He	ad Office
	ergorki Industrial Estate orchy, RCT, CF42 6DL, United Kingdom
3	+44 (0)1443 778 908

TRIAX MEA FZE Office #FZI080624W17, Tower B, Jafza One Building, Jebel Ali Free Zone Dubal, United Arab Emirates

Nrite To Us		
Who do you need to contact? F	lease select from the drop down below.	
Technical Support		•)
First Name	Telephone Number	
Last Name	Email Address	



# 7 Terms and Abbreviations

Term	Explanation
ТВА	To Be Added
TBD	To Be Determined
PID	Packet Identification; According to standard ISO 13818-1
SID	Service Identification; According to standard ISO 13818-1
TSID	Transport Stream Identification
NIT	Network Identification Table; According to standard ETSI EN 300 468
NID	Network Identification used in NIT; According to standard ETSI EN 300 468
ONID	Original Network Identification used in NIT; According to standard ETSI EN 300 468
STB	Set Top Box; DVB/IP receiver that is connected to a TV set
Receiver	A device that receives a signal from a headend. An example could be a TV-set or a STB.
end-user	A person that uses a TV or receiver.
Installer	A person that installs, deploys, and maintains the headend system
i/f	Interface
TS	Transport Stream; According to standard ISO 13818-1
ES	Elementary Stream; According to standard ISO 13818-1
Service	According to ETSI EN 300 468