TRIAX

connecting the future

Setting new standards with flexible pool technology

TDX and TDH 800 headend systems

triax.com / headends

The flexible headend systems

Ideal for any application

Innovative and versatile

The TDX and TDH 800 headend systems from TRIAX have turned everything in the headend world on its head. The market-leading IP-pool technology from TRIAX radically simplifies the construction and management of headends. This technology makes the input and output modules mutually independent.
All input signals, regardless of whether they are received via satellite, terrestrial, cable, audio/video or via the Internet (depending on headend type), can be flexibly and independently distributed from a "pool" to each and every output module. Each of these input signals can be converted to any output signal: PAL, QAM, COFDM or IP. An input signal can be assigned to several output modules to support different output modulations. Assigned twice in the same modulation is only possible when the input signal is used two times provided in the pool. The range of options leaves no wish unfulfilled.

So, whether you want to provide smaller residential facilities with television or want to provide a much larger districts with IP-television - with the two TRIAX Headends TDX and TDH 800 you are prepared for all eventualities.

- quite simply a revolution

User-friendly technology

- Fully configurable: all implementation variants are possible with significantly fewer modules than a standard headend, thereby reducing costs for acquisition, service and warehousing
- Browser-based (HTML5) user interface configuration. (Software Version 3.x and smaller requires the Silverlight plug-in, in your browser.)
- Infinite variety of programs thanks to the revolutionary IP-pool technology, that makes these two headends uniquely flexible, efficient and economical

Future-proof

- IPTV offers video on demand, time-shifted television, many additional services for hoteliers, trade shows and much more (TDX)
- No re-programming of the TV sets when a channel changes because of PID management
- Energy-saving and durable

Perfect service for installers

- New modules are automatically recognized and configured
- No downtime for TV customers, as modules can be replaced during operation (hot swap)
- Supplied ready to fit in the desired configuration
- Halved installation times due to easy programming and elaborate system properties
- Support remote access for service and support as configuration changes for example

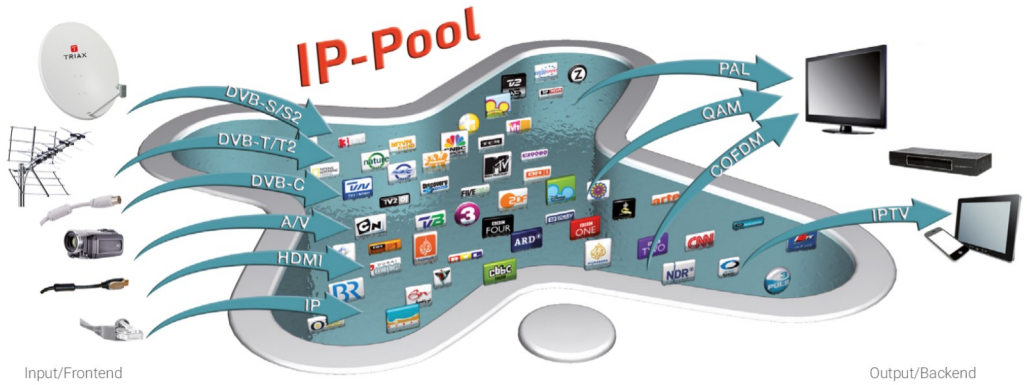
Flexibility makes the difference

TRIAX IP-pool technology

The TDH 800 range includes a minor series of the most popular in- and output modules.

If you need additional features and/or modules, then please select the TDX headend.

Get the complete overview of the modules on the last pages



Invest in technology that already meets the digital demands and requirements of tomorrow, such as HD, MPEG 4, CI/CAM, transport stream processing (MUXing, NIT, PID, stuffing). Put your money in a system that merges the highest level of efficiency with reliability, and benefit from the advantages provided by one of Europe's largest manufacturers of headends. The innovative pool technology is an integral part of both the TDX and TDH 800 headend systems. With TRIAX you can always rely on fast customised assistance and consultancy for tendering, planning, installation, configuration and maintenance.

The future is programmable - thanks to TRIAX IP-pool technology

The innovative TRIAX IP-pool technology makes your headend system free of coercion assignments of the input and output modules. All incoming signals initially enter the TDX IP-pool.
From this pool they can be converted into any required output signals and then simultaneously fed to several output modules.

This makes TDX and TDH 800 uniquely flexible, efficient and economical. For example, a single satellite signal can be modulated and can be output in both PAL, QAM and COFDM or in TDX as IP output signals.
The once selected assignments between the input and output signals can of course be changed at any time.

Reliable reception without any noise

System configuration is performed quickly and reliably via the browser-based user interface without any additional software in your browser. Simply use the program to configurate the inputs and outputs and the software does everything else. The Payload indication calculates the used bandwidth for each channel, preventing overloading of the output signal and ensuring a noise-free and clear reception.
The signal quality, e.g. Video S/N in PAL or typical MER value for QAM, is available in the technical specification, at the end of this brochure.

Easy to install. Easy to use.

The configuration XML file from the headend system can be stored on any laptop as a backup and for a new installation also rapidly else at a TDX system

In close collaboration with installers, TRIAX has optimised system handling: Installation and commissioning is very easy and operating the system is very friendly for both users as well as service staff.

For every application and budget

Flexible headend systems TDX and TDH 800

TDX

The professional TDX headend is cutting edge technology for those who place the highest demands on flexibility, performance and comfort. Ideal for the supply of all TV signals and opportunities.

Perfect care for

- Neighborhoods, small towns
- Hotels, large apartment buildings
- CATV systems and CATV Islands
- Settlements

The most important features

- Individual IPTV solutions
- More program channels by multiplexing
- More languages and programs through multi-unit (up to 3 headends connected together)
- Simple remote monitoring

TDH 800

The TDH 800 headend is the ideal solution for those looking for a flexible, compact and reliable solution.

Perfect care for

- Hotels
- Large multi-family houses
- Small settlements

The most important features

- Fully configurable thanks to pool technology
- More program channels by multiplexing
- Configuration via web interface

Compare of the systems and their capabilities

System technology		TDX	TDH 800
	IP-pool technology	✔	✔
	Multiplexing	✔	✔
	Hot Swap technology	✔	x
Frontends	DVB-S/S2	✔	✔
	DVB-T-T2	✔	✔
	DVB-C	✔	✔
	AV	✔	✔
	HDMI	✔	✔
Backends	PAL-HD	✔	✔
	PAL-HD CI	✔	✔
	QAM	✔	✔
	QAM CI	✔	✔
	COFDM	✔	✔
	COFDM CI	✔	✔
	IP Backend	✔	x
	CI only	✔	✔
Additional hardware	Redundant PSU	✔	x
	TDX IPTV EPG Server	✔	x
Functionality	IP-in IP-out	✔	x
	Multi Unit	✔	x
	SID remapping	✔	✔
	PID Management	✔	✔
	Simulcrypt	✔	x
	Samsung DRM	✔	x
	Common NIT	✔	x
	LCN HD	✔	✔
	PLP (DVB-T2)	✔	✔
	Alternative EIT input	✔	x
	EIT management	✔	x
	Network ID setting	✔	✔
	Network name	✔	✔
	Original network ID	✔	✔
	Nit standard DVB, NorDig	✔	✔
	CAT remove	✔	✔
	FranceSAT NIT	✔	✔
	Transport stream ID setting	✔	✔
Services	Software updates	✔	✔
	Software for IP-in and IP-out	✔	x

TDX digital headend

A true IP headend with revolutionary technology

Integrated cable management

- The connection cables are easily accessible and hidden behind the removable metal cover
- With lockable door for undisturbed operation

Multi-Unit for more power

- Up to three TDX-Headends can be combined as one system
- Up to 72 PAL, QAM or COFDM channels are possible (around 280 HD-programs or 570 SD-programs)
- High output level at 103 dBµV for interference free reception

Energy-saving and long-term reliability

- A fully loaded headend with 16 inputs and 6 outputs consumes only 280 watts
- Intelligent cooling system with integrated fans - increases the life of the equipment and alows a 19" rack mounting.

Easy installation and configuration

- Can easily be installed on a wall or a 19" cabinet
- All inputs and outputs modules and cables can be accessed and operated easily from the front
- Browser-based user interface configuration without additional software
- Simple and intuitive step-by-step configuration
- MUX bandwidth monitoring to avoid overfilling MUX
- DiSEqC-compatible when using a multi-switch as for input distribution

IP Pool and Multiplex technology

- IP Pool-Technology - Input- and Output modules are independent of each other
- Future proof, full compatibility with CAS systems, middleware, PMS, VOD services, EPG server, etc.
- Up to 16 input modules in a combination of DVB-S/S2, DVB-T/T2, DVB-C, AV, HDMI and IP-in
- Up to 6 Quad-output modules for up to 24 channels in any combination of PAL, QAM, COFDM and IP out, with or without CI-slot
- Output modules support up to 2 CAM modules. With full configuration per base up to 12 CAM modules possible.
- More program locations by use of multiplex technology (unused program will be placed in the pool for later release).

Maintenance and Service have never been easier

- HOT SWAP service
- Log file on all TDX activity
- Easy on-site or remote access to the TDX for the installer and/or the Triax support
- LEDs for indication of functionality or errors on each module
- Fewer modules - allows easy spare part handling

Valuable additional features

- Thanks to SID/PID Remapping you need no re-programming of the TV sets when you make channel changes
- Thanks to LCN (logic channel numbering) it is possible to create individual program list and save it as SD and HD program
- Manage and customize EPG data.
- The Adjust TPS-ID function transport stream ID - required if different. For Satellite same ID's are used

TDH 800 digital headend

The allrounder with innovative pool technology

Energy-saving - long-term reliability

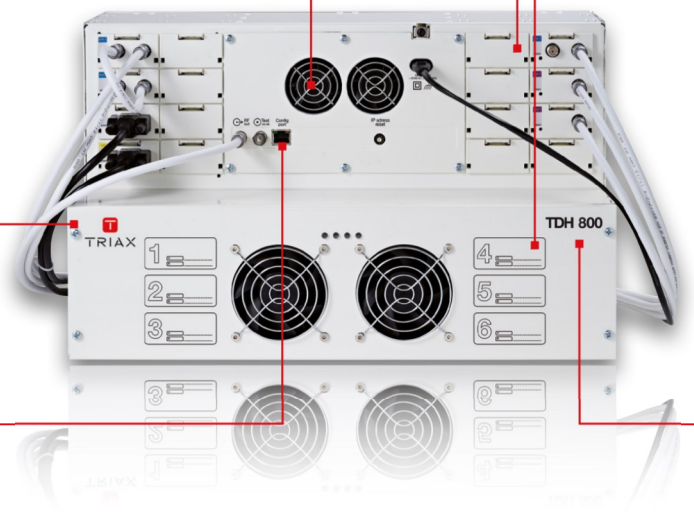
- 16 tuners and 6 backends fully loaded - only 280 W power consumption
- Intelligent cooling system with integrated fans - increases the service life of the equipment.
- The cooling system supports 19 "rack/cabinet mounting.

Easier service handling

- Fewer modules – allows easy spare part handling
- Log file on all TDH 800
- On-location access to the TDH system for installer and/or TRIAX support

Easy configuration

- Browser-based user interface configuration without additional software
- MUX bandwidth monitor to ensure that the MUX is not overloaded
- The four adjacent output channels can be freely selected across the full frequency range
- LED to indicate operation and errors on each module
- Easy, intuitive step-by-step configuration



IP Pool and Multiplex technology

- IP Pool-Technology - Input- and Output modules are independent of each other.
- Up to 16 input modules in a combination of DVS-S/S2, DVB-T/T2, DVB-C, AV and HDMI in.
- Up to 6 Quad-output modules for up to 24 channels in any combination of PAL, QAM, COFDM, with or without CI-slot.
- Output modules support up to 2 CAM modules. With full configuration per base up to 12 CAM modules possible.
- More program locations by use of multiplex technology (unused program will be placed in the pool for later release).

Easy installation

- Input modules are independent of output modules, resulting in a smaller number of modules overall
- Saves time on installation
- DiSEqC 1.0 functionality
- Housing designed to accommodate up to 16 input and 6 quad output modules, making it possible to support 12 CAM modules
- Can easily be installed on a wall or a 19" cabinet
- All inputs and outputs modules as well as all cables can be accessed and operated easily from the front
- Input and output modules identified via TRIAX supplied labels

TRIAX

TDX Modules

Technical specifications

TECHNICAL SPECIFICATIONS CABINET

Cabinet

TDX basic device with IP-pool technology for supporting 16 input modules and 6 Quatro output modules.

TDX MAIN UNIT		
Type Art. No		TDX Black edition main unit 492091
Frequency range (RF out)	MHz	47-862
Impedance (RF out):	Ohm	75
Return loss (RF out):	dB	> 14 at 47 MHz (-1.5 dB/octave; min. 10 dB)
Testpoint	dB	-20
Output level max @ 60 dB IMD 24 combined channels:	dBµV	103
Power Supply:		
Operating voltage	VAC	190-260 50/60 Hz
Power consumption, max	W	280
Max. LNB control	mA	4 x 305
Connectors:		
AC Power in (1.8 m)		IEC320 (cable)
Ext. RF out		F-con
Ext. Testpoint		F-con
PC interface		RJ 45
SFP cage		4 x SFP Module (Cat5/Opto)
Environment:		
Temperature, operating	°C	-10...+50
Temperature, storage	°C	-20...+70
Humidity, operating	%	20...80
Humidity, storage	%	10...90
Mechanical data:		
Dimensions product (L x W x H)	mm / HE	440 x 240 x 290 / 6.5
Weight - net	kg	12.0

TECHNICAL SPECIFICATIONS INPUT MODULES

DVB S/S2 module

SD and HD Satellite receiver module. Multiplex transmission and routing of all programs into the TDX Pool.

DVB-S/S2 INPUT DEMODULATORMODULE (FRONT-END)		
Type Art. No		QPSK and 8PSK demodulator 492020
Frequency range	MHz	950-2150
Input level	dBµV	55 ... 75
Input impedance	Ohm	75
Input return loss	dB	> 10
LNB control DiSEqC		1.1
LNB - V/H programmable	V/mA	0-13-18 / 300
LNB - Lo/Hi programmable	kHz	0/22
Input connector		F - con

DVB-T/T2 module

SD or HD Terrestrial receiver module. Multiplex transmission and routing of all programs into the TDX Pool.

DVB-T/T2 (1 TUNER) INPUT DEMODULATOR MODULE (FRONT-END)		
Type Art. No		DVB-T/T2 492023
Frequency range	MHz	177.5 - 226.5 / 474 - 858
Input level	dBµV	45 ... 75
Input impedance	Ohm	75
Input return loss	dB	> 6
Noise figure	dB	<7.0
Demodulator mode		QPSK, 16QAM, 64QAM 256QAM / 1k 2k 8k 16k 32k
Bandwidth	MHz	7 / 8
Input connector		F - male

DVB-C module

SD and HD cable receiver module. Multiplex transmission and routing of all programs into the TDX Pool.

DVB-C INPUT MODULE (FRONT-END)		
Type Art. No		DVB-C 492024
RF		
Frequency range	MHz	114-858
Input sensitivity QAM256 / QAM64	dBµV	45...75
Input impedance	Ohm	75
Input return loss	dB	>7.0
Noise figure	dB	<7.0
Bandwidth	MHz	8
Demodulator		
Type		QAM
QAM mode	DVB-C	16QAM, 64QAM, 128QAM, 256QAM
Symbol rates supported	Msym/s	1.8 to 7.2
Mechanical data		
Input connector		F-female

AV encoder module

Converting analogue audio/video signal in an MPEG4 stream and forwarding to the TDX Pool.

AV ENCODER MODULES (FRONT-END)		
Type Art. No		Video / Audio stereo modulator 492080
Video level	Vpp	1.0
Video impedance	Ohm	75
Video S/N ratio	dB	> 52
Video input standards		PAL, Secam
Audio level	Vpp	2.4
Audio impedance	kOhm	10 ±1
Audio/Video input connector		15 pol high density sub-D
Remarks		Use high quality cable art. no 153420

TDX Modules

Technical specifications

HDMI module

Converting analogue audio/video signal in an MPEG4 stream and forwarding to the TDX Pool.

HDMI INPUT MODULE (FRONT-END)		
Type Art. No		HDMI 492030
Input		1 x HDMI
Output		MPEG transport stream
Embedded Audio		2ch LPCM in, AAC or MP2 out
Video Codec		MPEG2, MPEG4
BW settings	Mbps	3-13
Remarks		Use high speed HDMI cable art. no 370715 - 370721

HDCP Compliant, blocks protected content

TECHNICAL SPECIFICATIONS OUTPUT MODULES

QAM module

Quad-QAM modulator, adjacent channel operation, automatic multiplexing, available as FTA or CI variant.

QAM OUTPUT MODULE (BACK-END)		
Type Art. No		FTA modulator / CI modulator 492055 / 492056
Output frequency range	MHz	50.5-858
Spourious signals	dB	> 60
QAM modes	QAM	16, 32, 64, 128, 256
Symbol rate	Mbps	2-40 (SCPC/MCPC)
Viterbi decoder		1/2, 2/3, 3/4, 5/6, 7/8
Reed Solomon decoder		204, 188, t=8
Deinterleaver		I = 12
Output spectrum		Normal, Inverted Random
Symbol rate	Mbaud	3.5-7200
Roll-off factor	%	15
FEC block code		RS 204, 188
MER (typical)	dB	≥ 41 dB (42 dB)
Output level (system)	dBµV	100
Output level adjustment	dB	+3 / -17 (0.5 dB step)
CI slots		0/2

COFDM module

Quad-COFDM modulator, adjacent channel operation, automatic multiplexing, available as FTA or CI variant.

COFDM OUTPUT MODULE (BACK-END)		
Type Art. No		FTA modulator / CI modulator 492060 / 492061
Output frequency range	MHz	50.5-858
Spourious signals	dB	> 60
QAM modes		16 QAM, 64 QAM, QPSK
Bandwidth	MHz	6, 7 or 8
Carriers supported		2k
Guard interval		1/32, 1/16, 1/8, 1/4
Error correction	Viterbi FEC	1/2, 2/3, 3/4, 5/6, 7/8
	Reed Solomon	204 byte mode
MER (typical)	dB	≥ 36 dB (38 dB)
Output level (system)	dBµV	100
Output level adjustment	dB	+3 / -17 (0.5 dB step)
CI slots		0/2

2xCI slots module

The 2 x CI backend module takes several services (depending on CAM module) from the IP Pool, decrypts them and loops them back in decrypted form to the pool.

2XCI SLOTS OUTPUT MODULE (BACK-END)	
Type Art. No	2xCI modulator 492070
CI slots	2

PAL HD modules

Quad-PAL modulator, adjacent channels, available as FTA or CI variant PAL with HD downscale function. For programs received only in HD, or processed as digital HD-signal.

PAL OUTPUT MODULE (BACK-END)		
Type Art. No		PAL HD FTA modulator / PAL HD CI modulator 492052 / 492053
TV-norm		Pal(B/G, I, L, D/K), Secam
TV system		VSB VHF/UHF/mono/A2/Nicam
Output frequency range	MHz	47-862
Picture carrier stability	kHz	< ±30
Spurious signals ref picture carrier	dB	> 60
Output level system	dBµV	103
Output level adjusting	dB	+3.0...-5.0 (0.5 dB step)
Output impedance	Ohm	75
Return loss	dB	> 10
Differentiel gain	%	< 8
Differentiel phase	degrees	< 8
Crominance/luminance delay	ns/m	< 80
Luminance non-linearity	%	< 8
Video S/N ratio (typical)	dB	57
CI slots	pcs	0/2

OUTPUT SFP PLUGS [FOR AC3 OPTION LICENSE REQUIRED]				
SFP MODULES (small form factor pluggable)				
Type Art. No		TDX SFP CAT 492086	TDX SFP 850 492087	TDX SFP 1310 492088
Type		Copper SFP(RJ45)	Fibre LC - 850 nm	Fibre LC - 1310 nm
Data rate	MBps	1000	1000	1000
Reach	m	100	upto 550 m with 50/125 µm MMF	2 km
Application		Gigabit Ethernet over cat 5e cable	Gigabit Ethernet over fibre	Gigabit Ethernet over fibre
Transport stream payload	max. MBps	720	720	720
Protocols		UDP with RTP optional	UDP with RTP optional	UDP with RTP optional

ACCESSORIES			
Type Art. No	TDX fan kit 775365	TDX power supply 492005	SD card 492084
Type Art. No	TDX BE Extension Plate 775366	TDX Controller 492000	

Type Art. No	TDX Redundant Power Supply 492006

Type Art. No	TDX IPTV EPG Server 492095

TDX Modules

IP technology & software

TRIAX TDX-headend technology that is oriented towards the needs of users. All incoming signals initially enter the IP-Pool. As a result, this technology allows unlimited possibilities to multiplex the services for each output modulation and to use simultaneously one service for different modulation types. All assignments between input to output signals can be readily changed at any time. This makes TDX uniquely flexible, efficient and economical.

TRIAX IP BACKEND

Triax IP backend is an output module for transmission of digital video, audio and miscellaneous data, encapsulated within one or more MPEG2/DVB single program transport streams. Besides the backend module the package consists of a AUX-TS-Loop module and a SFP RJ45 (small form factor pluggable) module

Features:

- IP transmission of up to 78 MPEG2/DVB SPTS
- Configurable ratio of 3-7 TS packets / MTU.
- Configurable output priority for each output SPTS.
- RTP option.
- 2 x CI slots complying to EN 50 221.
- Hotswapp able in TDX system

Art. No	Type	
492072	TDX IP Backend	3-7 TS 1 UDP package

IP IN & IP OUT LICENSE

Software for the TDX IP-in and IP-out in different package sizes.
The number of IP services can be expanded as required with additional 4 or 12 IP-in and out services.

Type Art. No	TDX-IP4-in 418047	TDX-IP4-in 418048	TDX-IP+12-in 418046
Description	IP-in Startpack 4 IP services	IP-in Extra 4 IP services	IP-in Extra 12 IP services
Type	Software	Software	Software
Remarks	For the award of the license code is the serial number and the ID-No. of the TDX needed		

Type Art. No	TDX-IP12-in 418045	TDX-IP12-out 418040	TDX-IP+12-out 418041
Description	IP-in Startpack 12 IP services	IP-out Startpack 12 IP services	IP-out Extra 12 IP services
Type	Software	Software	Software
Remarks	For the award of the license code is the serial number and the ID-No. of the TDX needed		

TDH 800 basic unit

Technical specifications

TECHNICAL SPECIFICATIONS

TDH 800 basic unit

- for supporting 16 input modules and 6 quad output modules.

CABINET		
Type Art. No		TDH 800 main unit 692890
Frequency range (tv out)	MHz	47-862
Impedance (RF out):	Ohm	75
Return loss (RF out):	dB	> 14 at 47 MHz (-1.5 dB/octave; min. 10 dB)
Testpoint	dB	-20
Output level max @ 60 dB IMD 24 combined PAL channels	dBµV	93.0
Power Supply		
Operating voltage	VAC	190-260 50/60 Hz
Power consumption, max	W	280
Max. LNB control	mA	4 x 305
Connectors:		
AC Power in (1.8 m)		IEC320 (cable)
Ext. TV-OUT		F-connector
Ext. Testpoint		F-connector
PC		RJ 45
Environment		
Temperature, operating	°C	-10...+50
Temperature, storage	°C	-20...+70
Humidity, operating	%	20...80
Humidity, storage	%	10...90
Mechanical data		
Dimensions product (L x W x H)	mm / HE	440 x 240 x 265 / 6.5
Weight - net	kg	9.8

TDH 811 frontend - DVB-S/S2 [QPSK/8PSK] module

SD and HD satellite receiver module. Multiplex transmission and routing of all programmes into the TDH 800 pool.

DVB-S/S2 INPUT DEMODULATOR MODULE (FRONT-END)		
Type		TDH 811 frontend - DVB-S/S2 module
Art. No..		692820
Frequency range	MHz	950-2150
Input level	dBµV	55 ... 75
Input impedance	Ohm	75
Input return loss	dB	> 10
LNB control DiSEqC		1.1
LNB control V/H	V/mA	0-13-18 / 300
Input connector		F-connector

Input modules

Technical specifications

TECHNICAL SPECIFICATIONS INPUT MODULES

TDH 813 frontend - DVB-T/T2 [COFDM] module

SD and HD terrestrial receiver module. Multiplex transmission and routing of all programmes into the TDH 800 pool.

DVB-T/T2 (1 TUNER) INPUT DEMODULATOR MODULE (FRONT-END)		
Type		TDH 813 frontend - DVB-T/T2 module
Art. No.		692823
Frequency range	MHz	177.5 - 226.5 / 474 - 858
Input level	dBµV	45...75
Input impedance	Ohm	75
Input return loss	dB	> 6
Demodulator mode		QPSK, 16QAM, 64QAM 256QAM / 1k 2k 8k 16k 32k
Bandwidth	MHz	7 / 8
Input connector		F-connector

TDH 816 frontend - DVB-C module

SD and HD cable receiver module. Multiplex transmission and routing of all programs into the TDX Pool.

DVB-C INPUT MODULE (FRONT-END)		
Type Art. No		TDH 814 frontend - DVB-C module 692824
Frequency range	MHz	114-858
Input sensitivity QAM256 / QAM64	dBµV	45...75
Input impedance	Ohm	75
Input return loss	dB	>7.0
Noise figure	dB	<7.0
Bandwidth	MHz	8
Type		QAM
QAM mode	DVB-C	16QAM, 64QAM, 128QAM, 256QAM
Symbol rates supported	Msym/s	1.8 to 7.2
Input connector		F-female

TDH 814 frontend - AV encoder module

Converting analogue audio/video signal into an MPEG2 or MPEG4 stream and forwarding to the TDH 800 pool.

AV ENCODER - HDMI MODULE (FRONT-END)		
Type		TDH 814 frontend -AV encoder module
Art. No.		692880
Audio /Video input connector		15 pol high density sub-D
Video level	Vpp	1.0
Video impedance	Ohm	75
Video S/N ratio	dB	> 52
Video input standards		PAL, Secam
Audio level	Vpp	2.4
Audio impedance	kOhm	10 ±1
Remarks		Use high speed HDMI cable art. no 370715 - 370721

TDH 815 frontend - HDMI module

Converting analogue audio/video signal in an MPEG4 stream and forwarding to the TDH 800 pool.

HDMI INPUT MODULE (FRONT-END)		
Type		TDH 815 frontend - HDMI module
Art. No.		692830
Input		1 x HDMI
Output		MPEG transport stream
Embedded Audio		2ch LPCM in, AAC or MP2 out
Video Codec		MPEG2, MPEG4
BW settings	Mbps	3-13
Remarks		Use high speed HDMI cable art. no 370715 - 370721

Output modules

TDH backend - COFDM module

Quad-COFDM modulator, adjacent channel operation, automatic multiplexing, available as FTA or CI variant.

COFDM OUTPUT MODULE (BACK-END)		
Type		TDH 843 FTA / TDH 844 CI
Art. No.		692860 / 692861
Output frequency range	MHz	50.5-858
Spurious signals	dB	> 60
QAM modes		16 QAM, 64 QAM, QPSK
Bandwidth	MHz	7, 8 or 8.5
Carriers supported		2k
Guard interval		1/32, 1/16, 1/8, 1/4
Error correction Viterbi FEC		1/2, 2/3, 3/4, 5/6, 7/8
Reed Solomon		204 byte mode
MER (typical)	dB	≥ 35 dB
Output level (system)	dBµV	90.0
Output level adjustment	dB	+3 / -17 (0.5 dB step)
CI slots		0/2

TDH backend - QAM module - Quad-QAM modulator, adjacent channel operation, aut. multiplexing, available as FTA or CI variant.

QAM OUTPUT MODULE (BACK-END)		
Type		TDH 845 FTA / TDH 846 CI
Art. No.		692855 / 692856
Output frequency range	MHz	50.5-858
Spurious signals	dB	> 60
QAM modes	QAM	16, 32, 64, 128, 256
Symbol rate	Mbps	2-40 (SCPC/MCPC)
Viterbi decoder		1/2, 2/3, 3/4, 5/6, 7/8
Reed Solomon decoder		204, 188, t=8
Deinterleaver		I = 12
Output spectrum		Normal, Inverted Random
Symbol rate	Mbaud	3.5-7200
Roll-off factor	%	15
FEC block code		RS 204, 188
MER (typical)	dB	≥ 38 dB
Output level (system)	dBµV	90.0
Output level adjustment	dB	+3 / -17 (0.5 dB step)
CI slots		0/2

TDH backend - PAL HD modules Quad-PAL modulator, adjacent channels, available as FTA or CI variant.

PAL OUTPUT MODULE (BACK-END)		
Type Art. No		TDH 848 PAL HD FTA / TDH 849 PAL HD CI 692852 / 692853
TV-norm		Pal(B/G, I, L, D/K), Secam
TV system		VSB VHF/UHF/mono/A2/Nicam
Output frequency range	MHz	47-862
Picture carrier stability	kHz	< +30
Spurious signals ref picture carrier	dB	> 60
Output level system	dBµV	93
Output level adjusting	dB	+3.0...-6.0 (0.5 dB step)
Output impedance	Ohm	75
Return loss	dB	> 10
Differential gain	%	< 8
Differential phase	degrees	< 8
Crominance/luminance delay	ns/m	< 80
Luminance non-linearity	%	< 8
Video S/N ratio (typical)	dB	57
CI slots	pcs	0/2

TDH backend - 2xCI slots module

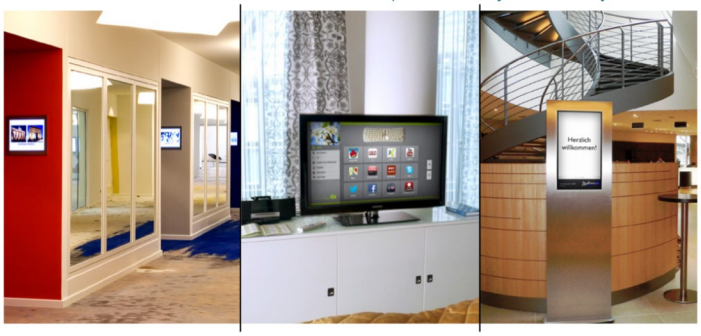
The 2 x CI backend module takes several services (depending on CAM module) from the IP Pool, decrypts them and loops them back in decrypted form to the pool.

2XCI SLOTS OUTPUT MODULE (BACK-END)	
Type Art. No	TDH 847 2xCI backend 692870
CI slots	2

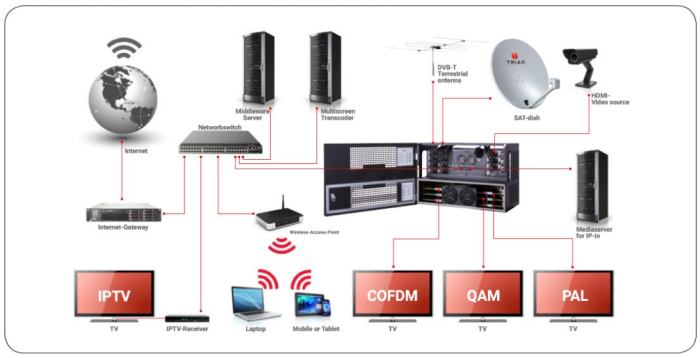
TDX Solutions

One product - many applications

IPTV middleware as central administration platform of your IPTV system



Example on a IPTV system with middleware



Can be used as an Internet Service Provider in hotels, fairs, businesses, schools and clinics

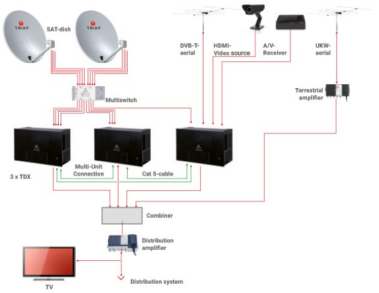
- Devices independently (receiver, PCs, smartphones, tablets, etc.)
- Multilingual
- Easy administration
- Menus in your own corporate design
- Additional advertising platform

And it benefits the end user

- Huge choice of programs - including local channels
- Value-added services available interactively
- Video on Demand and Pay TV
- Time-shifted TV (Time Shift)
- Internet: e-mail, chat and surf right on your TV
- Electronic Program Guide (EPG) for better overview and more program information

TDX Solutions
Combining of more units

- Up to three TDX-Headends can be combined as one system
- Up to 72 PAL, QAM or COFDM channels are possible (around 280 HD-programs or 570 SD-Programs)
- High output level at 103 dBµV for interference free reception



TDX Redundant Power Supply

Art. No. 492006

- The TDX Redundant power supply provides you with a high degree of power assurance in connection with your TDX headend system.
- The redundant power supply uses two identical TDX Power supplys mounted in a mechanical frame. These means only one power supply on stock to support TDX and redundant power supply installations. If one power supply unit breaks down the other unit instantly takes over and thereby prevents an interruption of the supply of power. The damaged power supply can be changed without disconnecting the working unit from the power.

TDX IPTV EPG Server

Art. No. 492095

- The IPTV EPG Server provides EPG data to IP-set top boxes, IP-televisions and middleware solutions, e.g. the EPG server extracts data from DVB-S, DVB-C and DVB-T front end modules enabling it to populate the EPG Guides on hotel IPTV displays.

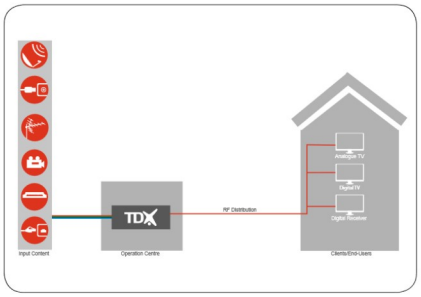
TDX Solutions

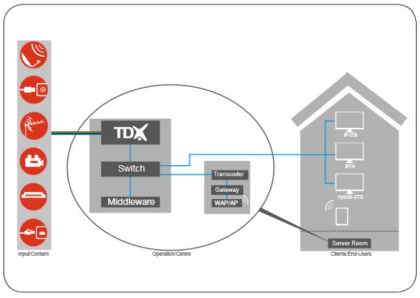
Analogue / digital mirror

The TDX IP pool technology enables output of the existing services in the pool with different output modulation forms.
As a result, the hardware can be minimized because each transponder is received only once. This provides the TDX as an optimal solution for the simultaneous transmission of analogue and digital services in a CATV network. The high signal-to-noise ratio allows support of large networks with multiple amplifiers in cascade.

Your benefits

- Only one receiver (tuner) per transponder
- All services of a transponder can be fed into the IP pool
- Encrypted services must be decrypted only once and can be used for simultaneous digital (QAM/COFDM/IP) and analog (PAL) transmission
- The headend can be easily changed from analog to digital by changing the output module





IPTV as a distribution technology

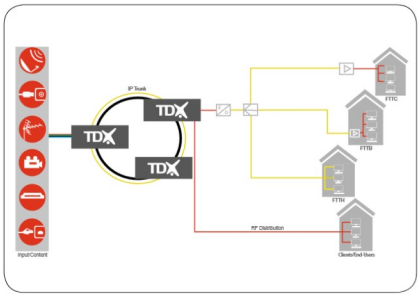
In closed buildings, there is a growing requirement for distribution of TV signals over CAT-cables or LWL-cables. This requires a headend to receive the signals and transform them into IP services and also a middleware to administrate the IP receivers.
In addition the used network structure must be designed to the requirements for IPTV transmission. This relates specifically to the used routers and switches which must support layer 3 and IGMP standard

Your benefits

- Only one type of cabling in the building necessary
- WIFI transfer to the end-user device
- With the use of a transcoder server it is possible to support different end-user devices

TDX Solutions

Example on fibre distribution and IPTV system



TDX as part of a fibre distribution

Increasingly, the existing optical CATV fibre networks (maybe in the past distributing analog modulated TV signals) are more and more used to transmit IP TV Services between the central headend and sub headend. Also the distribution cells in new system architectures are planned smaller. One reason for this is the feed-in of Internet services and providing bandwidth for Internet services to the end customer. These distribution cells can be built up as an RF distribution network or as an optical distribution network. There are different technologies for building up the system in terms of optical distribution. FTTC (Fibre to the curb), the optical distribution ends at the street cabinet. FTTB (Fibre to the block), the fibre reaches the boundary of the building. FTTH (Fibre to the Home), the fibre reaches the living room.

Your benefits

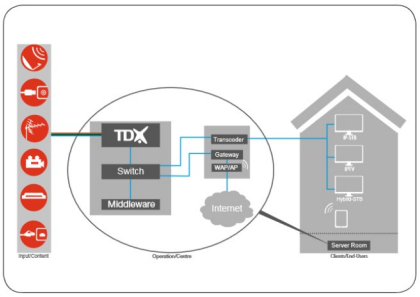
- Easy signal handling and management.
- Independent RF distribution per cell.
- Smaller RF-distribution cells.
- Redundancy systems with lower investments.

Full middleware solution

The combination of an IP headend and middleware addresses the fundamental needs of IPTV and Internet access for hotels, hospitals, cruise ships etc. To increase the revenue per guest a vast range of options for the multi-media promotion of different products and services are readily available. Triax offer a wide range of IPTV solutions in this area.

Your benefits

- Tablet solution for remote control and live TV streaming
- Meeting/Conference room solution: Connect, present, browse, control!
- Hotel Info-Channel
- Time shift
- PVR – Personal Video Recorder
- Internet on TV



TRIAX
connecting the future

Contact
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Headquartered in Denmark, TRIAX is an international supplier of innovative, high-tech solutions for the reception and distribution of video, audio and data signals. The company's products and solutions are used by broadcasters, cable operators, local closed networks and domestic dwelling.

Triax has 9 sales subsidiaries generating a turnover of approx. €90M and operates in more than 60 distributor countries.
The TRIAX team consists of 350 employees and is owned Polaris Private Equity.

See www.triax.com for further info.

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