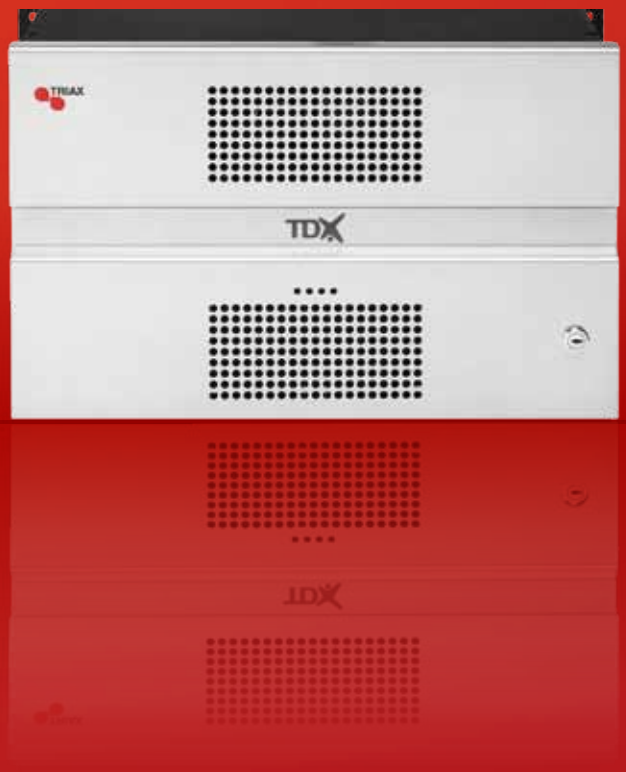


TDX Headend

Quite simply a revolution

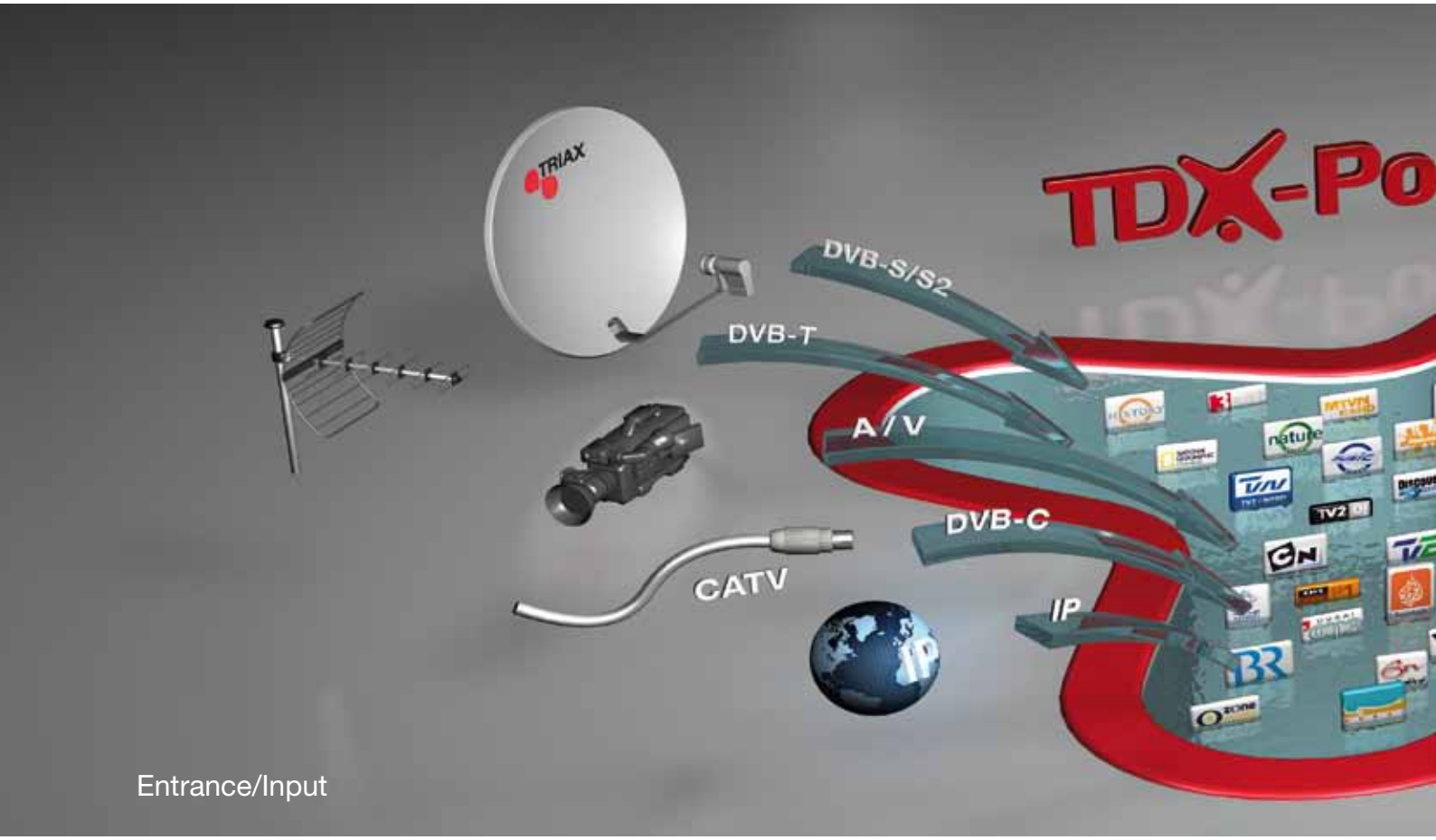

TRIAX
TDX

TDX.

Receive the technology that turns everything on its head.

Forget everything you know about headends. With TRIAX TDX you move into a completely new world. TRIAX's revolutionary TDX Pool technology simplifies the setting up and handling 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, 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, and because the input signals are not fixed to any particular outputs, an input signal can be assigned to several output modules. It's that simple.

TDX-Pool.
Take the plunge into the future



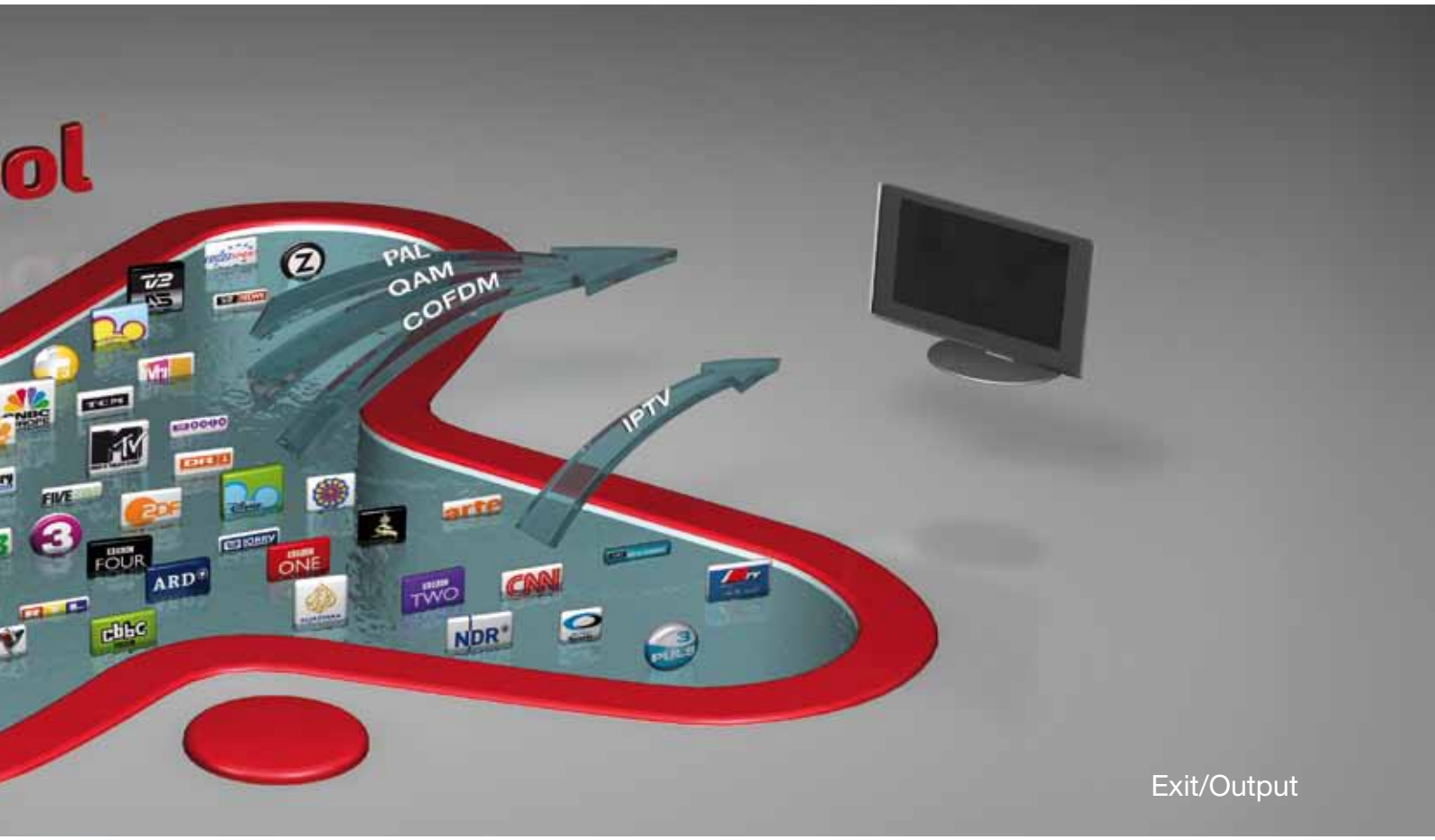
Entrance/Input

Invest in technology that already meets the requirements of tomorrow, such as HD, MPEG 4, CI/CAM, transport stream processing (muxing, NIT, PID, stuffing). Put your money on 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. With TRIAX you can always rely on fast customised assistance and consultancy for tendering, planning, installation, configuration and maintenance.

TRIAX TDX-Pool technology:

Immerse yourself in tomorrow's technology

In close collaboration with planners, installers and operators, TRIAX has developed a new technology that is orientated towards the needs of users. The new TRIAX TDX-Pool technology free´s the system of compulsory allocations for input and output modules, resulting in freedom from restrictions imposed by signal conversion. All incoming signals initially enter the TDX-Pool. From this pool they can be converted into any required output signals and then simultaneously fed to several output modules.



All assignments between input to output signals can be readily changed at any time. This makes TDX uniquely flexible, efficient and economical.

Reliable reception without any noise

System planning is performed quickly and reliably via the Internet using the TDX-Configurator. Simply use the program to specify the desired inputs and outputs and the Configurator does everything else. Not only does it optimally select the components for the system, it also programs the desired system configuration as an XML file. At the same time it calculates the maximum permissible bandwidth for each channel, preventing overloading of the output signal and ensuring a noise-free and clear reception. The signal quality, e.g. PAL with a Video S/N of typically 58 dB or for QAM with a MER of typically 35 dB is excellent.

Easy to install. Easy to use.

The completed XML file from the Configurator can be transferred to any laptop. Thus the complete preplanning data used for designing the system, can be quickly transferred to the TDX to perform the installation. 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.

TDX. Technology, that can do more.

Better and stronger performance

Up to three TDX-Headends can be combined as one system of input and output signals, as such up to 72 PAL programmes or 72 QAM channels are possible. The digital data streams are transferred via the transceiver interface by Cat-5 cable or optical fibre. This means the input and output modules can be located far apart from each other, while no data is lost in digital optical transmission. Within the system the coax output signals can be combined in the usual manner via a combiner. The HF output level of the integrated TDX output amplifier can be software-adjusted within the range 85 dBµV through 103 dBµV.

Energy-friendly and long-term reliability

Compared with similar systems, the TDX-Headend uses considerably less power. A fully loaded headend with 16 tuners and 6x4 QAM outputs (that equates to approx. 100 TV programmes) consumes no more than 0.2 kW. This low power consumption, coupled with intelligent cooling with four integrated fans, increases the life of the equipment and ensures long-term reliability.

Compact housing, quick installation

The housing is designed to accommodate up to 16 input and 6 Quad output modules; it is extremely compact and can be easily installed on a wall or within a 19” rack. Irrespective of whether for installation, maintenance or repair purposes, all inputs and outputs as well as all modules and cables can be accessed and operated easily from the front. The 22 modules are numbered so their respective allocations are always immediately clear. Each module also has an LED to indicate operation and errors. The well conceived system plus easy programming reduces the normal installation time by approx. 50%

Cable management

The metal covering which is integrated into the housing can be removed after opening the door. It serves as a cable guide and ensures the connector cables are protected, orderly and easy to access at the headend.

HOT SWAP Service

The system doesn't need to be shut down for servicing work or replacing an input or output module. All configurated data is stored on the integrated SD card. Newly installed modules are immediately recognised and configured. This saves time and the affected system sections continue to work normally. TRIAX TDX also offers a fast, trouble shooting service that works using the individual log files, which can be read from every system. Of course, TDX is network capable and can be remotely controlled and monitored.

Easy set-up with fewer modules

Pool technology and free programming have revolutionised the structure of the headend. With TDX, the input modules are independent of the quad output modules. This is supplemented by clever system programming, so that essential functions can be incorporated into just a few different modules, resulting in greater flexibility and higher performance. The respective 4 adjacent output channels can be freely selected across the full frequency range from 47 through 862 MHz.

TDX. Configuration has never been easier.

TRIAX TDX can be very easily configured via the Internet. Using the TDX Configurator you can quickly and safely plan the desired headend and output the configuration for your daily work. For example, if you require a material list in advance so you can quickly submit a quation.

1.

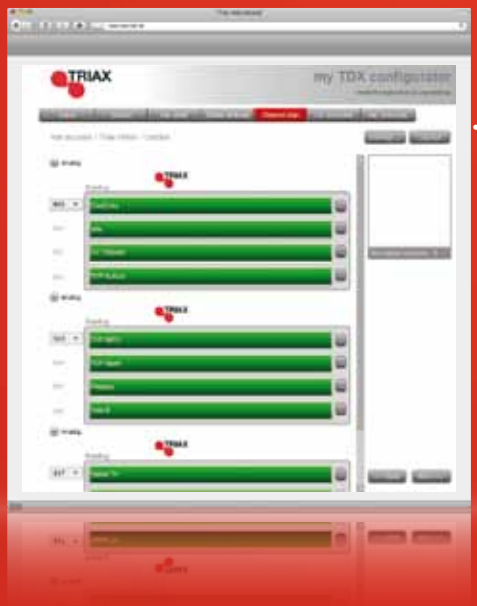
Go to the **TRIAX TDX** website [www.triax-tdx.com] and use the input form to assign a project number.

2.

Choose which **input** and **output** signals the system is to have. Alterations can be made at any time.

3.

You obtain an overview of the system with its **hardware components.** When you place the order you either select a completely assembled system, or a system that needs to be assembled, which means you would install the individual modules yourself.



4.

Define the channel plan, the **TDX-Configurator** does the rest. It calculates the optimum module allocation and creates a corresponding XML file

5.

The system is then delivered with the requested configuration, either ready to assemble or pre-assembled. Now you just need to install the TDX at the customer's site, connect the cable and upload the XML file from your laptop.

Finished.

TDX. A full program for your success.

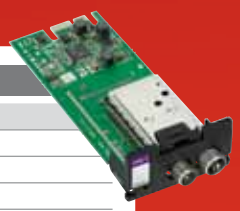
The TRIAX TDX program offers an optimised tuned and scaled range of modules.
The innovative TDX Pool technology and free programming, considerably reduces the number of different modules necessary to cover the full range of input and output signals. This also makes your system extremely forward-looking and flexible.

CABINET

Frequency range (TV OUT / MODULE RF IN):	(MHz)	47-862
Impedance (TV OUT / MODULE RF IN):	(Ohm)	75
Return loss (TV OUT / MODULE RF IN):	(dB)	>10
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 (1,8m)		IEC320 (cable)
Ext. TV-OUT		F-con
Ext. Testpoint		F-con
PC		RJ 45
SFP cage		4 x expansion
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)	440x240x290
Dimensions carton (L x W x H):	(mm)	546x316x374
Weight - net	(kg)	10.5
Weight - gross	(kg)	12.1

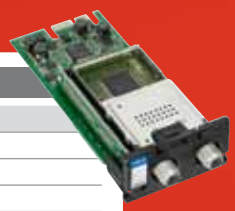
IP OUTPUT SFP (Small Form factor Pluggable)

Type		EOLT - C12 - 02 Copper - SFP	EOLT - 8512 MXX Fibre - SFP	EOLT - 1324-02XX Fibre - SFP
Type		Copper SFP (RJ45)	Fibre LC - 850 nm	Fibre LC - 1310 nm
Data rate	(MBps)	1.000	1.000	1.000
Reach	(m)	100	550	2.000
Packing size	(Pcs)	1	1	1
Application		Gigabit Ethernet over CAT5 cable	Gigabit Ethernet over fibre	Gigabit Ethernet over fibre
Transport stream payload	max (MBps)	720		
Protocols		UDP with RTP optional		



DVB-T INPUT DEMODULATOR MODULE (FRONT-END)

Type		COFDM demodulator
Frequency range	(MHz)	177.5 - 226.5 / 474 - 858
Input level	(dBµV)	> 35
Input impedance	(Ohm)	75
Input return loss	(dB)	> 6
Loop through gain	(dB)	1...+3
Demodulator / Mode		QPSK, 16QAM, 64QAM / 2k 8k
Bandwidth	(MHz)	7 / 8
Input connector		IEC - female
Output connector (loop through)		IEC - male

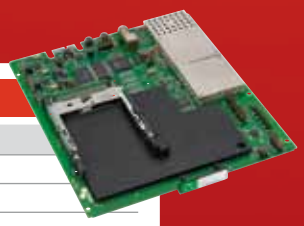


DVB-S/S2 INPUT DEMODULATOR MODULE (FRONT-END)

Type		QPSK and 8PSK demodulator
Frequency range	(MHz)	950-2150
Input level	(dBµV)	> 49
Input impedance	(Ohm)	75
Input return loss	(dB)	> 10
Loop through gain	(dB)	0 - 6
LNB control DiSEqC		1.1
LNB control V/H	(V/mA)	0-13-18 / 300
Input connector		F - con
Output connector (loop through)		F - con

AV ENCODER MODULE (FRONT-END)

Type		Video / Audio stereo modulator
Video level	(Vpp)	1
Video impedance	(Ohm)	75
Video S/N ratio	(dB)	> 53
Video input standards		PAL, Secam, NTSC
Audio level	(VPP)	< 2.4
Audio impedance	(kOhm)	10
Video input connector		15 pol high density sub-D
Audio input connector		15 pol high density sub-D



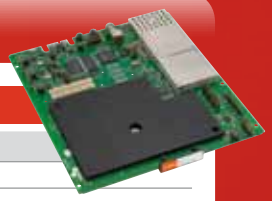
PAL HD DOWNSCALE MODULE – QUAD (BACKEND)

		Modulator
TV-norm		Pal/Secam B/G, I, L, D/K
System		VSB VHF/UHF mono A2 Nicam
Output frequency range	(MHz)	47-862
Picture carrier stability	(kHz)	< +/-30
Spurious signals ref. picture carrier (system 24 channels)	(dB)	< -60
Output level (system)	(dBµV)	103
Output level adjustment	(dB)	+3 / -17 (0,5dB step)
Output impedance	(Ohm)	75
Return loss	(dB)	>10
Differential gain	(%)	<8
Differential phase	(deg.)	<8
Group delay	(ns)	<80
Video S/N ratio (typical)	(dB)	57
Sound sub carrier	(MHz)	5,5 / 5,74 / 5,85 / 6,0 / 6,5
CI slots		0/2

QAM OUTPUT MODULE – QUAD (BACK-END) DVB-C

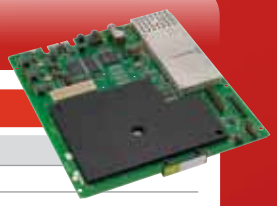
Type		Modulator
Output frequency range	(MHz)	50,5-858
Spurious signals	(dB)	> -60
QAM mode	QAM	16,32, 64 ,128,256
Viterbi decoder:		1/2, 2/3, 3/4, 5/6, 7/8.
Reed Solomon decoder		204,188, t=8.
Deinterleaver		I=12.
Symbol rate	(Mbaud)	3.5-7.2
Roll-off factor	(%)	15
FEC Block code		RS 204, 188
MER	(dB)	>38
Output level (system)	(dBµV)	92
Output level adjustment	(dB)	+3 / -17 (0,5dB step)
CI slots		0/2

COFDM OUTPUT MODULE – QUAD (BACK-END) DVB-T



Type		Modulator
Output frequency range	(MHz)	50,5-858
Spurious signals	(dB)	> -60
QAM modes		64QAM, 16QAM, QPSK
Guard Interval:		1/32, 1/16, 1/8, 1/4
Output level (system)	(dBµV)	92
Output level adjustment	(dB)	+3 / -17 (0,5dB step)
CI slots		0/2

PAL OUTPUT MODULE – QUAD (BACK-END)



Type		Modulator
TV-norm		Pal/Secam B/G, I, L, D/K
System		VSB VHF/UHF mono A2 Nicam
Output frequency range	(MHz)	47-862
Picture carrier stability	(kHz)	< +/-30
Spurious signals ref. picture carrier (system 24 channels)	(dB)	> -60
Output level (system)	(dBµV)	103
Output level adjustment	(dB)	+3 / -17 (0,5dB step)
Output impedance	(Ohm)	75
Return loss	(dB)	>10
Differential gain	(%)	<8
Differential phase	(deg.)	<8
Chrominance / luminance delay	(ns)	<80
Video carrier to noise	(dB)	57
CI slots		0/2

2X CI MODULE – (BACK-END)

Type	Modulator
TV-norm	Pal/Secam B/G, I, L, D/K
System	VSB VHF/UHF mono A2 Nicam
CI slots	2

More information on www.triax-tdx.com

TDX overview

System technology	
Feature	**Benefit**
TDX Pool technology • Separation between input and output modules • Any given input to any given output • One input can be used for multiple output modulations	*Unique allocation flexibility, hand in hand with a reduction in the number of different hardware components*
Advanced software technology for high system intelligence	*Forward looking technology to meet future system demands and customer requirements*

WEB-Configurator	
Feature	**Benefit**
Easy preparation of material lists and/or complete system configuration	*Fast preparation of quatations and/or ready-to-install headend system in compliance with the respective requirements*
Delivers XML file for system programming	*Very easy and fast system programming by simply transferring the XML file from a laptop on-site*
Integrated bandwidth calculator	*Prevents signal overload for QAM or COFDM channel*

TDX Hardware	
Feature	**Benefit**
Compact housing optimised for easy installation, removable cover and spacer wall-mount bracket	*Optimum cable guide from the front, service-friendly and clear cable management*
Easy module replacement (HOT SWAP)	*Very fast and safe installation*
Module with LED displays	*Faster and more reliable status overview for the entire system*
SD card memory integrated within the system	*Logfile of all system processes are saved for examination in the event of faults. Contains all system configuration files. When a module is replaced, an automatic system configuration is made (fail-safe) without the need to shut down the overall system*
Digital transceiver interface for optical fibre or CAT-5 cables	*No data loss when digital data is transmitted across long distances (optical) and easy cable connections during system installation at one location*
High-performance fan unit	*Ensures low system temperatures and long component life*

TDX in general
All system sizes: High-quality signals. From 10 to more than 10,000 connections
Easy service: Individual diagnostics and maintenance based on facility-specific logfiles
Low power consumption: A fully equipped system with 16 tuners and 6x4 QAM outputs (approx. 100 TV programmes) consumes no more than 0.2 kW

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