Transport-Stream Analyser

Installation

1. Introduction

The ***StreamXpert***™ is DekTec's real-time/offline transport-stream analyzer. It is used to analyze/monitor live incoming transport-streams received with one of DekTec's DVB input devices or for offline analysis of recorded transport-stream files.

The main features of the ***StreamXpert*** are:
- Real-time and offline analysis, monitoring and recording of MPEG-2 transport streams;
- Real-time, analysis and monitoring of OTT HTTP Smooth Streaming (MS-SSTR) and MPEG-DASH on-demand and live streams;
- Real-time and offline analysis, monitoring of ATSC 3.0 MMT, ROUTE and ALP
- Complete diagnostic and statistical information for PIDs, services, components and tables;
- Template-based decoding of tables in MPEG-2 private section format;
- Integrated decoder video/audio decoder with support for MPEG-1/2 video, AVC/H.264 Video, HEVC/H.265 Video, MPEG audio, (HE-)AAC audio, MPEG-H audio, AC3 and AC4 audio;
- Unique PID grid for an instant overview of the entire contents of the transport stream;
- Modern and intuitive GUI.

A setup program is available for easy installation or upgrading of the ***StreamXpert*** software. The installation package includes installation support for the ***Dta***, ***DtaNw, DtPcie*** and ***Dtu*** device drivers, which are required to run the ***StreamXpert***.

1.1. DekTec Cards Supported by StreamXpert

The ***StreamXpert*** supports the following DekTec PCI/PCI-Express cards, USB-2/3 and IP adapters for analysis of streams:

Type	***Description***	***Input Format***
PCI		
DTA-112	ATSC/DVB-T/QAM modulator	ASI
DTA-115	Multi-standard modulator	ASI
DTA-120	DVB-ASI input	ASI
DTA-122	DVB-SPI (LVDS) input	SPI
DTA-124	Quad ASI/SDI input	ASI
DTA-140	DVB-ASI input+output	ASI
DTA-145	ASI/SDI input+output, low-profile	ASI
DTA-160	Gigabit Ethernet TSoIP + 3 ASI ports	TSoIP, ASI

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PCI Express		
DTA-2131	Multi-standard VHF/UHF receiver	DVB-T2/T/C2/C, QAM-B/C, ISDB-T, ATSC, ATSC 3.0
DTA-2132	High-End Satellite Receiver	DVB-S2
DTA-2136	Dual QAM-A/B/C receiver	DVB-C, QAM-B/C
DTA-2137(C)	Dual DVB-S/DVB-S2 receiver	DVB-S/S2
DTA-2138B	DVB-T2/C2 and ISDB-T receiver	DVB-T2/T/C2/C, ISDB-T
DTA-2139(B)(C)	12-port Cable/Terrestrial receiver	DVB-T2/T/C2/C, ISDB-T, ATSC, ATSC 3.0
DTA-2142	Multi-mode serial and parallel port	ASI, SPI
DTA-2144(B)	Quad ASI/SDI ports	ASI
DTA-2145	ASI/SDI input+output, low-profile	ASI
DTA-2152	Dual HD-SDI input+output	ASI
DTA-2154	Quad HD-SDI/ASI input+output	ASI
DTA-2160	Gigabit Ethernet TSoIP + 3 ASI ports	TSoIP, ASI
DTA-2162	2xGigabit Ethernet TSoIP	TSoIP
DTA-2172	Dual 3G-SDI/ASI input+output	ASI
DTA-2174(B)	Quad 3G-SDI/ASI input+output	ASI
DTA-2175	HD-SDI/ASI input+output	ASI
DTA-2178	Octal 12G-SDI/ASI ports	ASI
DTA-2178-ASI	Octal ASI ports	ASI
DTA-2179	12x HD-SDI/ASI input+output	ASI
DTA-2180	H.264 HD encoder	ASI
DTA-2182	Dual H.264 HD encoder	ASI
DTA-2195	12G-SDI input+output	ASI
USB-2		
DTU-225	FantASI ASI/SDI input	ASI
DTU-236(A)	QAM measurement receiver	DVB-C, QAM-B/C, ATSC, ASI
DTU-238	DVB-T2/T/C, ISDB-T and ASI analysis probe	DVB-T2/T/C, ISDB-T, ASI
DTU-245	FantASI ASI/SDI input+output	ASI

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IP standalone modules		
DTE-3120	Networked ASI input	ASI

2. System Requirements

Platform	Windows 2k12/2k16/2k19, 7, 8, 10
Processor*	Core i5 4th generation minimum Core i7 4th generation recommended
RAM	2 GB
Graphics	DirectX 9.0 (or higher) compatible video card
Audio	A sound card is recommended

* Or equivalent AMD processor

3. Files

The `StreamXpert.zip` archive contains the following files:

`DTC-320 StreamXpert Installation.pdf`	This document
`StreamXpert Setup.exe`	Setup program for ***StreamXpert***

4. Installing the Software

The following install steps should be executed:

1. Extract `StreamXpert.zip` into a temporary folder.
2. Run `StreamXpert Setup.exe` to install ***StreamXpert***.
3. Optionally install appropriate license(s) through ***DtInfo***. The ***DtInfo*** utility can be downloaded here.

StreamXpert can now be started using the desktop shortcut.

5. Command-line options

5.1. Syntax

StreamXpert [-cf config_file]

5.2. Options

-cf Load StreamXpert options from the specific file (config_file).

5.3. Examples

StreamXpert -cf C:\myconfigfile.sxc

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6. Revision History

Revision	Date	Change description
v2.15.0	2021.03.18	• Support for DEPI (Downstream External PHY Interface); unpacking of a TS in the DEPI IP tunnel between DOCSIS equipment • Support for PCAP files for analysing TS in UDP, RTP and DEPI IP captures • Support for identifying JPEG-XS video • Improved support for high DPI displays (e.g. 4K resolution screen) and scaling • Dolby AC4 improvement for showing full channel configuration using object-based coding • Fix for Dolby AC-4 ES Info tree contained wrong presentation id • Fix for potential memory leak and crash when DTA-2131 was used • Fix for Teletext pages 800-899 that were not configurable for viewing from the PID/TS tree • Fix for OTT URL input in the ribbon bar that did not accept a hyphen "-"
v2.14.0	2020.11.27	• Improvement for showing MPEG-H audio ES info Presets conditions • Improvement for specific MPEG-H audio streams that were not decoded caused by not supported sample rates • Improvement for specific MPEG-H audio streams not showing the audio scene info preset descriptions in the ES info view • Improvement for configuring the MPEG-H audio settings 'Muting' option • Improvement for video decoding of specific ATSC 3.0 stream • Improvement for processing of specific OTT DASH streams type • Improvement for HE-AAC audio decoding • Bug fix for incorrect TS bitrate reported when using Local NIC input, introduced in v2.10.0 • Bug fix for stop responding on specific MPEG-H audio stream • Bug fix SH_delivery_system_descriptor was not correctly decoded • Bug fix and improvement for ARIB characters that were not completely decoded introduced in v2.12.0
v2.13.0	2020.09.17	• Support for ATSC 3.0 video and audio decoding • Support for ATSC 3.0 in depth ES video and audio information in the tree view • Support for OTT HEVC video decoding • Support for OTT MPEG-H audio decoding • Support for OTT in depth ES video and audio information in the tree view • Support for S2X satellite delivery system descriptor • Support for Protection message descriptor • Support for DTA-2178 Octal 12G-SDI/ASI Ports with Genlock for PCIe • Update TR 101 290 2.3a PCR repetition error default to 100ms; according latest TR 101 290 2020 specification • Improvement reset button now reset the graph range for example to reset graph after a spike bitrate • Bug fix OTT download was also initiated in TS mode • Bug fix PID tree was not re-initialized by the Reset button • Bug fix for potential crash on specific ATSC 3.0 stream
v2.12.0	2020.07.16	• Support for MPEG-H audio; including in depth meta data analyzing, decoding and configuration • Support for Audio Preselection Descriptor (NorDig IRD Specification 3.1.1) • Bug fix DTA-2180 Encoder input was disabled in the supported inputs list
v2.11.0	2020.06.02	• Support for DTA-2139C Twelve-channel Cable/Terrestrial Receiver including ATSC3.0 MMT/ROUTE analysis

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Revision	Date	Change description
		• Support for DTA-2178-ASI Octal ASI Ports • Support for ATSC3.0 detailed Elementary Stream processing • Bug fix for possible invalid file filters in the file open dialog
v2.10.0	2020.03.30	• Auto symbol rate support for the DTA-2132 High-End Satellite Receiver • OTT improvement for audio decoding for a specific manifest definition • Radio service decoding improvement; an audio indication (icon) is shown • Bug fix for OTT URL field non-operational in version 2.9.0 • Bug fix for multiple popup menu messages in full screen TV view • Bug fix TR 101 290 analyser did potentially use wrong profile
v2.9.0	2020.01.31	• Support for ATSC3.0 MMT/ROUTE analysis using DTA-2131 adapter • Support for DTA-2174B Quad 3G-SDI/ASI Ports PCIe adapter • Bug fix for crash when DTA-2131 was in use by another application • Bug fix for alias editor not working in MPEG-TS mode • Bug fix for file selection not working when previous file was removed • Bug fix for potential crash seen on Windows Server 2019 during IP adapter scan • Bug fix for DTA-2142 SPI adapter not part of the available adapters • Bug fix for incorrect input fields seen for RF inputs when switching modulation standard
v2.8.0	2019.12.18	• Support for ATSC3.0 IP and PCAP file support including MMT and ROUTE + ALP decoding (note DTA-2131 support will be added in next release) • Support for HDR/WCG related elementary stream info for AVC and HEVC • Bug fix for crash when no audio device was installed
v2.7.0	2019.09.19	• Support for dynamic update the list of available USB and IP adapters on connect/disconnect/enable/disable • Bug fix for possible application hang on H.264/AVC stream • Bug fix for possible DTA-2137 tuning issue • Bug fix Es Info treeview did show CC errors in red even for 0 errors
v2.6.0	2019.08.02	• Support for DTA-2132 High-End Satellite Receiver PCIe adapter • Support for configuring alias names for IP URL's
v2.5.0	2019.06.07	• Support for DTA-2172 Dual 3G-SDI/ASI Ports PCIe adapter • Support for new ATSC, DVB, MPEG and ISDB tables and descriptors • Support for Dolby AC-4 decoder v2.1.1 and several AC-4 bugfixes • Support for Closed Caption presence/absence information in ES info • Extra CA System Name added for scrambled PID and Services • Extra IP adapter info for IP address, Network alias name in adapter selection dropdown • Bug fix: DTA-2145 in failsafe could not be used • Bug fix: IP addresses were not always persistently stored • Bug fix: TR 101 290 logging did not use correct profile on mode change • Bug fix: custom configuration file was not loaded; introduced in v2.3.0 • Bug fix: Video was not decoded for specific OTT stream • Bug fix: Video and Audio was not decoded for specific OTT stream • Bug fix: RTP IP address did automatically change into UDP; Note: RTP FEC is currently not enabled in StreamXpert since FEC statistic are not shown • Bug fix: USB adapter disconnect sometimes resulted in a crash • Bug fix: Messages and Trace bar could not be activated after undock-hide • Bug fix: ES info for LATM or ADTS audio was not shown
v2.4.1	2019.02.20	• Support for DTA-2139B Twelve-Channel Cable/Terrestrial Receiver for PCIe

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Revision	Date	Change description
		• Bug fix: DtapiService crash was seen on older PC's that did not support AVX instruction set
v2.4.0	2019.02.04	• Support for Dolby AC-4 meta data and audio decoding • Support for DTA-2175 HD-SDI/ASI input+output PCIe adapter • Bug fix: in some cases, AAC audio was not decoded • Bug fix: for crash when Windows Audio Service was disabled • Bug fix: for crash when selecting collapsed teletext ribbon bar • Bug fix: OTT didn't decode live DASH streams when only 1 presentation field was available • Bug fix: TR101290 EIT_actual_error was counted every 10 seconds instead of every 2 seconds
v2.3.0	2018.05.28	• Support for OTT analysis mode: HTTP Smooth Streaming (MS-SSTR) and MPEG-DASH manifests visualization. MPEG-DASH profiles decoding is supported for both on-demand and live streams containing AVC/H.264 video and AAC audio • Support for detection of AVS,AVS+ and AVS2 encoded video (no decoding support yet) • File input ribbon media control added • Decoding TV view now shows service name, resolution, bitrate and codec info • Bug fix: ISDB-T Parameter Emergency-Alarm Broadcast was not shown
v2.2.1	2018.03.16	• Bugfix: MS Office font was required for Teletext decoding • Bugfix: DTA-2131 QAM-B config did not always set default symbol rate • Bug fix: the last-set IP-address was not loaded on start
v2.2.0	2018.02.14	• Support for Teletext decoding • Support for DTA-2131 QAM-B • Bug fix: StreamXpert needed to be restarted every 2-3 days when dongle license was used
v2.1.7	2017.05.31	• Bug fix: closed captions where garbled for video streams with a frame rate above 30fps • Bug fix: active Tr101290 profile was not updated when switching between standards
v2.1.6	2017.04.20	• Bug fix: when switching between services it could take tens of seconds before decoding the video of the newly selected service began • Bug fix: display resolution for interlaced HEVC content was reported as the field resolution (i.e. half height) • Bug fix: Frame rate for HEVC with an invalid NumUnitsInTick field was reported as "1.#J"
v2.1.4	2017.02.28	• Support for SCTE-35 stream-type • Bug fix: VLAN configuration was not working
v2.1.3	2017.01.02	• Now possible to use offline mode with NIC-only license • Bug fix: SX license on DTE-31xx series was not accepted • Bug fix: audio decoding not running smooth after switching to another service
v2.1.2	2016.10.12	• Updated ATSC version of build-in template for AC-3 descriptor • Bug fix: on Windows XP the TR 101 290 tab page was empty
v2.1.1	2016.09.26	• Bug fix: failure to detect presence of DTA-2138B, DTA-2144B and DTU-245B cards

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Revision	Date	Change description
v2.1.0	2016.09.15	• Support for offline (file based) analysis • Support for TSoIP RTP streams with an extended RTP header • Bug Fix: failure to decode services from a transport-stream with 204-byte packets
v2.0.30	2016.06.14	• Bug fix: failure to decode services which use a separate PID for the PCR • Bug fix: interruption in decoding when the PAT changes, but the service that is being decoded remains unchanged (i.e. when a new service is added or other service is removed from the PAT)
v2.0.29	2016.05.20	• Bug fix: TS bitrate reported as 0bps after a temporary loss-of-signal
v2.0.28	2016.05.11	• Support for extraction of metadata from AC4 sub-streams • Restored support for using the StreamXpert on Windows XP. NOTE: we recommend using windows 7 or higher • Bug fix: occasional crash that occurred when number of services in the transport-stream changes • Bug fix: lip-sync issue with (E)-AC-3 audio • Bug fix: StreamXpert would not list local NICs if there were more than 10 local NICs available • Bug fix: failure to decode video streams with a large vbv-delay
v2.0.25	2016.02.18	• Restored '+' and '-' keyboard shortcuts for 'zapping' through services to decode • Identify custom tables by name, instead as a 'private/custom table', if there is a XML template definition for the table. E.g. AIT table is now identified as AIT in the PID and service trees • Restored option to select a specific character code table for decoding of string in P(SI) tables/descriptors • Bug fix: aspect ratio was not always maintained correctly by the video decoder • Bug fix: failure to Digicypher video • Bug fix: crash of StreamXpert when there are no (or no licensed) input adapters in the system • Bug fix: closed caption where garbled when both the primary and secondary closed caption streams where present • Bug fix: could only decode the first video/audio PID from a service with more than one video/audio stream • Bug fix: AC-3 audio was not decoded properly when multiple (complete + partial) AC-3 audio frames where encapsulated in one PES packet
v2.0.24	2015.10.20	• Bug fix: AVC/HEVC video with an access unit per field would not decode smoothly or freeze regular • Bug fix: crash when decoding AVC/HEVC with an access unit per field • Bug fix: failure to receive IP streams via a DTA-160/2160/2162
v2.0.23	2015.10.15	• Added support for decoding video while connected via a remote desktop session • Increased max. number of services in decode popup to 50 • Increased with of service and PID dropdowns controls in decode ribbon tab • Bug fix: failed to decode a service with (E-)AC-3 audio on a Windows 7 machine • Bug fix: incorrect resolution was reported for some HEVC streams • Bug fix: some HEVC video streams where not decoding smoothly. NOTE: this does not apply to 4k resolutions (CPU specs are TBD) • Bug fix: Lite version refused to decode 8-bit AVC streams

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Revision	Date	Change description
		• Bug fix: field parity in vbi_data_descriptor was displayed as even when it should be odd and other way around
v2.0.22	2015.09.30	• New ribbon based GUI look • Support for HEVC and AVS decoding • Support for Dolby AC-4 metadata • Dolby certified Dolby Digital and Dolby Digital Plus audio decoder • Full screen decoding with a dual-screen mode • Support for DTA-2152/2154/2174 and DTU-238 • Many bug fixes

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7. Contact Information

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