

# AVT Direct Stream Package

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## Release Information

V2.0

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## 1 Overview

The AVT Direct Stream Package (DSP) is a software development kit (SDK) designed for the Windows operating systems: Windows7, Vista, and XP. The SDK can be used with all AVT IEEE 1394<sup>1</sup> cameras and is free of charge for AVT camera owners.

The DSP focuses on DirectShow and COM based programming. Thereby, the provided DirectShow compliant streaming driver allows also using AVT 1394 cameras with many DirectShow compliant image processing solutions.

This document provides an overview about the components and their versions provided with the AVT Direct Stream Package. Additionally, the package architecture (see figure 1) is shown.

## 2 Package contents

The current version (v2.0) of the AVT Direct Stream Package contains the following components:

Type	Component	Description
Driver	1394 DirectShow Capture Source	WDM-based kernel-mode streaming driver (DirectShow CaptureSource) for AVT 1394 cameras.  This driver is embedded in Microsoft DirectShow and allows that in all corresponding programs AVT cameras are made available as video capture devices.  The capture source provided with the DSP supports several DirectShow interfaces. Please refer to the DSP User Guide for details.
API	AVT Direct Stream Property Set	Proprietary camera interface for controlling AVT 1394 camera features via COM, with additional GUI (property pages).
DirectShow Filter	Image Format Transformation Filter <sup>2</sup>	The AVT Convert transform filter can be used to convert AVT camera image formats to displayable (such as RGB24, RGB32) and other usable image formats (such as YUV422).  With the AVT Convert Filter additionally a property page (GUI) is provided to control the filter's attributes.
Tools	AVT AmCap	Example viewer for standard and advanced feature support
	DSP 1394 Driver Installer	Easy-to-use DSP driver installation tool.  Contains additionally all files required to perform a (SP1) driver rollback for XP systems.

<sup>1</sup> Prosilica 1394 cameras EC and CV are not supported!

<sup>2</sup> This filter replaces: the YUV411 transform filter and the Y800 transform filter from the AVT Direct FirePackage

Additionally, an API Reference Manual (as CHM file) for the AVT Direct Stream Property Set is available and a User Guide (as PDF file) is provided separately, which contains all information required to install and apply the SDK properly.

### 3 Package architecture

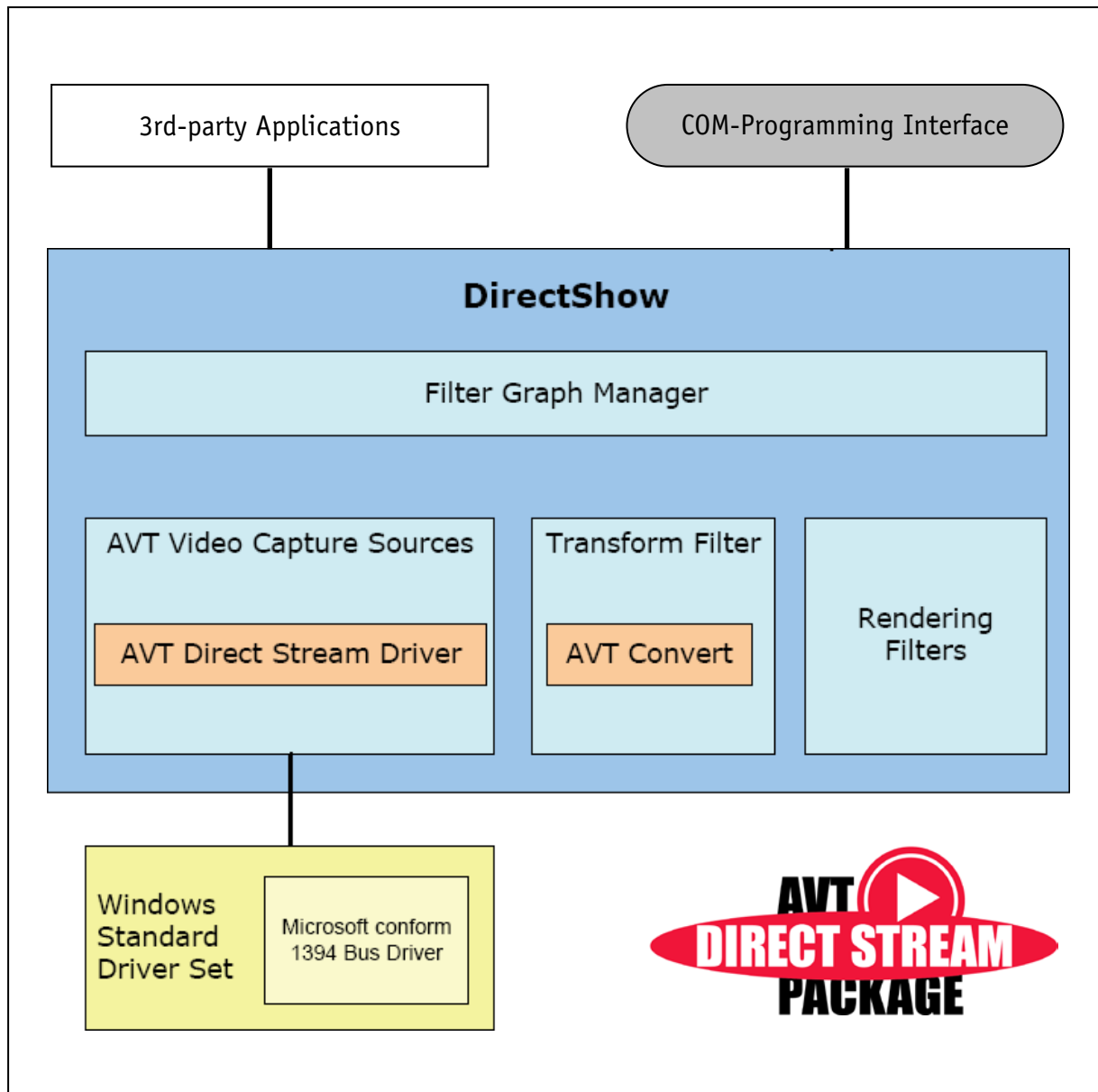


Figure 1: AVT Direct Stream Package architecture

## 4 System requirements

### Software

The AVT Direct Stream Package is a software development kit (SDK) designed for the Windows operating systems:

- Windows 7 32- and 64-bit version
- Windows Vista (SP1) 32-bit version only
- Windows XP (SP3) 32-bit version only

#### Note

This SDK should also work on older service pack releases. However, testing has been performed on the service pack versions listed above.



#### Note

Currently there is no S800 support provided by Microsoft for Vista. Please use the 'AVT 1394 Bus Driver Package' to overcome this drawback.



#### Note

With Windows XP SP2, 1394b devices are only supported with S100 speed. To enable S400 with 1394b, there is an official Microsoft hot-fix KB885222, and S800 support can only be achieved by a 'rollback' to 1394 OHCI drivers that come with Windows XP SP1, which can also be achieved by using the DSP1394DriverInstaller tool.



With Windows XP SP3, 1394b devices are only supported with S100 speed. S800 support can only be achieved by a 'rollback' to 1394 OHCI drivers that come with Windows XP SP1, which can also be achieved by using the DSP1394DriverInstaller tool.

Alternatively, the 1394 bus driver of the 'AVT 1394 Bus Driver Package' can be used.

Furthermore, to run the DirectShow example (AVTAmCap.exe) Direct-X 9.0c is required. In addition, for being able to compile the provided example(s), you need Visual Studio 2005 or higher and a Platform SDK containing DirectShow and DirectX SDK.

Optionally for .NET compatibility the installation of .NET FrameWork 2.0 or higher is required.

### Hardware

1 GHz PC or laptop with 32-bit (x86) or 64-bit (x64) processor or better and at least 1 GB RAM.

#### Note

For the maximum system performance of a **64-bit Windows 7 system** please take care that the maximum of PCI/PCIe addressable space is not exceeding the 4GB limit, because otherwise it is only possible to use a maximum of 256 map registers, which results in a maximum DMA transfer of 1MB only.



Additionally, when using AVT 1394 cameras, a built-in IEEE 1394 interface or (OHCI) adapter card (one or more) for PCI or PCI Express bus or PC card or an ExpressCard with IEEE 1394 port(s) is required.

**Note**



AVT Direct Stream Package supports only AVT 1394 cameras. Prosilica EC and CV cameras, as well as any other 3<sup>rd</sup>-party 1394 cameras are not supported.

## 5 Quick version overview

The components provided with current AVT Direct Stream Package v2.0 have the following version numbers:

### Driver

- 1394 DirectShow Capture Source – AVT1394DSPCamera.sys **2.0.0.2**

### Programming Interface (API)

- Property Pages – AVT1394DirectStreamProperty.ax **2.0.0.2**

### DirectShow Filter

- Image Format Transformation Filter - AVT\_Convert.ax **1.0.5**

### Tools

- Camera Demo Viewer – AVTAmCap.exe (also provided as an example) **9.0.4**
- DSP Driver Installation Tool – DSP1394DriverInstaller.exe **1.3.0.2**

**Note**



*Components with a **bold** version number have been changed compared to the previous AVT Direct Stream Package v1.0.5*

In addition an updated User Guide (as PDF file) is separately available that describes the installation of the SDK and provides an overview about the package contents.

## 6 List of changes

In this chapter the revision history of the components provided with the AVT Direct Stream Package is listed.

Thereby, only the changed components are listed for each release. Furthermore, a **bold version number** indicates a component version number that was published in an official release of the AVT Direct Stream Package. Version numbers in parentheses indicate a component version number that was never published in an official release of the AVT Direct Stream Package.

### 6.1 AVT Direct Stream Package v2.0

Release date: 15<sup>h</sup> of July 2011

The major change of this release is the addition of 64-bit Windows 7 and Guppy PRO camera support. Furthermore, camera feature control options have been extended and minor bugs have been fixed (see details below).

#### Driver

Component	Version	Description of changes
<b>1394 Capture Source</b> [AVT1394DSPCamera.sys]	<b>2.0.0.2</b>	Preview Mode no longer resets the Trigger Mode

#### API

Component	Version	Description of changes
<b>AVT Direct Stream Property Set</b> [AVT1394DirectStreamProperty.ax]	<b>2.0.0.2</b>	Added LUT control methods to API and LUT tab GUI elements to property pages, including: LUT selection, LUT ON/OFF, and LUT upload/download from/to file ----- Enable selection of 'auto mode' as a possible ISO Channel ----- Corrected the behaviour of SetFeatureState method ----- Extended Visual Basic and .Net support ----- Extended the AOI Selection control ----- Improved reliability of feature settings in general

#### DirectShow Filter

Component	Version	Description of changes
<b>AVT Convert</b> [AVTConvert.ax]	<b>1.0.5</b>	Bug-fix: Corrected image transform functions utilizing 2x2 LCAA or YUV debayering algorithms

**Tools**

Component	Version	Description of changes
<b>AVT AmCap Viewer</b> [AVTAmCap.exe]	<b>9.0.4</b>	Added 64-bit support
<b>DSP Driver Install Tool</b> [DSP1394DriverInstaller.exe]	<b>1.3.0.2</b>	Added 64-bit support

**6.2 AVT Direct Stream Package v1.0.5**

Release date: 5<sup>th</sup> of March 2010

Although this is the initial release of the AVT Direct Stream Package, it utilizes some components that are also part of other AVT SDKs and thus have already a release history (see below). These are:

- The Image Format Transformation Filter (AVT\_Convert.ax) is also part of the **AVT Active FirePackage**

**DirectShow Filter**

Component	Version	Description of changes
<b>AVT Convert</b>	<b>1.0.4</b>	Added support for output formats of the new capture source provided with the DSP.
	[1.0.0]	New DirectShow filter that replaces the previous transform filters provided with the AVT Direct FirePackage for YUV411 and Y800 output formats. The AVT Convert filter is an overall image format transform filter for AVT cameras that supports, in addition to the image format transformations of the Y411 and Y800 filters, various additional format transformations.



## 7 Known issues

### DirectShow

- The DirectShow filter AVT\_Convert is not 100% compatible with the AVTY800 and AVTYUV411 filters provided with previous versions of the Active FirePackage or the DFP v4.10 (or older). This is because the output formats of the corresponding capture sources are different.
- 3<sup>rd</sup>-party DirectShow applications  
AVT has successfully tested the following DirectShow-compliant applications together with the DSP:
  - AmCap
  - GraphEdit
  - MovieMaker (tested only with XP)
  - Video Capturix (tested only with XP)

### Capture Source Filter Property Pages (IAVTDirectStreamPropertySet interface)

- *Color* tab  
*White balance UB* and *White balance VR* have two combo boxes for setting the state, but they are synchronized.
- *Format* tab  
The maximum of the FPS slider is only determined when initializing the camera and is determined for each media type for maximum AOI at maximum speed. This might cause that the maximum value is not correct for the current camera configuration.

### API (IAVTDirectStreamPropertySet interface)

- All methods of the *IAVTDolphinPropset* interface provided formerly in the *AVT Direct FirePackage* are also provided by the *IAVTDirectStreamPropertySet* interface, but not all of them were debugged or improved. So if you experience problems (especially using the deprecated methods), please switch to the new methods.
- Although listed in the enumeration and possibly supported by the camera the following features are not accessible via the GetFeature... functions:
  - enFeatExposureOffset
  - enFeatLutMaxSize (\*)
  - enFeatShading (\*)
  - enFeatSoftReset
  - enFeatTriggerDelayAdv (\*)
  - enFeatAutoShutterLow (\*)
  - enFeatAutoShutterHigh (\*)
  - enFeatAutoGainLow (\*)
  - enFeatAutoGainHigh (\*)
  - enFeatAutoFunctionAOI\_XUnits (\*)
  - enFeatAutoFunctionAOI\_YUnits (\*)

...

- enFeatAutoFunctionAOI\_Left (\*)
- enFeatAutoFunctionAOI\_Top (\*)
- enFeatAutoFunctionAOI\_Width (\*)
- enFeatAutoFunctionAOI\_Height (\*)
- enFeatUserProfile
- enFeatParameterUpdateTiming
- enFeatSIS
- enFeatSISpike
- enFeatLogging
- enFeatCameraBusy
- enFeatPhySpeed (\*)
- enFeatFrameBufferCount
- enFeatFreeBandWidth (\*)
- enFeatCameraacceptDelay
- enFeatCycleTime
- enFeatBurstCount
- enFeatDoBusTrigger

Nevertheless features marked with an asterisk (\*) are accessible via dedicated functions in the *IAVTDirectStreamProperty* interface. The others can still be controlled via direct register access.

### **IAMStreamConfig interface**

Changing stream properties via this interface and corresponding property page is not recommended, since only parts of the camera configuration needed to set up the transport parameters are passed to the driver via the media subtype. Instead, we recommend using the "Format" tab of the AVT Capture Source filter.

### **AMCap example**

- The filter properties are displayed differently depending on the current preview state: In case the filter graph is connected, the "Format" tab of the capture source's property pages is hidden, because DirectShow does not allow changing the bandwidth of a connected filter graph. Once the filter graph is disconnected, all property pages are displayed again.
- For being able to change the properties of the *AVT\_Convert* filter via the menu entry 'Options/Video Preview Convert Filter' the filter graph is temporarily disconnected.

### **Windows XP**

- The Windows XP SP1 rollback driver, which may be installed on request by the driver install tool has some severe drawbacks concerning plug and play. To avoid blue screens, please refrain from plugging or unplugging cameras while cameras are running!

- Furthermore, when using XP and the SP1 rollback driver for 1394 cards, moving or resizing the image window might scramble the image.

Workarounds:

- Stop image acquisition before moving or resizing the window
- or use the AVT 1394 Bus Driver available in a separate package provided [here](#).

### Windows Vista and Windows 7

- Windows 7 and Vista's User Account Control (UAC) prevents the compilation of example projects if those are opened directly from a location protected by UAC (i.e. C:\Program Files\...). Therefore, to compile the example projects under Windows 7 or Vista, either copy the project to a user-writable location or disable the UAC feature.
- On a freshly installed Windows Vista system with no SP1, recorded AVI files were corrupt due to wrong header information and could not be played with the Windows Media Player.

*Remark: This Windows problem has been solved by hotfix 938194 (part of SP1).*

### General

In some seldom cases, we have seen that some drivers (version dependent) for graphics cards cause scrambled images. After a corresponding driver update, the image display was OK again.

### For users of the DFP 4.x

All methods available in the IAVTDolphinPropset are also available in the IAVTDirectStream-PropertySet, but you might have to recompile your code to work with the new property pages. You may also have to modify the code slightly because backward compatibility was not the major goal of the DSP.

The DirectShow filter AVT\_Convert is not 100% compatible with versions of the AVTY800 and AVTYUV411 filters previously provided with the Direct FirePackage (DFP) 4.x, because the output formats of the DSP and DFP capture source are different.

For further details please refer to the *ReleaseNotes.txt* file installed with the AVT Direct Stream Package.

## 8 Support

Please do not hesitate to inform us about any problem, error, or bug you may discover. You can reach the **AVT Technical Software Support** via the corresponding contact form for your region:

### Asia Pacific

<http://www.alliedvisiontec.com/apac/support/contact-support.html>

### Europe, Middle East and Africa

<http://www.alliedvisiontec.com/emea/support/contact-support.html>

### Germany

<http://www.alliedvisiontec.com/de/support/support-kontaktieren.html>

### The Americas

<http://www.alliedvisiontec.com/us/support/contact-support.html>