

American Dynamics Software Development Kit (SDK) User Manual

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About this guide

This guide provides information about the American Dynamics Software Development Kit (American Dynamics SDK). The kit enables user-written application programs to access and manipulate Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR features in a unified interface.

The functionality included in this SDK enables you to achieve the following results:

- Access and administrate Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR.
- Perform administrative actions on Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR recorder devices.
- Perform administrative actions on all cameras on Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR.
- Perform administrative actions on all audio inputs on Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR.
- Perform administrative actions on all dry-contact inputs on VideoEdge NVR.
- Receive all notifications from Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR.
- Manage media recording for Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR.
- Manipulate historical media data in Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR, including historical media data searching and clip retrieval.
- Manipulate PTZ controls and perform PTZ actions for Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR.
- Generate alarms on Intellex and VideoEdge NVR.
- Set different properties on the Intellex and VideoEdge NVR.
- Search for motion alerts from Intellex and VideoEdge NVR.
- Search for analytics alerts from VideoEdge NVR.
- Discover Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and TVR recorders.

American Dynamics SDK content

The American Dynamics SDK installation includes the following items:

- American Dynamics SDK User Manual.
- American Dynamics SDK COM Interface Reference generated CHM file.
- American Dynamics SDK .Net Control Reference generated CHM file.
- Sample applications, that include the following:
 - Demonstrates the use of the ActiveX Video control: Simple Live Video (C#), Advanced Live Video (C#), Advanced PTZ (C#), Date/Time Search (C#), Motion and Analytic Search (C#), and Simple Streaming Video Search (C#).
 - Unit Information (C# and C++).
 - Event Retrieval (C++).
 - VideoEdge NVR Web Sample (HTML).
 - MFC Frame Provider.
 - Alarm Event Sample (C#).
 - Discovery Sample (C#).

- Demonstrates the use of the .NET Video control (Deprecated): Simple Live Video (C#), Advanced Live Video (C#), Advanced PTZ (C#), Date/Time Search (C#), Motion and Analytic Search (C#), and Simple Streaming Video Search (C#).
 - Source code for the sample applications. You can access the applications at the following location: <user>/<my documents>/ADSDK/Samples. These can be built as x86 or x64 applications.
 - Samples COM Library demonstrating how to implement the different controls, such as streaming, trickplay, and playback.
 - American Dynamics SDK Binaries: American Dynamics SDK COM Library and its dependencies and American Dynamics SDK .Net Control DLLs and their dependencies.
- ⓘ **Note:** The .Net video control has been deprecated. It is advised that new integrations incorporate the new ActiveX video. The .Net video control and its samples continue to be supported and bug fixes supplied, however new features are added to the ActiveX control only.

User qualification

An American Dynamics SDK user must be qualified in a relevant software language, such as C++, and be proficient with Win32 programming conventions. In addition, it is assumed that the user meets the following criteria:

- Experience with COM interface.
- Access to a software development IDE, such as Visual Studio.
- Access to the complimentary development tools to work with the API.

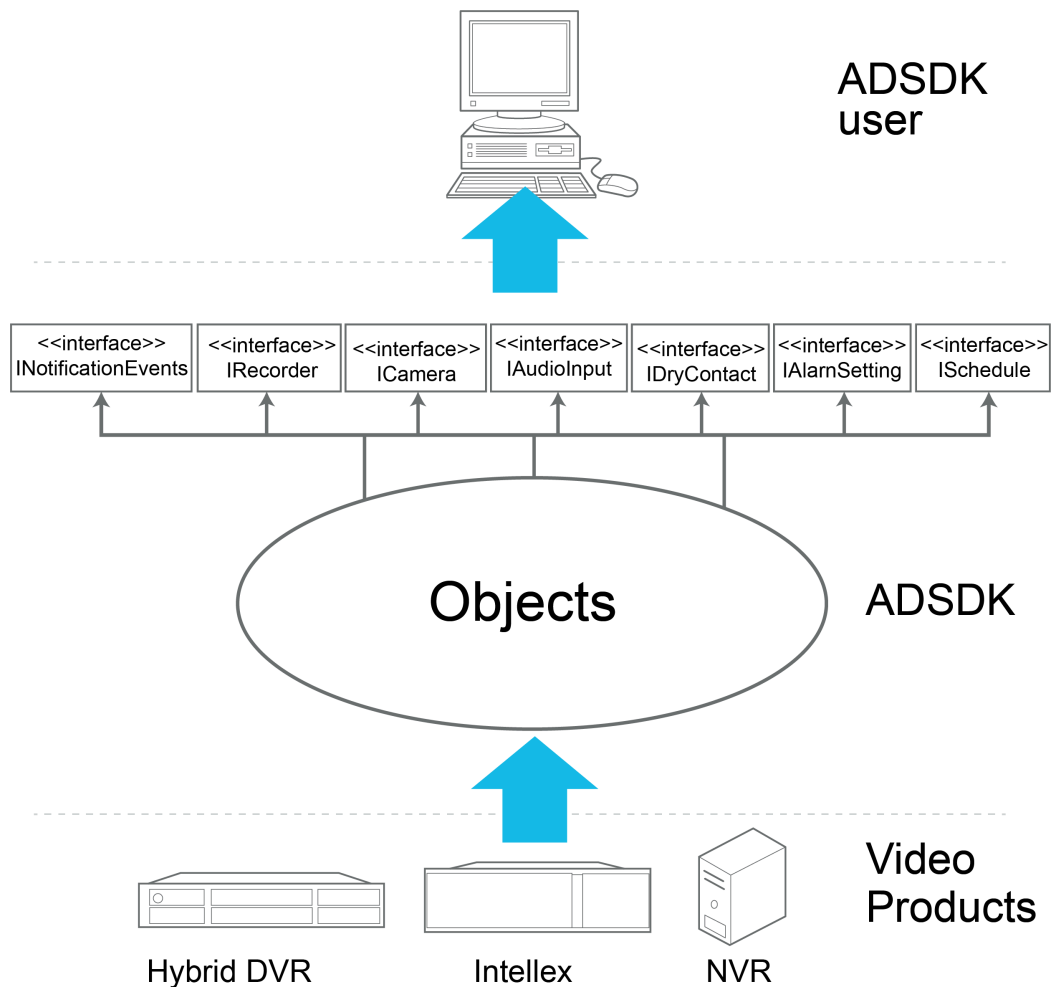
For technical support and software engineering related queries, contact: <http://victorSDKsupport@tycoint.com>.

American Dynamics SDK overview

American Dynamics SDK is a unified SDK for Intellex, VideoEdge NVR, and Hybrid DVR/ExacqVision. It is a single interface that enables access to Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR.

American Dynamics SDK provides ActiveX and .Net controls to integrate into your applications. You can display video from Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR with different layouts and pause, fast forward, and rewind video.

Figure 1: American Dynamics SDK logical structure

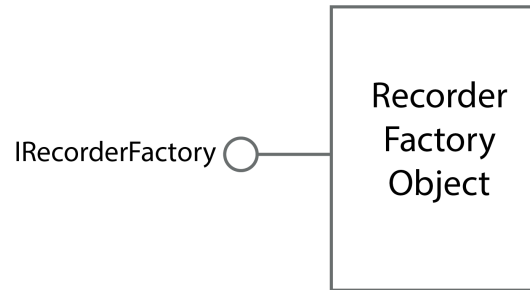


The application programming interface (API) component of the American Dynamics SDK is accessed through a common object model (COM) object that implements several interfaces and several connection points interfaces. The COM object and its interfaces are stored in a set of dynamic linked libraries (DLLs).

The COM object category groupings are shown in the following figures.

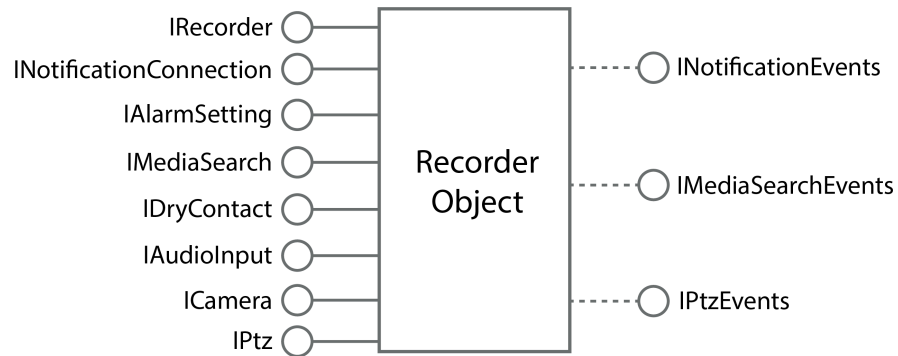
- **RecorderFactory Object:** Provide a set of methods in IRecorderFactory interface to create a specified recorder object corresponding to specified Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR recorder device.

Figure 2: RecorderFactory COM object interface groupings



- **Recorder object:** Provide several unified interfaces and several unified connection point interfaces to access and manipulate Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision and ADTVR

Figure 3: Recorder COM object interface groupings



Programming guide

The following section outlines on how to use the American Dynamics SDK. The following topics are included in this section:

- Minimum system requirements
- SDK installation
- Compatibility
- Sample application dependencies

Minimum system requirements

Development platform requirements

For the development platform, you require the following minimum system requirements:

- 1.6 GHz Intel Pentium 4 or Celeron processor or equivalent processor that supports streaming SIMD extensions (SSE).
- 3 GB hard drive space available for software installation.
- 1.56 GB (x86) or 2.5 GB (x64) RAM.
- Ethernet 10/100 NIC.
- DVD-ROM drive for installation.
- AGP or PCI Express X 8 graphics card with 64 MB+ memory and DirectX 9.0 with 1024 x 768 support.
- Windows 10 (x86 or x64) or Windows 11 (x86 or x64).
- Microsoft .NET Framework 4.6.1.

① **Note:**

- Developer's studio such as Visual Studio is required to demonstrate how the interfaces are used by the included demo sample applications.
- Programming tools for COM compatible languages such as Microsoft Visual C++ and Visual C#.
- American Dynamics SDK has been compiled with Microsoft Visual Studio 2019. It is recommended that your application also be compiled with MS VS 2019.

Target (Client) platform requirements

For the target (Client) platform, you require the following minimum system requirements:

- 2.66 GHz Intel Pentium 4 or Celeron processor or equivalent processor that supports streaming SIMD extensions (SSE).
- GB hard drive space available for software installation.
- 2 GB RAM.
- Microsoft .NET Framework 4.6.1, if you use the .NET video control.
- Direct X June2010 Redistributables.
- Microsoft Visual C++ 2015 Redistributables.

Table 1: Supported operating systems

Supported operating systems	Video	Management
Windows 10	✓	✓
Windows 11	✓	✓
Windows Server 2008	X	✓
Windows Server 2016	X	✓
Windows Server 2019	X	✓

Coding languages

This manual and its respective API assume that the software developer is writing the application software in C++, C# or a scripting language like VBScript or JavaScript. Applications that are written in other COM incompatible coding languages are not supported.

- ❗ **Note:** There are known issues with using JavaScript. Some methods have [out] marked parameter which JavaScript doesn't know how to handle. These methods should use [out] marked parameter compatible script language, such as VBScript.

SDK installation

- ⚠ **CAUTION:** Uninstall any previously installed version of the American Dynamics SDK before you install a new version.

The American Dynamics SDK is contained in an executable file. To install the American Dynamics SDK, run the `ADSDKSetup.exe`, and follow the installation wizard steps.

All API components are installed on your local workstation. The default location for the SDK installation is `C:\Program Files\Tyco\American Dynamics SDK`.

Target environment

The installer should ensure correct installation and registration of the respective DLLs on the developer's intended target machine. The minimum system requirements for the target system are outlined in [Minimum system requirements](#).

The American Dynamics SDK, its samples, and documentation are intended for use only on the target development machine. It is not intended for third party distribution. The third party should provide a suitable installer for their application that includes the American Dynamics SDK redistributable package.

Multiple American Dynamics SDK clients

The American Dynamics SDK is designed for both free and apartment threading models. By default, it takes on the threading model of the thread that created the COM object.

Compatibility

- ❗ **Note:** No claim is made regarding the upward compatibility of this software.
- ❗ **Note:** This SDK is not compatible with VideoEdge NVR 3.

Redistributable package

As part of the American Dynamics SDK installation, an executable file is installed that contains the ADSDK redistributable components. To install the ADSDK Redistributable, include the `ADSDKRedist.msi` in your installer.

Access the redistributable installation at the following locations:

- **64-bit ADSDK:** C:\Program Files\Tyco\American Dynamics\ADSDK
- **32-bit ADSDK:** C:\Program Files (x86)\Tyco\American Dynamics\ADSDK

The American Dynamics SDK redistributable installs both versions. There is another redistributable executable file installed as part of the American Dynamics SDK installation, `ADSDKRedistFull.exe`, this file contains all the prerequisites.

- ① **Note:** It is recommended that the `ADSDKRedist.msi` is used and that the pre-requisites are already installed on the target machine.

Sample application dependencies

Table 2: C# Samples, ActiveX video control

Sample application	COM dependency	ActiveX control dependency
Simple Live Video	N/A	AmericanDynamics.Sdk.ControlsLib2.dll
Advanced Live Video	American Dynamics SDK.DLL	AmericanDynamics.Sdk.ControlsLib2.dll
Advanced PTZ	American Dynamics SDK.DLL	AmericanDynamics.Sdk.ControlsLib2.dll
Date/Time Search	American Dynamics SDK.DLL	AmericanDynamics.Sdk.ControlsLib2.dll
Motion and Analytic Search	American Dynamics SDK.DLL	AmericanDynamics.Sdk.ControlsLib2.dll
Simple Streaming Video	American Dynamics SDK.DLL	AmericanDynamics.Sdk.ControlsLib2.dll

Table 3: C# samples, .NET video control, deprecated

Sample application	COM dependency	.NET control dependency
Simple Live Video	N/A	AmericanDynamics.Sdk.ControlsLib.dll
Advanced Live Video	American Dynamics SDK.DLL	AmericanDynamics.Sdk.ControlsLib.dll
Advanced PTZ	American Dynamics SDK.DLL	AmericanDynamics.Sdk.ControlsLib.dll
Date/Time Search	American Dynamics SDK.DLL	AmericanDynamics.Sdk.ControlsLib.dll
Motion and Analytic Search	American Dynamics SDK.DLL	AmericanDynamics.Sdk.ControlsLib.dll
Simple Streaming Video	American Dynamics SDK.DLL	AmericanDynamics.Sdk.ControlsLib.dll

Table 4: C# samples

Sample application	COM dependency	.NET control dependency
Alarm Event	American Dynamics SDK.DLL	N/A
Unit Information	American Dynamics SDK.DLL	N/A
Discovery	American Dynamics SDK.DLL	N/A

Table 5: C++ samples

Sample application	COM dependency	.NET control dependency
MFC Event Retrieval	American Dynamics SDK.DLL	N/A
MFC Unit Information	American Dynamics SDK.DLL	N/A
MFC Frame Provider	American Dynamics SDK.DLL	N/A

 **Note:** MFC Frame Provider Sample requires DirectX SDK Feb 2010 to compile and use.

Table 6: C++ samples

Sample application	COM dependency	.NET control dependency
VideoEdge NVR Web Sample	American Dynamics SDK.DLL	N/A

Sample applications

The sample applications delivered with this installation are working examples. They are not intended to be complete applications, though they are completely functional.

You can review the sample applications to gain an understanding of how to invoke the underlying objects and write your application to handle the connectivity of the API's functional objects, and the presentation layer characteristics.

This section contains an overview of the sample applications currently available with the American Dynamics SDK.

The C++, C#, and web-based sample applications included with the American Dynamics SDK are now consolidated and streamlined. See the following table for details regarding the consolidation of the sample applications.

Table 7: Sample applications

Prod language	Sample name	Demonstrates	Description
C#	Simple live video	Display live and streaming video from Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR.	• Display live video in single pane (1x1) video layout. • PTZ/Virtual PTZ operation with on-screen display (OSD) control. • Render live audio from VideoEdge NVR.
C#	Advanced live video	Display live and streaming video from Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR. • Gets camera list from recorder. • Switch video layout. • Change video overlay options. • Streaming from Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR together. • Drag and drop camera on .Net or ActiveX control. • Displays the version of the ADSDK. • Set the bandwidth limit in bps. • Take a snap shot of the 1 x 1 video display with the Video Control or the COM interface. • De-warp functionality is available on supported VideoEdge cameras.	Display live video in the following layouts: • Single pane (1 x 1) • Four panes (2 x 2) • Nine panes (3 x 3) • Sixteen panes (4 x 4) perform streaming playback operation on supported video stream • Pause • Rewind • Fast forward • Fast rewind • Frame forwards • Frame backwards • Jump to date/time

Table 7: Sample applications

Prod language	Sample name	Demonstrates	Description
C#	Advanced PTZ	Display live video from Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR. • Gets camera PTZ features list. • Performing PTZ operation. • Performing vPTZ operations on non PTZ cameras, ActiveX sample only.	• Display live video in single pane layout. • Perform PTZ operation using API calls. - Pan - Tilt - Zoom - Nudge - Focus - Iris - Preset - Pattern - Sequence

Table 8: Sample applications

Prod language	Sample name	Demonstrates	Description
C#	Date time search	Display recorded video from Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR. • Download recorded video and audio from one or more cameras for a specific time span from a recorder. • Playback downloaded clips. • Specify the file name, format, and directory.	Playback media clips with defaults of IMG format file from Intellex, ISO format files from VideoEdge NVR, and ZIP format file from Hybrid DVR/ExacqVision and ADTVR.
C#	Alarm event sample	Display all alerts from Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR: • Camera Notification Event • Connection Status Changed Event • Property Changed Notification Event • Protection Status Notification Event • Recorder Status Notification Event • Storage Status Notification Event • Generate Alarm in Intellex and VideoEdge NVR	• Use to receive all alerts generated from Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR devices. • Use to create user generated alarm.
C#	Unit information sample	• Get Record Mode • Get Record State • Get Recorder Name • Get Version • Get Camera List • Get Camera Name • Get Camera IP Server • Type • Get Camera Live Rate • Get Camera Alarm Rate	Use to get some basic unit information from Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR devices.

Table 8: Sample applications

Prod language	Sample name	Demonstrates	Description
C#	Discovery sample	Discover Intellex, VideoEdge NVR, Hybrid DVR/ ExacqVision, and ADTVR recorders in an IP address range: • Specify IP address range. • Specify recorder type. • Search discovered device list.	Use to discover American Dynamics recorders present on the network in a defined IP address range.
C#	Motion and analytic search	Display list of all motion and analytic alerts from Intellex and VideoEdge NVR using specified parameters: • Alert Type • Camera • Audio • Duration • Motion Direction • Motion Sensitivity • Duration of Motion • Linger Duration • Maximum Results • Overlap • Change Update image by taking snap shot of the live video feed. Select Region of Interest (ROI) for alert searches.	Used to search for specific types of motion and analytic alerts generated from Intellex and VideoEdge NVR devices.
C#	Simple streaming video	Display live and streaming video from Intellex, VideoEdge NVR, Hybrid DVR/ ExacqVision, and ADTVR.	• Display live video in single pane (1 x 1) video layout. • PTZ/Virtual PTZ operation with on-screen display (OSD) control. • Render live audio from VideoEdge NVR.

Table 8: Sample applications

Prod language	Sample name	Demonstrates	Description
C++	MFC event retrieval sample	Display all alerts from Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR: • Camera Notification Event • Connection Status Changed Event • Property Changed Notification Event • Protection Status Notification Event • Recorder Status Notification Event • Storage Status Notification Event	Use to receive all alerts generating from Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR devices.
C++	MFC unit information sample	• Get Record Mode • Get Record State • Get Recorder Name • Get Version • Get Camera List • Get Camera Name • Get Camera IP Server Type • Get Camera Live Rate • Get Camera Alarm Rate	Use to get some basic unit information from Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR devices.

Table 9: Sample applications

Prod language	Sample name	Demonstrates	Description
C++	MFC frame provider	- Retrieves live unrendered video frames from Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR. - Retrieves recorded unrendered video frames from Intellex and VideoEdge NVR.	Use to display unrendered video from Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR devices.
HTML	VideoEdge NVR web sample	- Display video from VideoEdge NVR. - PTZ control for VideoEdge NVR.	Use to display video and PTZ control for VideoEdge NVR.

- Note:** Camera ID on the HDVR is a 6-to-7-digit number. As these can change over time as cameras are added and removed, for convenience during testing the SDK also supports a zero-based camera index. Production code must identify cameras using the ID retrieved from the device.
- Note:** Bandwidth throttle limit: if the recorder cannot be throttled, for example, HDVR and NVR 4.1 or earlier, then the stream drops if its bit rate exceeds the limit set.

American Dynamics SDK tools

The American Dynamics SDK tools are installed as part of the ADSDK Redistributable in the following location: `C:\Program Files\Tyco\American Dynamics\ADSDK`

Video streamer

The video streamer executable is used to view live video and stream historic video and audio from Intellex, VideoEdge NVR, Hybrid DVR/ExacqVision, and ADTVR.

The `VideoStreamerCommandLineOptions.txt` file that lists a combination of the command-line options is installed along with the executable.

ADSDK utility

Use the ADSDK utility to detect common configuration problems on the computer that an ADSDK is installed. The utility is split up into the following four parts and functions:

1. When you launch the utility, it automatically runs basic diagnostics that detect and gather information on the current machine set-up. Any problems that can prevent the ADSDK video control from running correctly are highlighted. Detailed detection results display in an output text control and can be saved to a text file in the current session folder.
2. Connection quality enables the user to test the network connection quality for all recorders supported by the ADSDK. Detailed results for each recorder display on screen. Any logs are retrieved from NVRs and can save the list of recorders to a CSV file. Both types of files are saved to the current session folder.
3. Logging utility allows one-click activation of the video or audio pipeline logging mechanism. It also offers advanced pipeline logging whereby individual loggers and log levels can be selected and the executable to be logged.

4. Runtime Monitor monitors all ADSDK-based programs running on the computer. The user can choose to monitor individual programs for crashes, hangs, or high CPU and dump files are automatically generated. If a dump has been triggered it displays in a list so the user can keep track of what has occurred. The monitored program's versions also display.

Saved information in the current session folder can be easily attached to email and sent to victor SDK support.