

Infodraw MRS Active-X Control

Abstract

MRS are the initials of Media Relay System, a system that transports media: video, audio and others. The system is based on a server, clients, devices and monitors. Programs and applications running on computers in the MRS system can usually be either a client or a server, and may be a monitor or a device. An Active-X Control is a special kind of software in a form of a dynamically loaded library, which can be loaded by a Windows Application. More specifically, it is a C++ object that manages a window system object.

Functionality of MRS Active-X Control

The MRS Active-X Control has two main modes of operation:

1. An MRS Monitor Client that displays in real time one selected video channel of one MRS device. This control is capable of recording this channel to an H264 compressed video file.
2. An H264 video playback that displays a video file recorded from an MRS video channel.

This document explains about version 5.4.0.5 of the MRS Active-X control.

MRS Active-X Control Object Information

Class ID	96F064F1-2ACD-4E01-97B8-897739DF8516
Signature	Not Signed
CR-Registry Name	MRS_ACTIVEX_CONT.MRS_ActiveX_ContCtrl.1

In order to load the object, the object file (MRS_ActiveX_Control.ocx) must first be registered in the system. Use “regsvr32.exe MRS_ActiveX_Control.ocx” to register the control in the system.

Control Parameters

Name	Value	Example
ServerAddress	IP address of the server	212.143.39.227
UserName	Name of user for logging in	shushu
Password	Password of user	psss
DeviceID	Decimal positive identifier	1256
VideoChannelIndex	Decimal 0-Based index of video channel index	0
AudioChannelIndex	Decimal 0-Based index of audio channel index	0
AudioOutChannelIndex	Decimal 0-Based index of	0

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	audio output channel index	
SoundDeviceIndex	Decimal 0-Based index of PC's selected sound device for playback	0
SoundInputDeviceIndex	Decimal 0-Based index of PC's selected sound device for capture	0

Object Properties

Name	Value	Example
AudioChannelIndex	Audio channel index (0-based) for listening to audio from the device. Stop with -1.	0
AudioOutChannelIndex	Audio output channel index (0-based) for talking to the device. Stop with -1.	0
CameraEngineIndex [RO]	Index of associated camera PTZ engine. (-1) = no PTZ engine.	1
ConnectionProviderName[RO]	Name of cellular connection provider	"Pelephone"
ConnectionTechnology[RO]	Name of cellular connection technology used	"HSPA"
DeviceID	Selected device identifier – Unsigned Integer	1256
FrameCount	Number of frames	7
FrameIndex	The index of the current frame	6
FrameRate	Average number of frames per second	25
InputMediaFileName	Path for video playback	"e:\\temp\\x.h264"
MaxCameraEngineLocations [RO]	The maximal number of presets for a camera engine.	20
NumAudioChannels [RO]	The number of audio input channels (microphones).	1
NumAudioOutChannels [RO]	The number of audio output channels (headphones).	1
NumInputPorts [RO]	The number of input ports.	4
NumOutputPorts [RO]	The number of output ports.	4

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NumUsedCameraLocationNames	The number of used camera location names.	2
NumVideoChannels [RO]	The number of video channels in the selected device.	1
OutputMediaFileName	Path for saving current video real-time stream	"e:\\temp\\x.h264"
SecureConnection	Whether or not to have a secure connection to the server (1 or 0).	0
ServerAddress	IP address of the server	"212.143.39.227"
ServerPassword	Password of user	"psss"
ServerUserName	Name of user for logging in	"shushu"
SoundDeviceIndex	PC audio playback device index (0-based)	0
SoundInputDeviceIndex	PC audio recording device index (0-based)	0
VideoBitrate	Number of bits per second of compressed video	300000
VideoChannelIndex	Video channel index (0-based) for display video. Stop with -1.	0

Object Methods

Method	Details
CalculateVideoLatency	Returns the video latency in microseconds, -1 if unknown.
Cleanup	Performs cleanup of the internal objects.
EmptyCameraLocationsList	Empties the location names list for the camera's PTZ engine.
GetCameraLocationName(index)	Returns the camera engine preset location name. index = location index
GetDeviceName(deviceID)	Returns the device name for a given device ID number.
GetInputPortValue(index)	Returns the input port value. index = 0-Based port index (0..NumInputPorts-1)
GetOutputPortValue(index)	Returns the output port value. index = 0-Based port index (0..NumOutputPorts-1)
GetSoundDeviceName(index)	Returns the name of PC playback sound device. index = 0-Based device index (0..NumSoundDevices-1)
GetSoundInputDeviceName(ind	Returns the name of PC recording sound device.

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ex)	index = 0-Based device index (0..NumSoundInputDevices-1)
MoveCamera(angle,speed,time)	Moves the camera's PTZ engine. angle = angle in degrees (0-359). [0 = Up] speed = 1-100. time = move duration in milliseconds.
MoveCameraToLocation(index)	Moves the camera's PTZ engine to a preset location. index = preset index (1-20)
Pause	Pauses playback or real-time stream.
Play	Enables playback or real-time stream.
RestartMedia	Restarts the selected live media stream coming from the capture device through the server.
SaveCameraLocation(index)	Saves the camera engine location (set preset). index = preset index (1-20)
SaveImage(filename)	Saves the current image to a file. The file format is set according to the file extension, which is one of BMP, JPG, GIF or PNG.
SetCameraLocationName(index, name)	Sets a camera engine preset location name. index = preset index (1-20) name = identifying name for the location.
SetLiveMode	Sets the control to live mode (real time stream). This is automatic when setting the ServerAddress property.
SetOutputPortValue(index,value)	Sets output port value. index = 0-Based output port index (0..NumOutputPorts-1) value = 0 or 1
SetPlaybackMode	Sets the control to playback mode to play back a video file. This is automatic when setting the InputMediaFileName property.
StartWindowsSockets	Starts usage of Windows Sockets (winsock2). This method should be used first in the application (and only once) in order to allow networking to function.
Stop	Stops the current playback or real-time stream.
ZoomIn(time)	Zoom in (forward) using the camera's PTZ engine.
ZoomOut(time)	Zoom out (backward) using the camera's PTZ engine.

Object Events

Name	Details
BatteryStatus(flags,voltage,partial,minutes)	Battery status change. flags = 0x1 – voltage, 0x2 – time, 0x4 – partial, 0x8 – charging, 0x10 – Full voltage = current battery voltage (in volts) [if flags & 1] partial = number between 0 and 1 specifying the partial energy left in the battery [if flags & 4]

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	minutes = minutes left for usage [if flags & 2]
Click	The object is clicked.
DbClick	The object is double-clicked.
DeviceConnection(deviceID)	A device connected to the server.
DeviceDisconnection(deviceID)	A device disconnected from the server.
GPSSatellitesCount(count)	The number of GPS satellites received.
InputPortValueChanged(index,value)	Input port value change. index = 0-based input port index. value = 0 or 1
LocationChange(lat,lon,height)	The object's location has changed. The parameters, latitude, longitude and height, all double precision, indicate the current position of the object on planet earth.
MouseDown	Mouse down event.
MouseMove	Mouse move event.
MouseUp	Mouse up event.
OutputPortValueChanged(index,value)	Output port value change. index = 0-based output port index. value = 0 or 1
SignalQuality(signal)	The cellular station signal strength received [0-100].

Web Page Example

The MRS Active-X Control can be embedded in a web page using the following example:

```

<HTML>
<HEAD>
  <TITLE>MRS ActiveX Control</TITLE>
</HEAD>
<BODY>
  <center>MRS ActiveX Control</center>
  <OBJECT ID="MRSActiveXExample" WIDTH=500 HEIGHT=300 CLASSID="CLSID:96F064F1-2ACD-4E01-97B8-897739DF8516" CODEBASE="MRS_ActiveX_Control.ocx">
    <PARAM NAME="ServerAddress" VALUE="10.0.0.85">
    <PARAM NAME="DeviceID" VALUE=1256>
    <PARAM NAME="VideoChannelIndex" VALUE=0>
    <PARAM NAME="UserName" VALUE="gadi">
    <PARAM NAME="Password" VALUE="wow">
  </OBJECT>
  <BUTTON
    TYPE=BUTTON
    onClick="document.MRSActiveXExample.RestartMedia();">
  <P>Restart Media</P>
</BUTTON>
</BODY>
</HTML>

```

C# .Net Example

The following steps are required in order to embed the MRS Active-X Control inside a .NET form:

- Create .NET wrapping for the Active-X control library using “AxImp.exe” provided with Microsoft Visual Studio SDK:
AxImp.exe MRS_ActiveX_Control.ocx
Generated Assembly: MRS_ActiveX_ControlLib.dll
Generated Assembly: AxMRS_ActiveX_ControlLib.dll
- Add the two DLL files as references to the .NET application project.
- Register the control: regsvr32.exe MRS_ActiveX_Control.ocx
- Add the control to the form doing the following:
 - Select a tab in the form's toolbox (you can create a new tab).
 - Right click the tab and select 'Choose Items'.
 - Select 'MRS_ActiveX_Control Control' under COM Components and check it or make sure it is checked.
 - Choose MRS_ActiveX_Control Control from the toolbox under the correct tab and draw its border on the form.
 - If references were added to the project, make sure there are only two references to the ActiveX control (delete if necessary): MRS_ActiveX_ControlLib and AxMRS_ActiveX_ControlLib.

- The following code was added by the wizard to the form:

```

        this.axMRS_ActiveX_Control1 = new
        AxMRS_ActiveX_ControlLib.AxMRS_ActiveX_Control();
        ((System.ComponentModel.ISupportInitialize)(
        this.axMRS_ActiveX_Control1)).BeginInit();
// axMRS_ActiveX_Control1
//
        this.axMRS_ActiveX_Control1.Enabled = true;
        this.axMRS_ActiveX_Control1.Location = new System.Drawing.Point(94, 85);
        this.axMRS_ActiveX_Control1.Name = "axMRS_ActiveX_Control1";
        this.axMRS_ActiveX_Control1.OcxState = ((System.Windows.Forms.AxHost.State)
(resources.GetObject("axMRS_ActiveX_Control1.OcxState")));
        this.axMRS_ActiveX_Control1.Size = new System.Drawing.Size(292, 178);
        this.axMRS_ActiveX_Control1.TabIndex = 0;

```

- Use the following example to add code in 'Form1_Load'.

```

        Object o = axMRS_ActiveX_Control1.GetOcx();
        MRS_ActiveX_ControlLib._DMRS_ActiveX_Control pMRSObject =
(MRS_ActiveX_ControlLib._DMRS_ActiveX_Control)o;
//LiveExample(pMRSObject);
//PlaybackExample(pMRSObject);

void LiveExample( MRS_ActiveX_ControlLib._DMRS_ActiveX_Control pMRSObject )
{
    pMRSObject.StartWindowsSockets();
    pMRSObject.ServerUserName = "Gadi";
    pMRSObject.ServerPassword = "foo";
    pMRSObject.VideoChannelIndex = 0;
    pMRSObject.DeviceID = 501;
}

```

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```
pMRSObject.ServerAddress = "212.143.39.227";  
pMRSObject.OutputMediaFileName = "e:\\temp\\out.h264";  
pMRSObject.Play();  
}
```

```
void PlaybackExample( MRS_ActiveX_ControlLib._DMRS_ActiveX_Control  
pMRSObject )  
{  
    pMRSObject.InputMediaFileName = "e:\\temp\\out.h264";  
    pMRSObject.Play();  
}
```