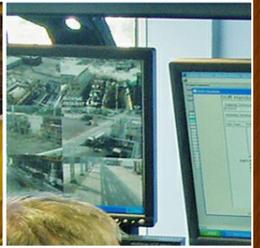
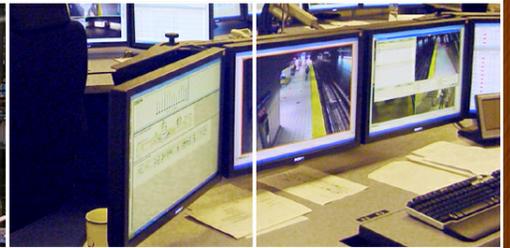


# **DELTA V INTEGRATION GUIDE**

**INTEGRATING LIVE VIDEO FROM IVC VIDEO SYSTEMS INTO DELTA V OPERATE HMI SCREENS**



# **USER MANUAL**

**IVC**  
&  
**INDUSTRIAL  
VIDEO & CONTROL**



# **DeltaV Integration Guide**

**User Manual**

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*Industrial Video & Control*

# DeltaV Integration Guide

## Industrial Video & Control Co.

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# Part

**Copyright, Trademarks, and Important Information**

**I**



# 1 Copyright, Trademarks, and Important Information

## 1.1 Copyright

© 2015 Industrial Video and Control Company

## 1.2 Trademarks

Relay Server and View Station are registered trademarks of Industrial Video and Control.

Microsoft and Windows are registered trademarks of Microsoft Corporation.

DeltaV and DeltaV Operate are registered trademarks of Emerson Process Management.

All other trademarks mentioned in this document are trademarks of their respective owners.

## 1.3 Disclaimer

This document is intended for general information purposes only. While every reasonable effort has been made to ensure the accuracy of the information included in this document, Industrial Video and Control Company, LLC (IVC) assumes no responsibility for any errors, omissions, or damages resulting from the use of the information contained herein.

Although IVC believes this document to be accurate, any risk arising from the use of this information rests with the recipient, and nothing herein should be construed as constituting any kind of warranty.

Industrial Video and Controls reserves the right to make adjustments without prior notification.

All names of people and organizations used in this document's examples are fictitious. Any resemblance to any actual organization or person, living or dead, is purely coincidental and unintended.

## 1.4 Intended Audience

This document covers integration of video into DeltaV from process monitoring system administrator's perspective. It is solely aimed at system administrators, and administrator rights might be required in order to be able to access the majority of features described in this document. It is assumed the reader has a basic understanding of IP-networking principles, Microsoft Visual Basic, and Emerson's DeltaV.

This document provides descriptions of the hardware and software interface required to integrate video from an IVC video system into DeltaV Operate HMI screens. It also provides examples, guiding administrators through completing configuration and understanding operation tasks..

This document contains very limited end-user related documentation. Users who do not have surveillance system or DCS administrator responsibilities - such as DeltaV operators - will find that this manual is not of relevance to them.

---

## 1.5 Support Resources

If during installation, configuration, or use of any of IVC's software or hardware products you need assistance, please do not hesitate to contact IVC Product Support at **617-467-3059** or **support@ivcco.com**. You may also find useful information on the Support page of our website at **www.ivcco.com**.

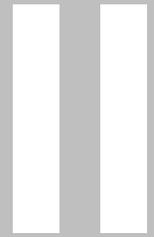
Additionally, the optional support services listed below are available from IVC to help facilitate the installation and configuration of your system as well as shortening your learning curve with our products. Contact your IVC sales representative for more information and the fees for these services.

- On-site support
- System Preconfiguration
- Training
- Customized Documentation Services
- Factory Acceptance Tests
- Software Support Subscriptions
- Extended Product Warranties



# Part

Introduction



## 2 Introduction

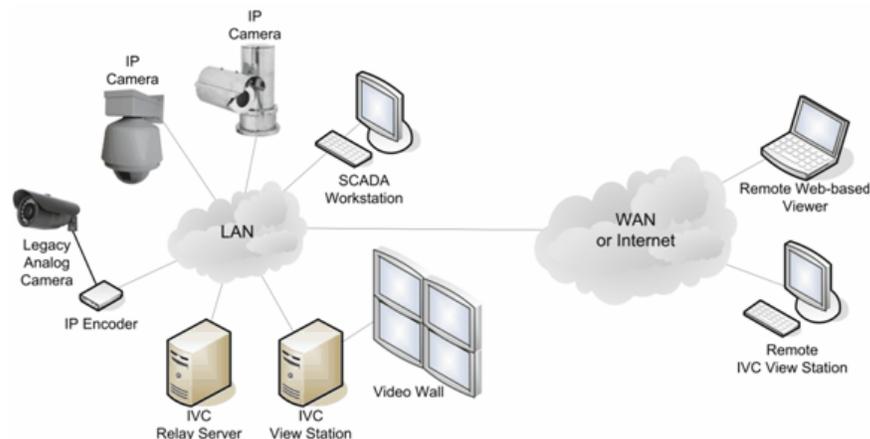
This document describes how to use an IVC video system to integrate live video and camera controls into DeltaV Operate HMI screens. The information presented assumes the following:

- A video network is in place that includes:
  - IVC's Relay Server software running on a connected server
  - Connected IP video cameras
- IVC's Relay Server has been configured appropriately and is able to serve video to browser-based client on the network and any connected PTZ cameras can be controlled from this browser interface.
- The IVC Relay Server computer is connected to a network that includes DeltaV Operate workstations.

Consult the documentation provided with the IVC Relay Server software and Emerson DeltaV for software installation and general configuration instructions.

### 2.1 IVC Camera System Architecture

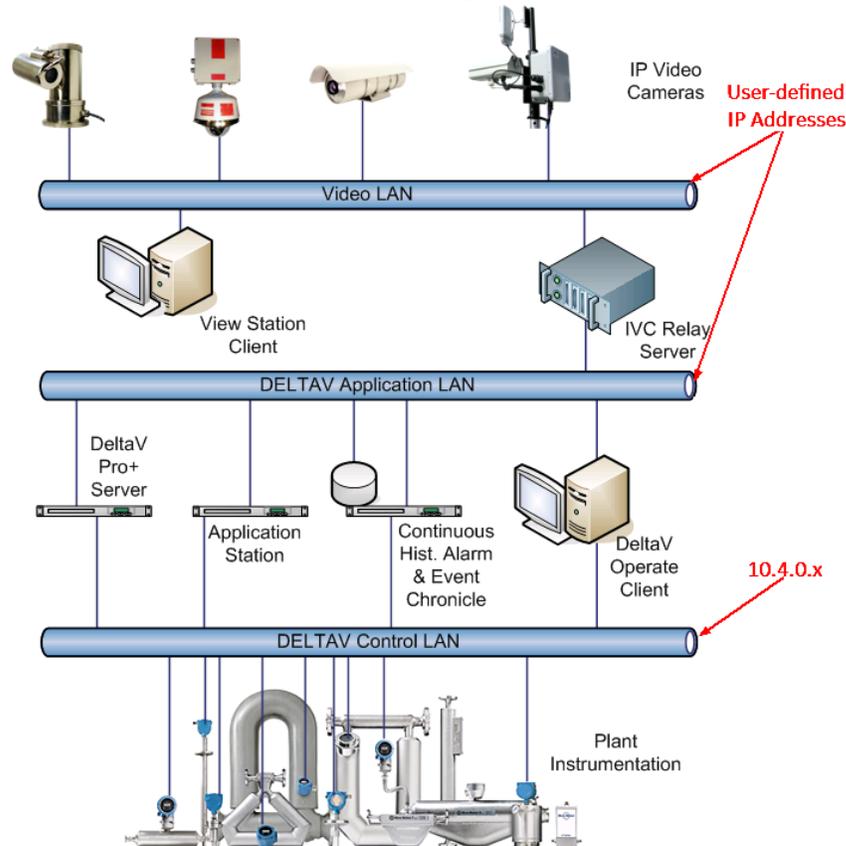
The figure below illustrates an IVC Video System that generally consists of a network of one or more IP-enabled cameras and at least one computer running IVC Relay Server Software (RSS). View Station, SCADA, and browser clients access Relay Server(s) to display and control live and stored video.



For SCADA HMI clients, the relationship of the camera network, which includes the Relay Server, to the application and DCS networks are application dependent. The number of cameras, available bandwidth, viewing expectations, and the critical nature of the DCS network dictate the optimum network architecture. The diagram above might be suitable if:

- The video bandwidth consumption is low (small number of cameras, low frame rate, or bandwidth consumption is otherwise capped by Relay Server)
- The application is not critical. In other words, should the cameras share a network with the DCS equipment, diminishment of bandwidth by video would not adversely affect overall system performance.

However, this is not the typical case. In most process monitoring applications users want to see high quality, high frame rate video. The critical nature of the process usually cannot accommodate the potential loss of bandwidth due to video on the DCS network. Therefore, in most applications, it is preferable to isolate the camera network from the DCS network and limit video bandwidth to the SCADA HMI screens. The diagram below illustrates how this can be done.



Note in the diagram above that the video network is completely isolated from the SCADA control network. The Relay Server computer is equipped with two NICs. One is connected to the camera network domain and the other is connected to the SCADA application network domain. IP address ranges used in the DeltaV application network and in the video network are defined by the application network administrator. As indicated above, only addresses in the primary range 10.4.0.x (secondary: 10.8.0.x) are allowed in the DeltaV Control LAN. Since only video requested by the DeltaV Operate Client is sent across the application network, bandwidth impact by video is minimal.

If a video only workstation is required, the IVC View Station is ideal. It provides the ability to create fully customized displays and is useful for building video walls. Many installations use the IVC View Station to provide camera video to security or management personnel and use the DeltaV integration capabilities described in this document to provide process operators video on their DeltaV Operate HMI screens. Depending on application requirements, this workstation can be connected directly to the video network or to the application network. Again, in either case, video bandwidth is isolated from the control network.

### 2.1.1 Supported Cameras

The IVC Camera System supports cameras that could include any mix of the following camera types:

- IP cameras purchased from IVC. IVC offers a wide variety of indoor and outdoor cameras. Our Relay Server software supports our fixed, auto zoom, and pan tilt cameras. These products are available with standard definition, high definition (HD), megapixel, or thermal imagers and come with several connectivity options that include copper, fiber, wireless, and cellular. IVC also offers a broad range of rugged cameras that are certified for use in potentially dangerous environments.
- Legacy analog cameras IP-enabled through the use of IP encoders. IVC offers several encoder options. Contact your local sales representative to determine which of these will best leverage your existing installation.
- Supported third-party cameras. In addition, to our own cameras, IVC Relay Server Software supports a broad array of cameras manufactured by the world's leading camera technology companies.

### 2.1.2 Relay Server

At the heart of your IP video system, the IVC Relay Server performs the following primary functions:

- Direct live video from camera feeds to clients on the network and provide a consistent, cohesive interface for the viewing and control of these cameras. Clients could include one or more of the following:
    - Web page
    - IVC View Station
    - SCADA or other third-party application
  - Act as a network video recorder by managing continuous or event-based storage of video from connected cameras.
  - Direct playback of stored video or snapshots to attached clients
  - Manage bandwidth consumed by video feeds
-

- Provide mechanism for securing the video network through user authentication
-



# Part

Integrating Video into HMI Screens

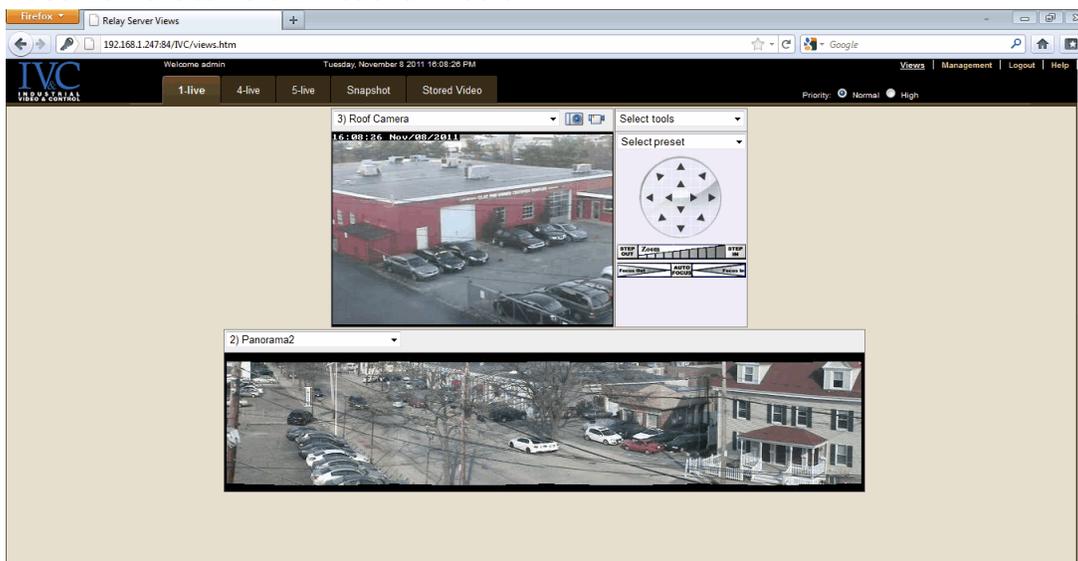


### 3 Integrating Video into HMI Screens

This chapter describes in detail how to create live video windows and camera controls in DeltaV Operate HMI screens. The information in this chapter details how to:

1. Install the IVC Relay Server ActiveX control
2. Create display objects for live video and camera controls
3. Assign properties to created display objects

To ensure that the target DeltaV computer can properly communicate with the Relay Server from which video feeds will be accessed, simply type in the IP address of the Relay Server into a browser address bar. You should be presented with the web page served by the Relay Server and video from the camera ID 1 as shown below.



If you are not presented with the Relay Server web page, recheck your network configuration. If you are presented with the web page, but you do not have video, recheck your camera connections and configurations. Consult the Relay Server Help or contact IVC support for more information.

Consult the Relay Server Help documentation for details on the IVC Relay Server ActiveX API.

See also:

- Install ActiveX Control
- Insert Live Video Object
- Assign General Properties
- Assign Other Properties

#### 3.1 Install ActiveX Control

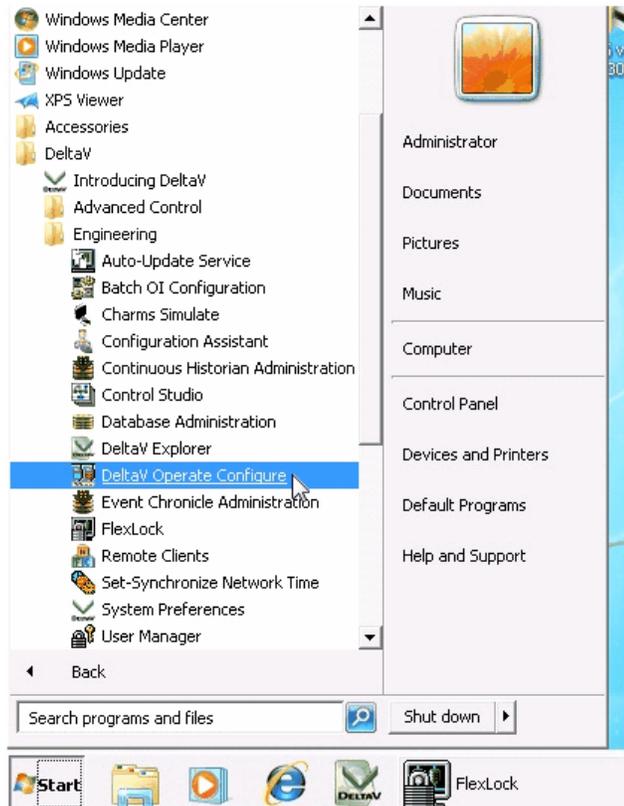
Make sure the IVC ActiveX control is loaded on the DeltaV machine that will be used to create the Operate HMI screens. This software is distributed on the IVC Relay Server CD. Consult the Relay Server Help documentation for installation instructions.

## 3.2 Insert Live Video Object

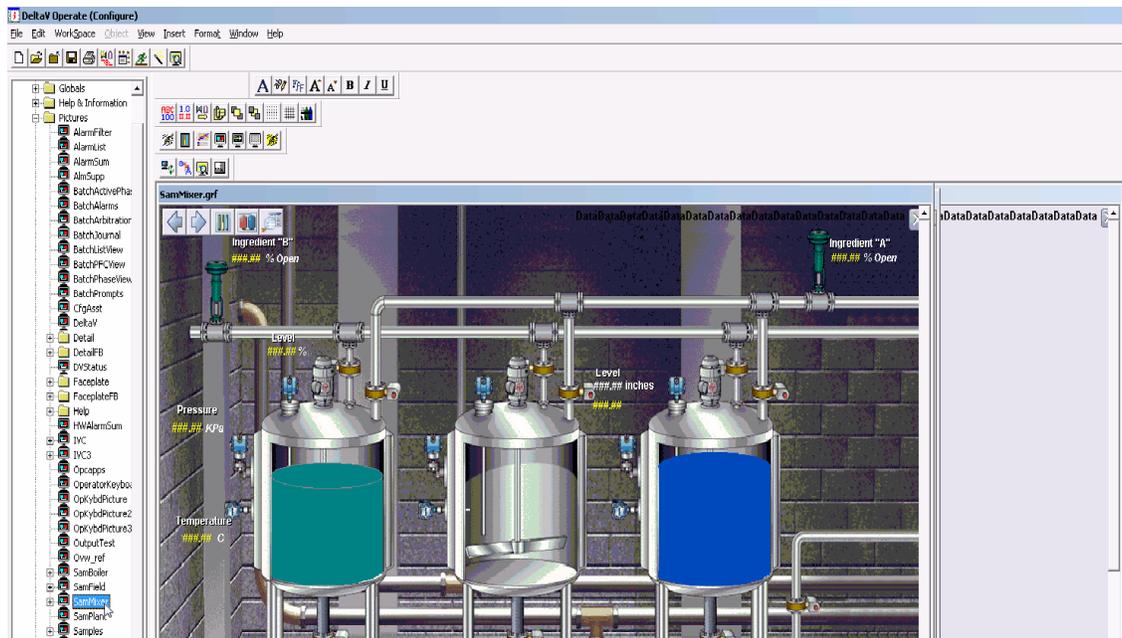
This document assumes the reader has installed DeltaV. If you need to install DeltaV, consult the documentation provided with this software.

To create an HMI screen with embedded live video:

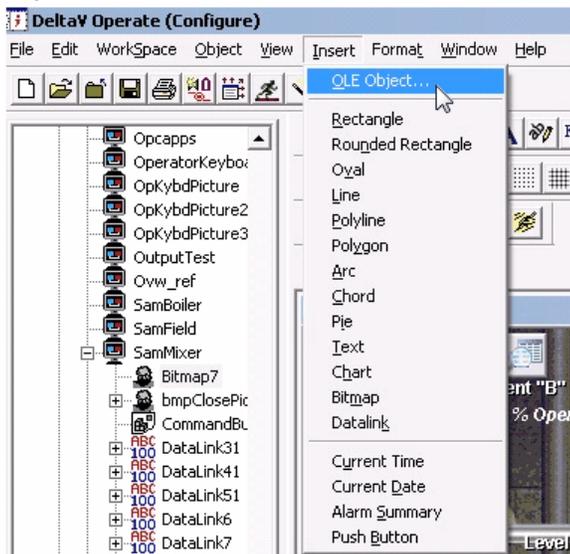
1. Start the DeltaV Operate configuration tool by clicking on **DeltaV Operate Configure** in the **DeltaV/Engineering** folder in the **Start** menu.



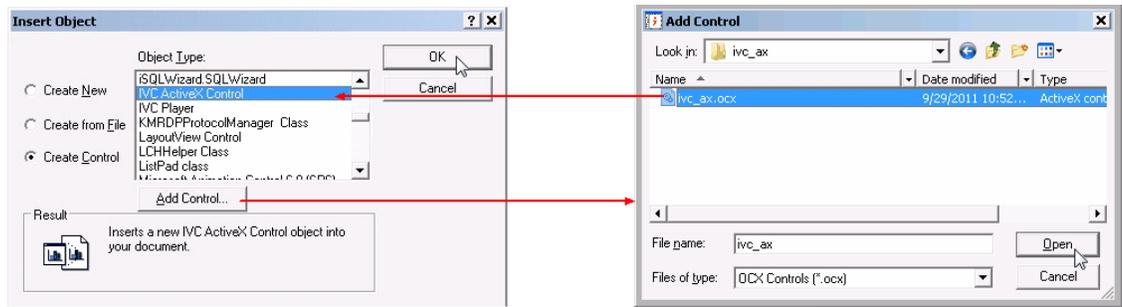
2. This will start the DeltaV Operate Configure desktop. Select an existing image (.grf file) or create a new one.



3. Insert the IVC ActiveX control by clicking on **Insert** in the desktop menu and selecting **OLE Object...** from the menu.



4. From the resulting **Insert Object** dialog select **IVC ActiveX Control** and click the **Create Control** radio button. If the IVC ActiveX object does not appear in the **Object Type** list, click the **Add Control...** button. In the resulting **Add Control** dialog search your computer's file structure to locate **ivc\_ax.ocx**. Select this file and click the **Open** button. This object should now appear in the **Insert Object** dialog list.



- Observe that a live video window object along with an **IVC ActiveX Control Properties** dialog appears on your DeltaV Operate image.

See also:

Assign General Properties

Assign Other Properties

### 3.2.1 Assign General Properties

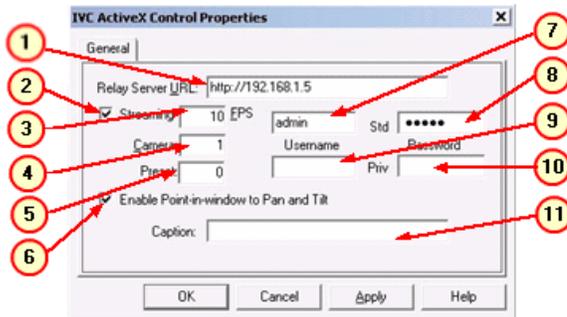
After you insert a live video object, observe that video window appears on your picture as illustrated below.



You should also see displayed an **IVC ActiveX Control Properties** dialog for this object. If you do not, point to the live video object and click the right mouse button. From the resulting menu select **Properties... IVC ActiveX Control Object**.



Configure the properties for this live video window as noted below:



#	Property	Description
1.	Relay Server URL	Type in the IP address of the Relay Server from which a camera feed will be displayed.
2.	Streaming	Click this check box to instruct the Relay Server to continuously stream video from the selected camera; otherwise the image will only be updated on demand
3.	FPS	Enter the frame rate, expressed in frames per second, at which you wish to view live video in this object
4.	Camera	Type in the Relay Server ID number for the camera whose video will be initially displayed in this object.
5.	Preset	If the video initially displayed in this window is from a PTZ camera, you may type in the preset ID number you wish this camera to move to when this object is initially viewed.
6.	Enable Point-in-window to Pan and Tilt	Click this check box to enable in-window point and click PTZ camera positioning. This option only applies to PTZ cameras that support absolute positioning.
7.	Std. Username	Type in a valid Relay Server username
8.	Std. Password	Type in a valid Relay Server password
9.	Priv. Username	Not required
10.	Priv. Password	Not required

11.	Caption	Enter a character string you wish overlaid on the live video window
-----	---------	---

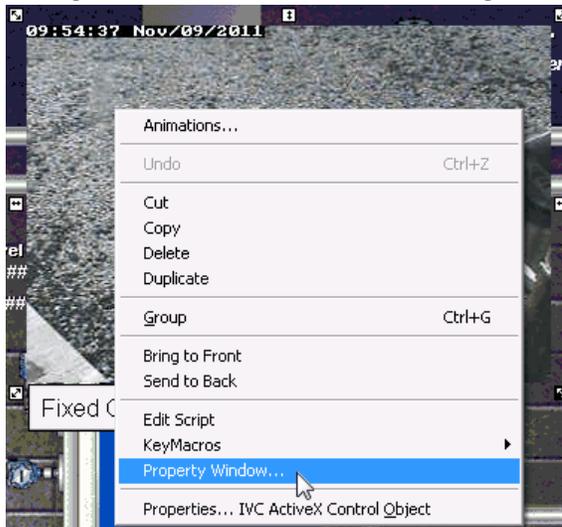
Click **OK** when satisfied with the property settings. If you have this computer connected to a network that includes the Relay Server specified in the properties and the camera specified is connected and accessible through the Relay Server, you should see live video in this object. At this point you may assign other properties to this object. Resize and position the window as required.

See also:

Assign Other Properties

### 3.2.2 Assign Other Properties

Additional properties can be assigned to live video object by pointing to the window and clicking the right mouse button. In the resulting menu, select **Property Window...**



The properties window for this object window appears. At this point you can modify the display or behavior of the window by editing these entries. As you can see, the properties you entered in the General Properties window appear in this window along with other behavior and display settings. The table below describes the settings specific to video behavior and Relay Server connection.

Properties with descriptions of **\*\*\*DeltaV Property\*\*\*** are common properties of most DeltaV objects. More detail on these properties can be found in the documentation provided with DeltaV.

Properties	
IVC_ax1 IVC_ax	
Alphabetic   Categorized	
(Custom)	
(Name)	IVC_ax1
Active	True
Camera	3
Cancel	False
Caption	
ContextID	-1
ControlOrderIndex	2147483647
Default	False
Description	
EnablePoint	True
EnableTooltips	False
Exclusive	False
ExclusivePriority	3
ExclusiveTimeout	60
FramesPerSecond	10
FramesPerSecond2	10
Height	24.5251017639077
HighlightEnabled	True
HorizontalPosition	29.9361493123772
HorizontalScaleDirection	0 - HorizontalFromLeft
HorizontalScalePercentage	100
Image	
ImageHeight	0
ImageWidth	0
IsSelectable	False
Layer	-1
Mute	False
OverrideTimeout	-1
PanLeft	0
PanRight	0
Password	ivc
Preset	0
Priority	-1
PrivPassword	
PrivUsername	
ProductVersion	2.6.20.0
PromptNetworkPassword	True
RelayServerURL	http://192.168.1.247:84
SocketReadWriteTimeout	5
StreamVideo	True
TiltDown	0
TiltUp	0
Timeout	5
UniformScale	False
Username	admin
VerticalPosition	3.10379918588874
VerticalScaleDirection	1 - VerticalFromBottom
VerticalScalePercentage	100
Visible	True
Volume	0
Width	17.3379174852652
ZoomLevel	2

Property	Description
(Name)	The name of the ActiveX control assigned to this object - READ ONLY
Active	True=Video feed active False=Video feed inactive
Camera	Relay Server camera ID number currently displayed in object
Cancel	***DeltaV Property***
Caption	Text string that will be displayed in lower left corner of video object window
ContextID	***DeltaV Property***
ControlOrderIndex	***DeltaV Property***
Default	***DeltaV Property***
Description	***DeltaV Property***
EnablePoint	True=Click to point PTZ camera movement enabled False=Click to point PTZ camera movement disabled
EnableTooltips	***DeltaV Property***
Exclusive	Not required
ExclusivePriority	Not required
ExclusiveTimeout	Not required
FramesPerSecond	Positive integer representing display frame rate expressed in frames per second. This number will also be automatically entered in the <b>FramesPerSecond2</b> field.
FramesPerSecond2	Positive real number representing display frame rate expressed in frames per second. This number will also be automatically entered in the <b>FramesPerSecond</b> field. If a fraction is entered here, this entry will be rounded down to the nearest integer and entered in the <b>FramesPerSecond</b> field.
Height	***DeltaV Property***
HighlightEnabled	***DeltaV Property***
HorizontalPosition	***DeltaV Property***
HorizontalScaleDirection	***DeltaV Property***
HorizontalScalePercentage	***DeltaV Property***
Image	***DeltaV Property***
ImageHeight	Height of the live video window expressed in pixels - default is 352 pixels
ImageWidth	Width of the live video window expressed in pixels - default is 240 pixels

IsSelectable	***DeltaV Property***
Layer	***DeltaV Property***
Mute	True=Mute audio from this camera feed False=Enable audio from this camera feed
OverrideTimeout	Positive integer that represents a time expressed in seconds that is the temporary priority override lifetime of the priority level entered in the <b>Priority</b> field.
PanLeft	Integer representing the number of frames to pan PTZ camera left. A negative number will cause the camera to pan right. This is not a permanent setting; this command will be executed once after entry. FOR DEBUG ONLY.
PanRight	Integer representing the number of frames to pan PTZ camera right. A negative number will cause the camera to pan left. This is not a permanent setting; this command will be executed once after entry. FOR DEBUG ONLY.
Password	Text string representing a valid Relay Server password for the Username entered below
Preset	Positive integer representing a PTZ camera Preset ID number. Only applies to PTZ cameras that support absolute positioning. This is not a permanent setting; this command will be executed once after entry. FOR DEBUG ONLY.
Priority	Positive integer that represents a temporary override priority level for the logged in client. Only numbers 1 through 10 are valid where 10 is the highest priority.
PrivPassword	Not required
PrivUsername	Not required
ProductVersion	Version number of IVC ActiveX control. READ ONLY
PromptNetworkPassword	True=Prompts user for valid username and password False=Will not prompt user for username and password

	RelayServerURL	IP address of Relay Server from which video feeds will be accessed
	SocketReadWriteTimeout	Integer representing the number of seconds the Relay Server will timeout after trying to read/write to selected camera
	StreamVideo	True=Stream live video from Relay Server to live video window object False=Displays JPEG image that is updated when Active is set the True or when any other property is set
	TiltDown	Integer representing the number of frames to tilt PTZ camera down. A negative number will cause the camera to tilt up. This is not a permanent setting; this command will be executed once after entry. FOR DEBUG ONLY.
	TiltUp	Integer representing the number of frames to tilt PTZ camera up. A negative number will cause the camera to tilt down. This is not a permanent setting; this command will be executed once after entry. FOR DEBUG ONLY.
	Timeout	Integer representing the number of seconds the Relay Server will timeout after trying to connect to selected camera
	UniformScale	***DeltaV Property***
	Username	Text string representing a valid Relay Server login username
	VerticalPosition	***DeltaV Property***
	VerticalScaleDirection	***DeltaV Property***
	VerticalScalePercentage	***DeltaV Property***
	Visible	***DeltaV Property***
	Volume	Integer representing volume of audio from selected camera feed
	Width	***DeltaV Property***
	Zoomlevel	Integer representing zoom step level (1-10).

See also:

Insert Live Video Object  
Assign General Properties  
Create Camera Controls

### 3.3 Create Camera Controls

This chapter discusses how to create a variety of control images to control PTZ cameras and the video displayed in the live video object. Controls may include:

- Select camera
- Pan/Tilt/Zoom controls
- Move to preset controls for absolute positioning PTZ cameras.
- URL or pass through commands to camera or connected devices

The sections of this chapter illustrate how to add typical controls. It is assumed you have already created at least one live video object.

See also:

Insert Live Video Object

Select Camera Button

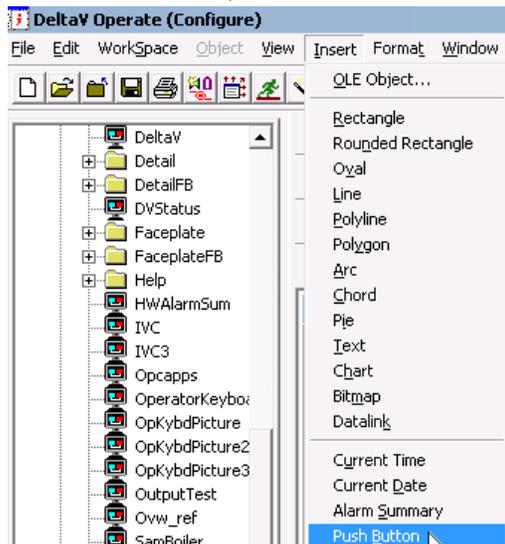
Move PTZ Camera Button

Zoom Button

#### 3.3.1 Move PTZ Camera Button

You can create a user interface using the IVC ActiveX Control so that users may control the movement of cameras mounted to pan-tilt units. This section describes how to create a control button to move these cameras. The example described below illustrates how to add a Pan Left button. The process is similar to create pan right, tilt up, and tilt down controls. The only difference is the script assigned to the button as noted below.

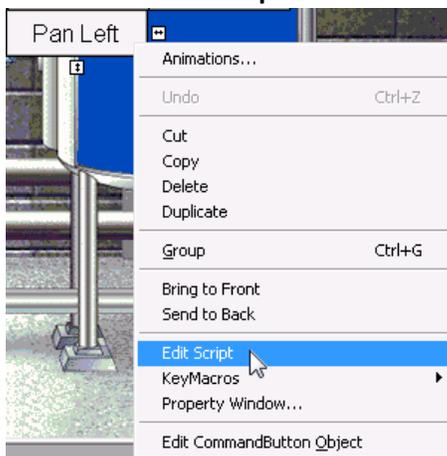
To create a button, select **Push Button** from the DeltaV Operate (Configure) **Insert** menu.



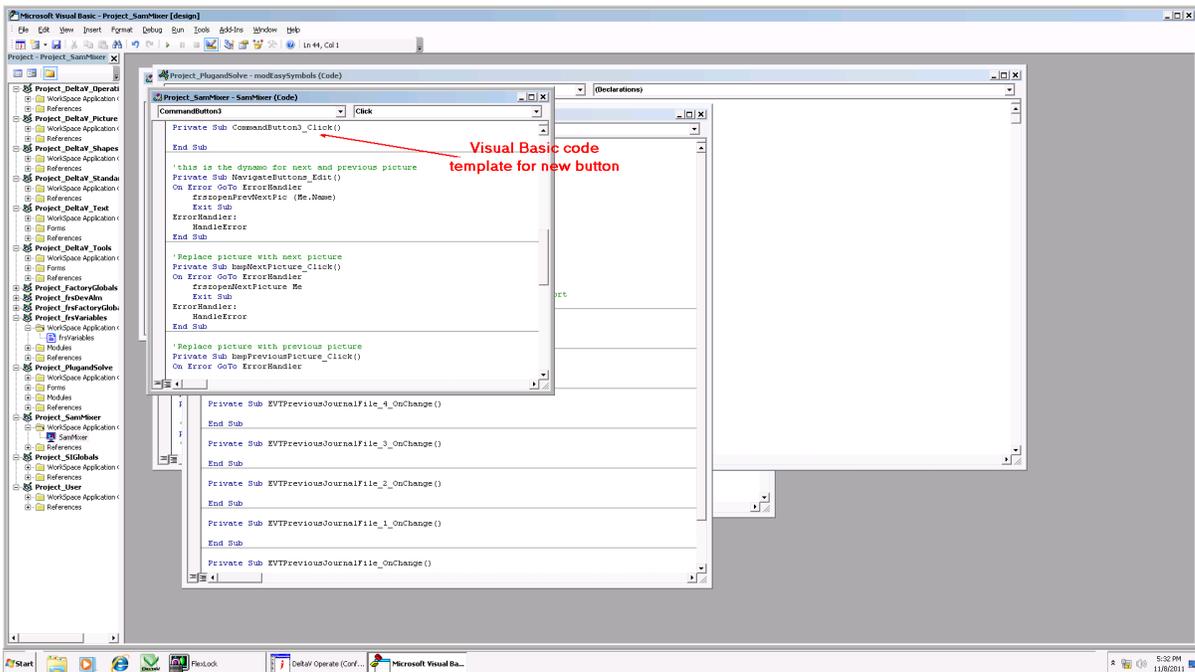
A blank button appears on your picture. Drag and drop the button to an appropriate location. Resize the button if necessary. Double-click on the button and type an appropriate label on the button. Click away from the button to exit button edit mode.



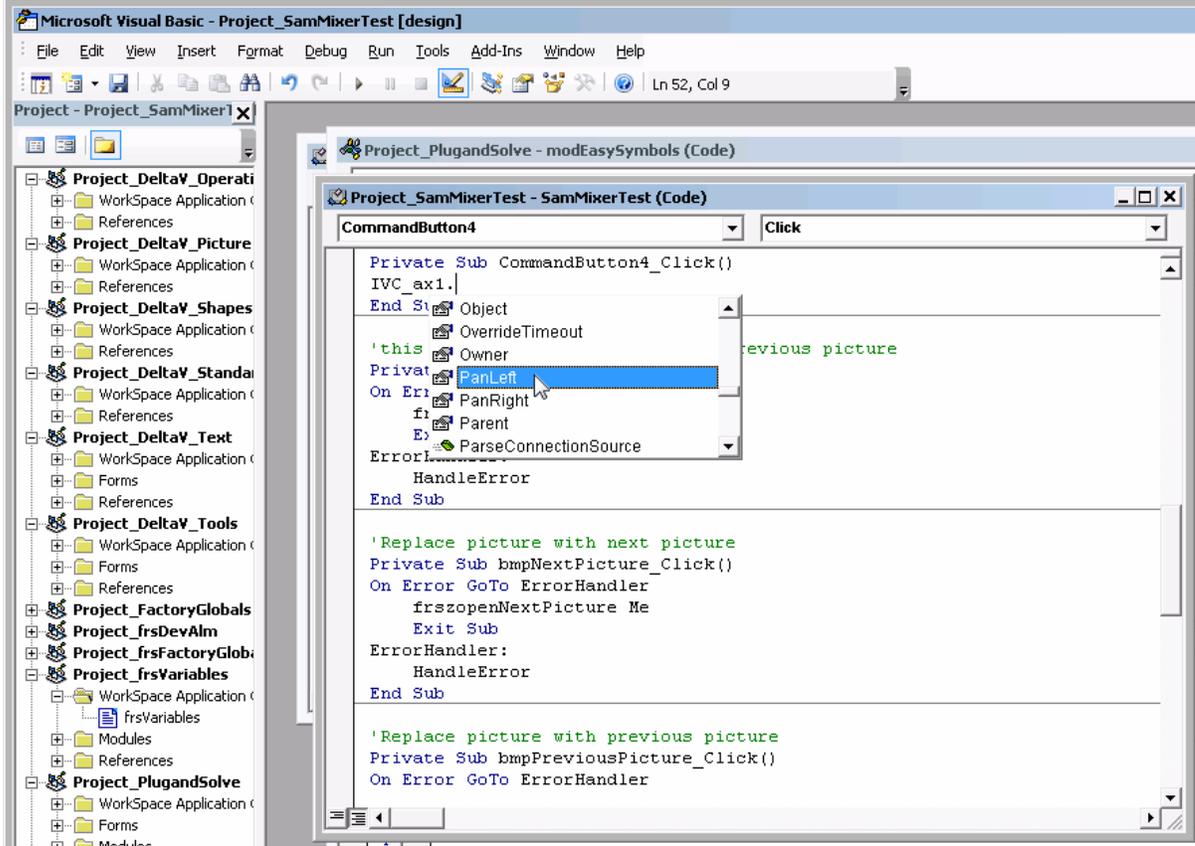
To assign a behavior to the button, point to it and click the right mouse button. In the resulting menu select **Edit Script**.



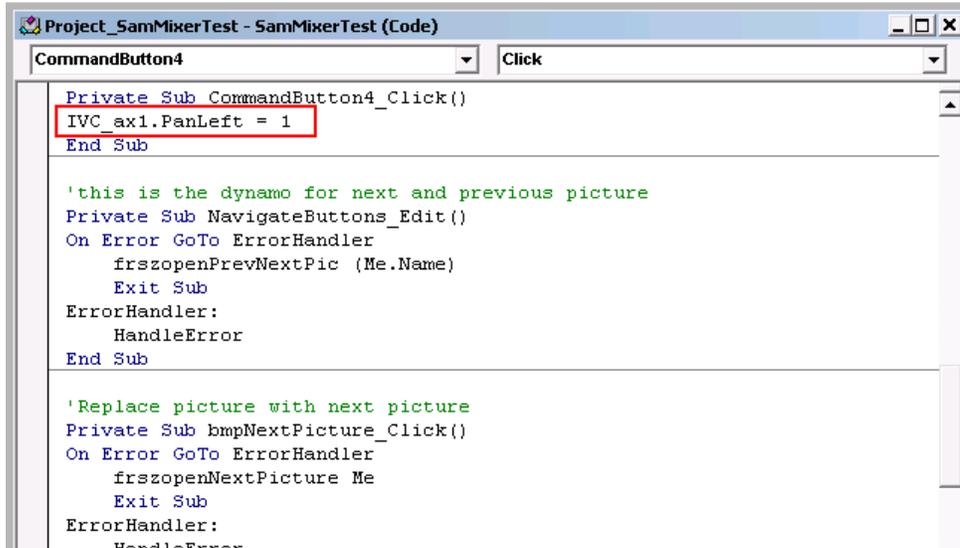
DeltaV invokes Microsoft Visual Basic and opens a project based on the name of the .grf picture that is currently being edited. Included in the desktop is script window for all of the image's embedded controls including the command button you just created. A VB script template for the new button appears at the top of the window.



Under **Private Sub CommandButton4\_Click** (the number 4 is a sequential ID number assigned by DeltaV) enter "IVC\_ax1." Once you type the period, a drop down menu will be presented with available options for this command. Scroll down and double click on **PanLeft**. For other movements, select **PanRight**, **TiltUp**, or **TiltDown** as needed.



Complete the command string by typing " $= n$ "; where  $n$  is a real number that represents the number of frames you wish to move a PTZ camera left. A negative number will cause the camera to pan right.



```
Project_SamMixerTest - SamMixerTest (Code)
CommandButton4 Click
Private Sub CommandButton4_Click()
    IVC_ax1.PanLeft = 1
End Sub

'this is the dynamo for next and previous picture
Private Sub NavigateButtons_Edit()
On Error GoTo ErrorHandler
    frszopenPrevNextPic (Me.Name)
    Exit Sub
ErrorHandler:
    HandleError
End Sub

'Replace picture with next picture
Private Sub bmpNextPicture_Click()
On Error GoTo ErrorHandler
    frszopenNextPicture Me
    Exit Sub
ErrorHandler:
    HandleError
```

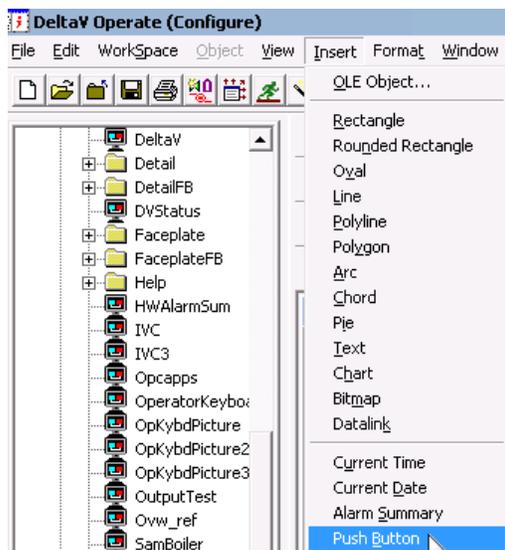
Once satisfied with the script, save it and exit the Visual Basic desktop. If you wish to edit the appearance of this control point to it and click the right mouse button. In the resulting menu select **Property Window...** Details on the available properties can be found in the documentation provided with DeltaV.

At this point you can exit the DeltaV Operate configuration tool and test the results of your edits by running this project.

### 3.3.2 Select Camera Button

You can create a user interface using the IVC ActiveX Control so that users may select which camera is displayed in a live video object. This section describes how to create a camera selection button.

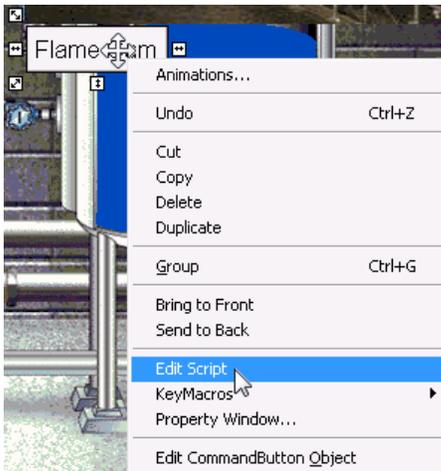
To create a button, select **Push Button** from the DeltaV Operate (Configure) **Insert** menu.



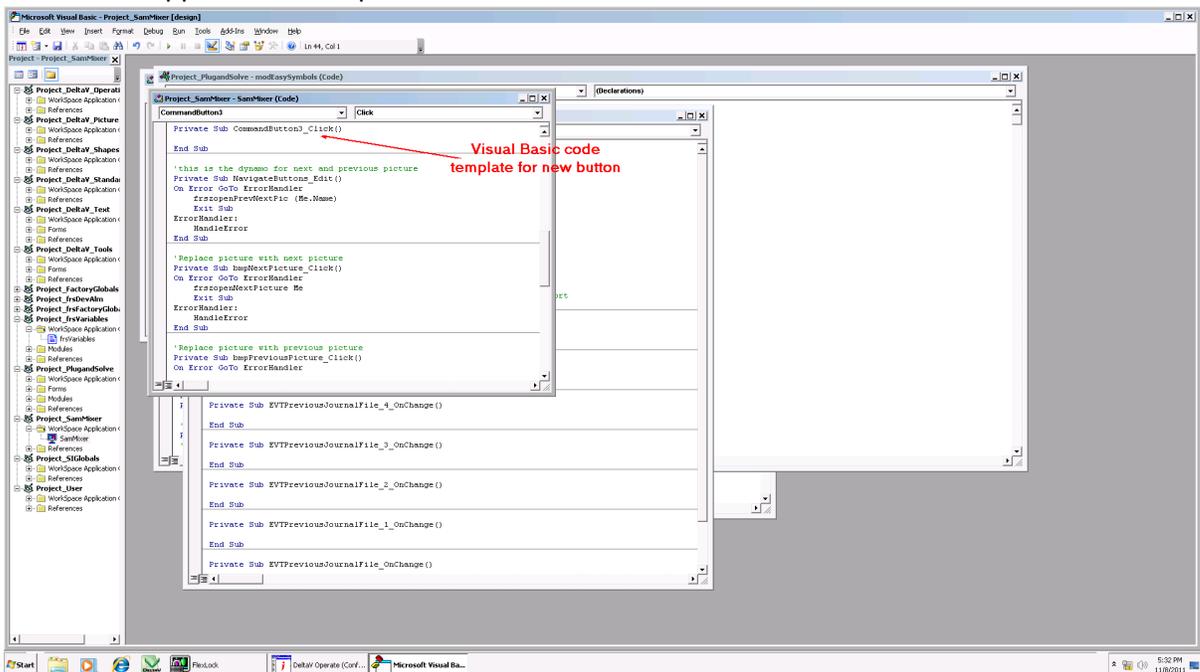
A blank button appears on your picture. Drag and drop the button to an appropriate location. Resize the button if necessary. Double-click on the button and type an appropriate label on the button. Click away from the button to exit button edit mode.



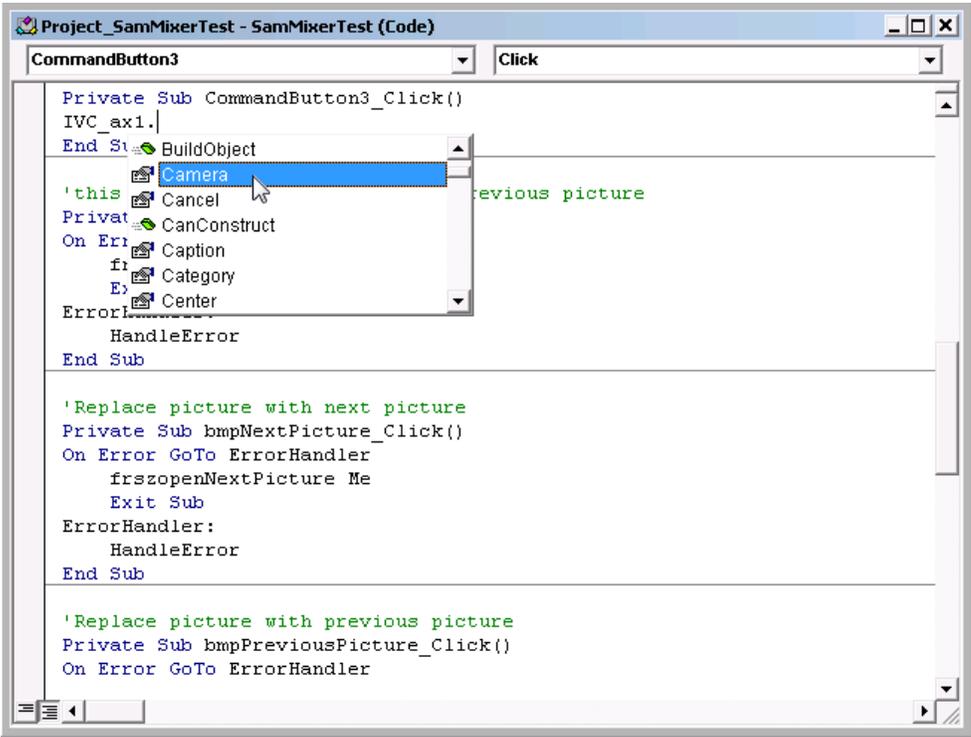
To assign a behavior to the button, point to it and click the right mouse button. In the resulting menu select **Edit Script**.



DeltaV invokes Microsoft Visual Basic and opens a project based on the name of the .grf picture that is currently being edited. Included in the desktop is script window for all of the image's embedded controls including the command button you just created. A VB script template for the new button appears at the top of the window.



Under **Private Sub CommandButton3\_Click** (the number 3 is a sequential ID number assigned by DeltaV) enter "IVC\_ax1." Once you type the period, a drop down menu will be presented with available options for this command. Scroll down and double click on **Camera**.

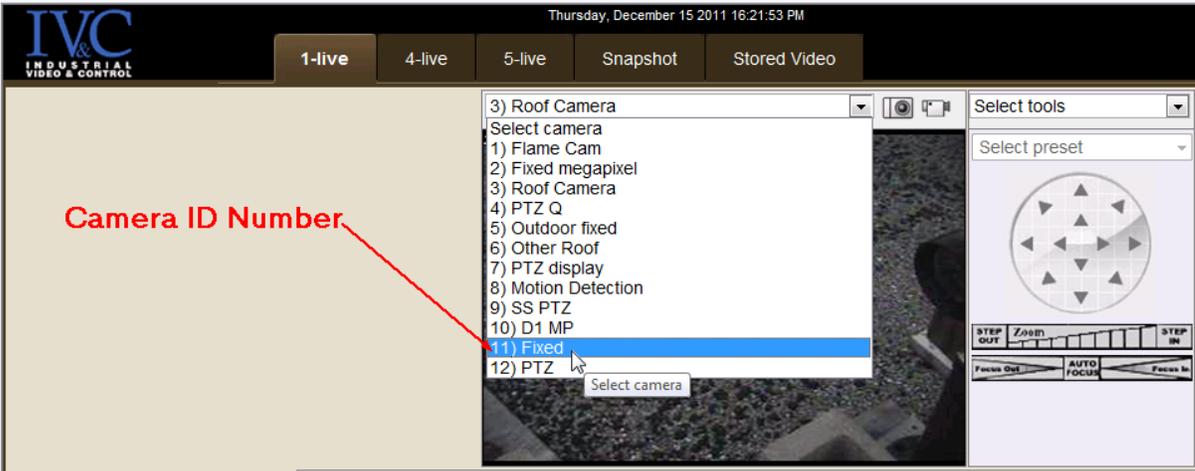


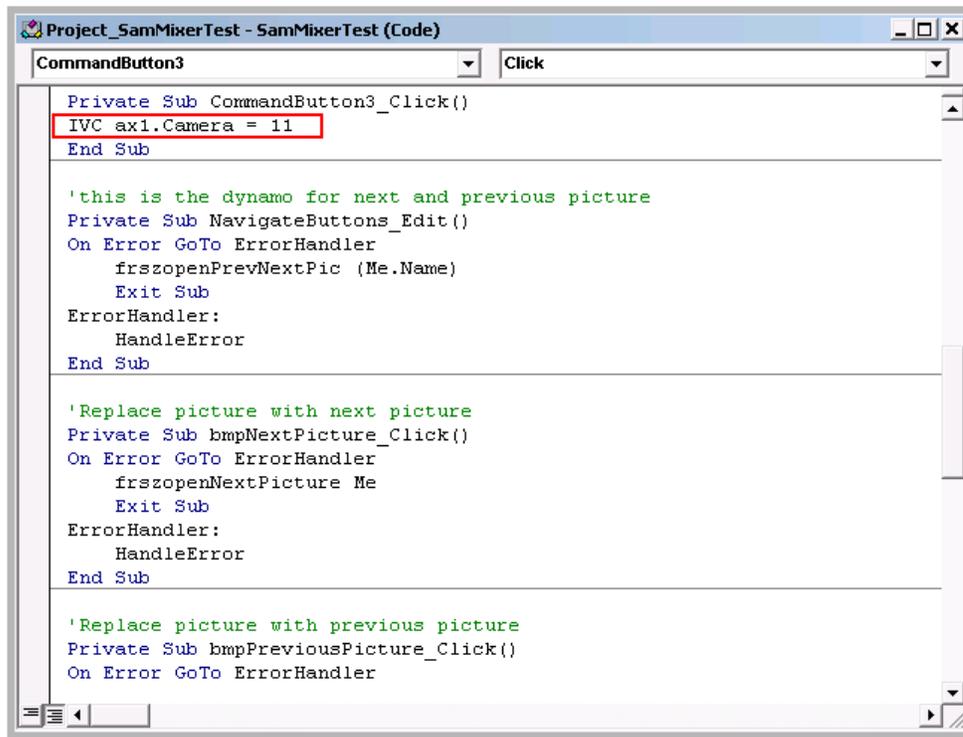
```
Project_SamMixerTest - SamMixerTest (Code)
CommandButton3 Click
Private Sub CommandButton3_Click()
IVC_ax1.
End Sub
BuildObject
Camera
'this Cancel
Private CanConstruct
On Error Caption
Caption
Category
Center
ErrorHandler
HandleError
End Sub

'Replace picture with next picture
Private Sub bmpNextPicture_Click()
On Error GoTo ErrorHandler
frszopenNextPicture Me
Exit Sub
ErrorHandler:
HandleError
End Sub

'Replace picture with previous picture
Private Sub bmpPreviousPicture_Click()
On Error GoTo ErrorHandler
```

Complete the command string by typing "= d"; where *cis* the Relay Server ID number of the camera you wish to access with this control. In most cases this will be a whole number between 1 and 24. You can determine the ID number simply by entering the IP address of the Relay Server in a browser. Click on the **Select Camera** drop down menu to reveal the list of cameras assigned to this Relay Server. The cameras are listed in order of ID number, which is shown along with the assigned camera name.





```
Project_SamMixerTest - SamMixerTest (Code)
CommandButton3 Click
Private Sub CommandButton3_Click()
IVC ax1.Camera = 11
End Sub

'this is the dynamo for next and previous picture
Private Sub NavigateButtons_Edit()
On Error GoTo ErrorHandler
    frszopenPrevNextPic (Me.Name)
    Exit Sub
ErrorHandler:
    HandleError
End Sub

'Replace picture with next picture
Private Sub bmpNextPicture_Click()
On Error GoTo ErrorHandler
    frszopenNextPicture Me
    Exit Sub
ErrorHandler:
    HandleError
End Sub

'Replace picture with previous picture
Private Sub bmpPreviousPicture_Click()
On Error GoTo ErrorHandler
```

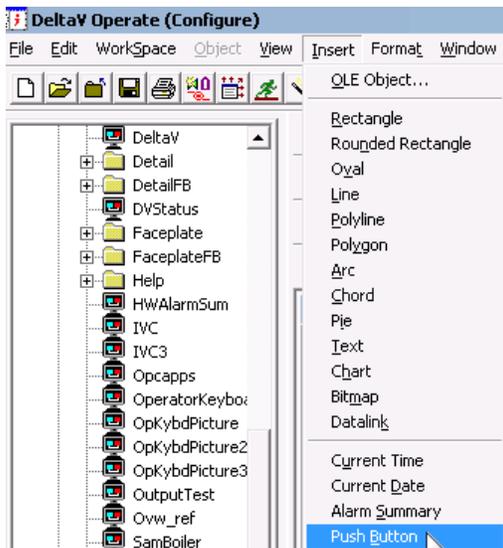
Once satisfied with the script, save it and exit the Visual Basic desktop. If you wish to edit the appearance of this control point to it and click the right mouse button. In the resulting menu select **Property Window...** Details on the available properties can be found in the documentation provided with DeltaV.

At this point you can exit the DeltaV Operate configuration tool and test the results of your edits by running this project.

### 3.3.3 Zoom Button

You can create a user interface using the IVC ActiveX Control so that users may control the zoom level of cameras that have a motorized optical zoom capability. This section describes how to create a control button to control the zoom level of such camera. The example described below illustrates how to add a **Zoom In** button.

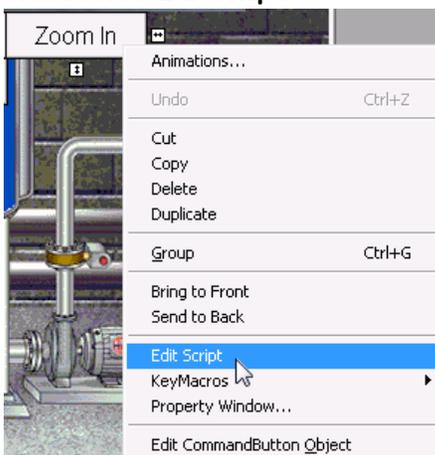
To create a button, select **Push Button** from the DeltaV Operate (Configure) **Insert** menu.



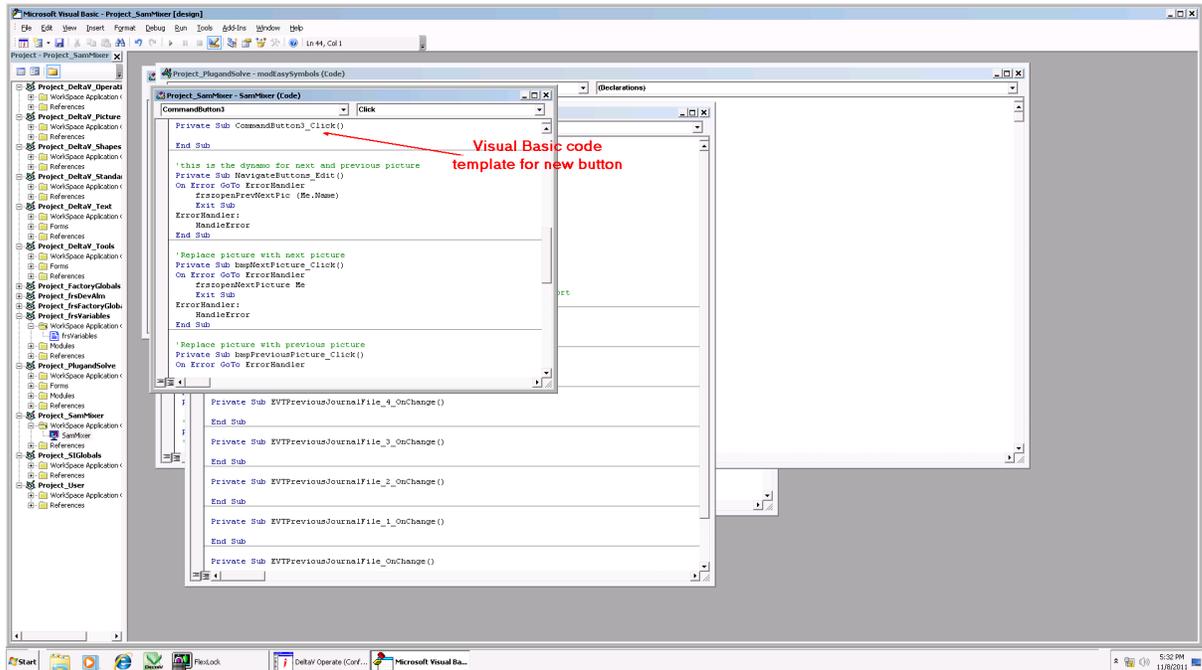
A blank button appears on your picture. Drag and drop the button to an appropriate location. Resize the button if necessary. Double-click on the button and type an appropriate label on the button. Click away from the button to exit button edit mode.



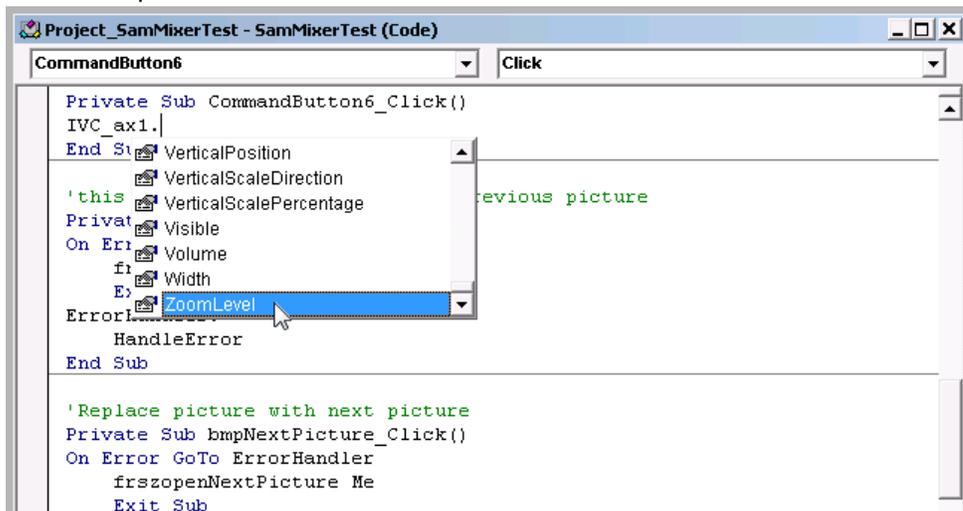
To assign a behavior to the button, point to it and click the right mouse button. In the resulting menu select **Edit Script**.



DeltaV invokes Microsoft Visual Basic and opens a project based on the name of the .grf picture that is currently being edited. Included in the desktop is script window for the command button you just created.



Under **Private Sub CommandButton6\_Click** (the number 6 is a sequential ID number assigned by DeltaV) enter "IVC\_ax1." Once you type the period, a drop down menu will be presented with available options for this command. Scroll down and double click on **ZoomLevel**.



Complete the command string by typing " $= n$ "; where  $n$  is a real number that represents one of the following zoom operations:

- If  $n$  is a positive real number between 1 and 10, the fraction will be ignored and the camera will zoom to the specific zoom level indicated by the remaining integer
- If  $n$  is a real number less than 1, the camera will zoom out to the next level. The camera will

not zoom beyond level 1.

- If  $n$  is a real number more than 10, the camera will zoom in to the next level. The camera will not zoom beyond level 10.

```

Project_SamMixerTest - SamMixerTest (Code)
CommandButton6 Click
Private Sub CommandButton6_Click()
IVC_ax1.ZoomLevel = 11
End Sub

'this is the dynamo for next and previous picture
Private Sub NavigateButtons_Edit()
On Error GoTo ErrorHandler
    frszopenPrevNextPic (Me.Name)
Exit Sub
ErrorHandler:
    HandleError
End Sub

```

Once satisfied with the script, save it and exit the Visual Basic desktop. If you wish to edit the appearance of this control point to it and click the right mouse button. In the resulting menu select **Property Window...** Details on the available properties can be found in the documentation provided with DeltaV.

At this point you can exit the DeltaV Operate configuration tool and test the results of your edits by running this project.

### 3.4 Send Command Method

The Send Command Method can be used to send any valid HTTP command to the IVC Relay Server. These commands can be used to control and configure cameras and other Relay Server settings and operations. The general format is :

***http://<host>/<command>/<camera number>/<argument list>***, where

***<host>*** is the IP address or hostname of the computer which is running the Relay Server

***<command>*** indicates the type of request. Request types include:

- video - video requests
- control - camera and PTZ controls
- snapshot - save a JPEG image to a file
- storage - save a video clip to a file
- manage - camera, PTZ controls, and PTZ configuration when camera is not in user mode

***<camera number>*** is the Relay Server ID number of the camera to controlled or configured

***<arguments>*** is the parameter list specific to the command the server needs to process the request

The following argument substitutions can be used when configuring a command:

***%c*** - represents the current Relay Server camera ID number

***%u*** - represents the current Relay Server IP address

***%f*** - represents the current frame rate of the selected camera

*%m-* represents either manage or control

The other sections of this chapter present examples of using this method to create Save Snapshot and Save Video buttons in DeltaV Operate screen. Consult IVC support for more details on the IVC Relay Server HTTP API.

See also:

Save Snapshot

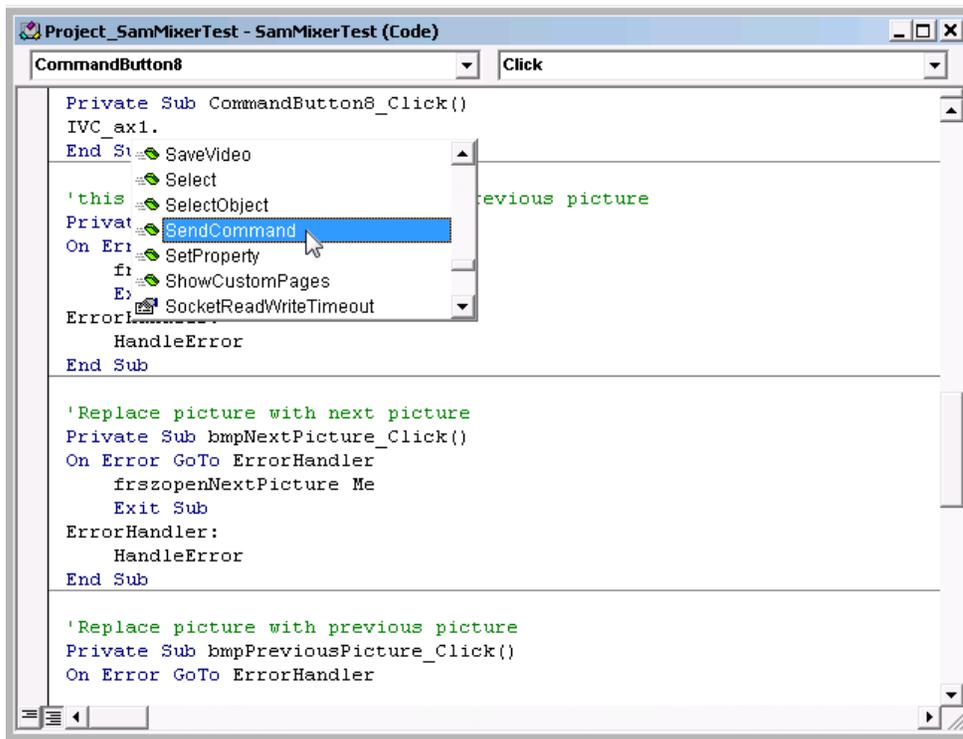
Save Video

### 3.4.1 Save Video

This section describes how to add a save video control to your DeltaV Operate screen. As described in the **Create Camera Controls** chapter, create a button for this control. After you have created and named the button, point to it and click the right mouse button menu. In the resulting menu select **Edit Script**.



Under **Private Sub CommandButton8\_Click** (the number 8 is a sequential ID number assigned by DeltaV) enter "**IVC\_ax1.**" Once you type the period, a drop down menu will be presented with available options for this command. Scroll down and double click on **SendCommand**.



Complete the command string by typing ("*storage/%c/cmd=dump&name=valve1&dumpDuration=10*"). Where:

*storage* indicates the type of command string to follow

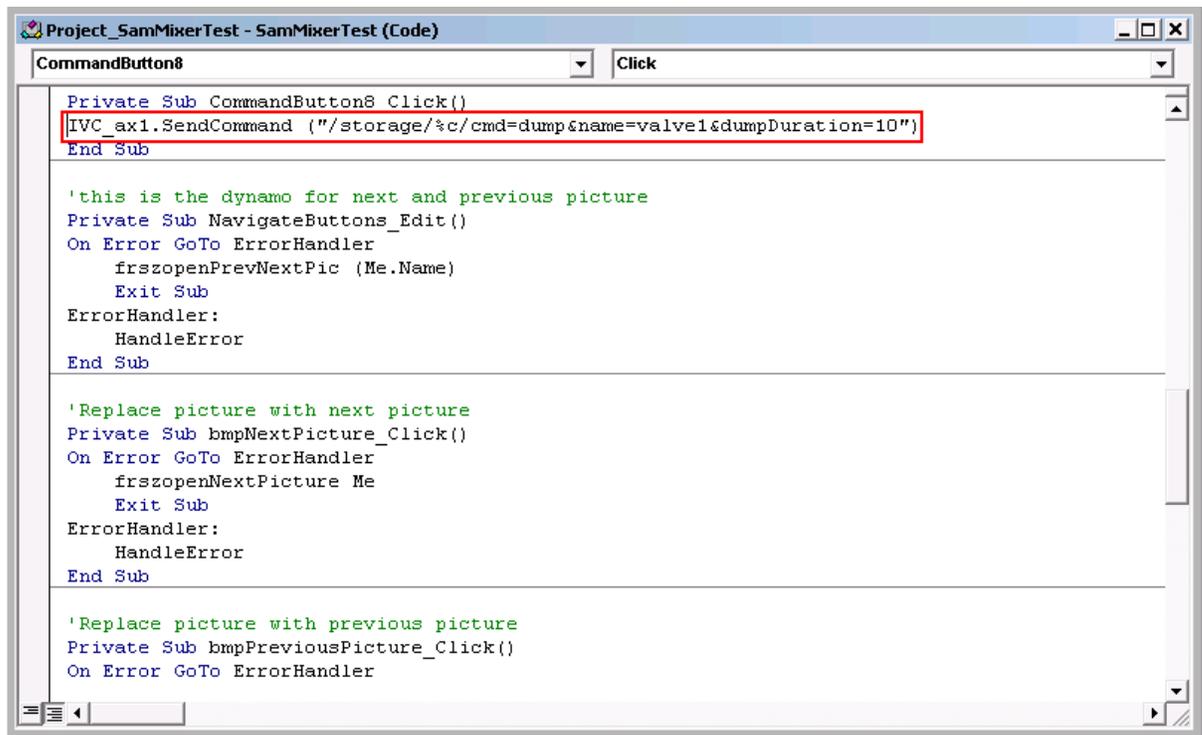
*%c* is a substitution parameter indicating the current camera display in the live video window; a specific camera ID number may also be used here

*cmd=dump* commands the Relay Server to start recording video from the selected camera

*name=valve1* commands the Relay Server to save the video clip with the base name **valve1**.

Not specifying a base name, causes the Relay Server to save the file without a base name and only the camera name and data and time stamp.

*dumpDuration=10* commands the Relay Server to store 10 seconds of the pre-event video buffer and then store live video



```
Private Sub CommandButton8 Click()  
IVC_ax1.SendCommand ("/storage/%c/cmd=dump&name=valve1&dumpDuration=10")  
End Sub  
  
'this is the dynamo for next and previous picture  
Private Sub NavigateButtons_Edit()  
On Error GoTo ErrorHandler  
    frszopenPrevNextPic (Me.Name)  
    Exit Sub  
ErrorHandler:  
    HandleError  
End Sub  
  
'Replace picture with next picture  
Private Sub bmpNextPicture_Click()  
On Error GoTo ErrorHandler  
    frszopenNextPicture Me  
    Exit Sub  
ErrorHandler:  
    HandleError  
End Sub  
  
'Replace picture with previous picture  
Private Sub bmpPreviousPicture_Click()  
On Error GoTo ErrorHandler
```

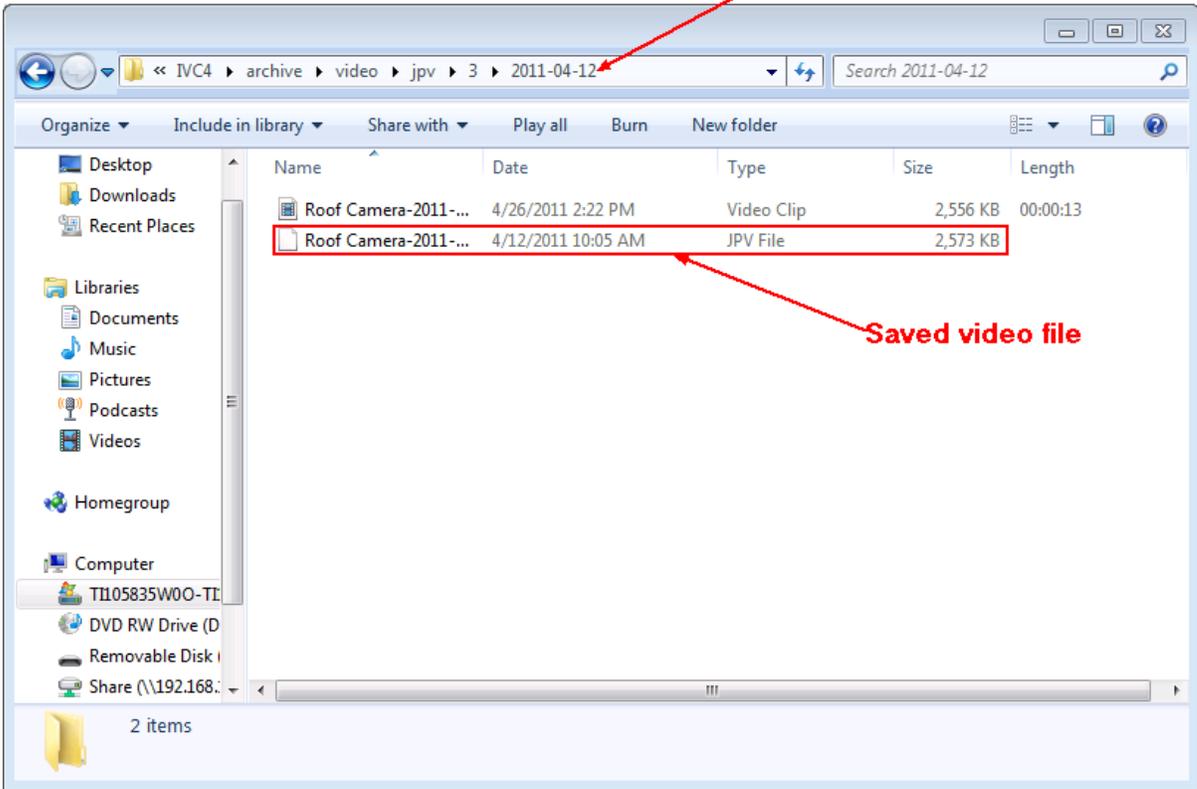
Other optional command options for this storage command include:

***dumpFps=n*** commands the Relay Server to store video from the specified camera at a frame rate of *n* frames per second

***copyNoStamp*** is a flag that instructs the Relay Server to store an extra copy of the video without prepending the timestamp to the name of the file

When this control is used the Relay Server will save a date and time stamped video file for the selected camera in the video directory specified in the Relay Server configuration. The video file is saved in IVC's .jpv format. It can be played reviewed using the Relay Server browser interface or the IVC View Station client. This file format can be converted to .avi format for use with popular media players. See the Relay Server Help documentation for more details on archiving video and snapshots.

Date/Time-stamped saved video folder for Relay Server camera ID# 3



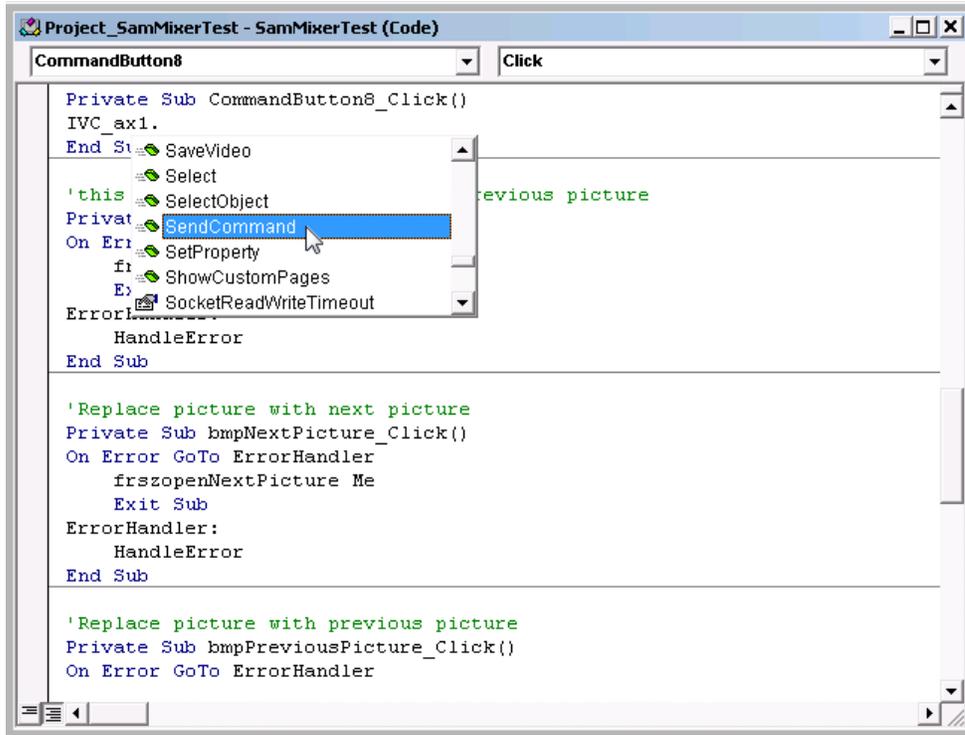
See also:  
Save Snapshot

### 3.4.2 Save Snapshot

This section describes how to add a save snapshot control to your DeltaV Operate screen. As described in the **Create Camera Controls** chapter, create a button for this control. After you have created and named the button, point to it and click the right mouse button menu. In the resulting menu select **Edit Script**.

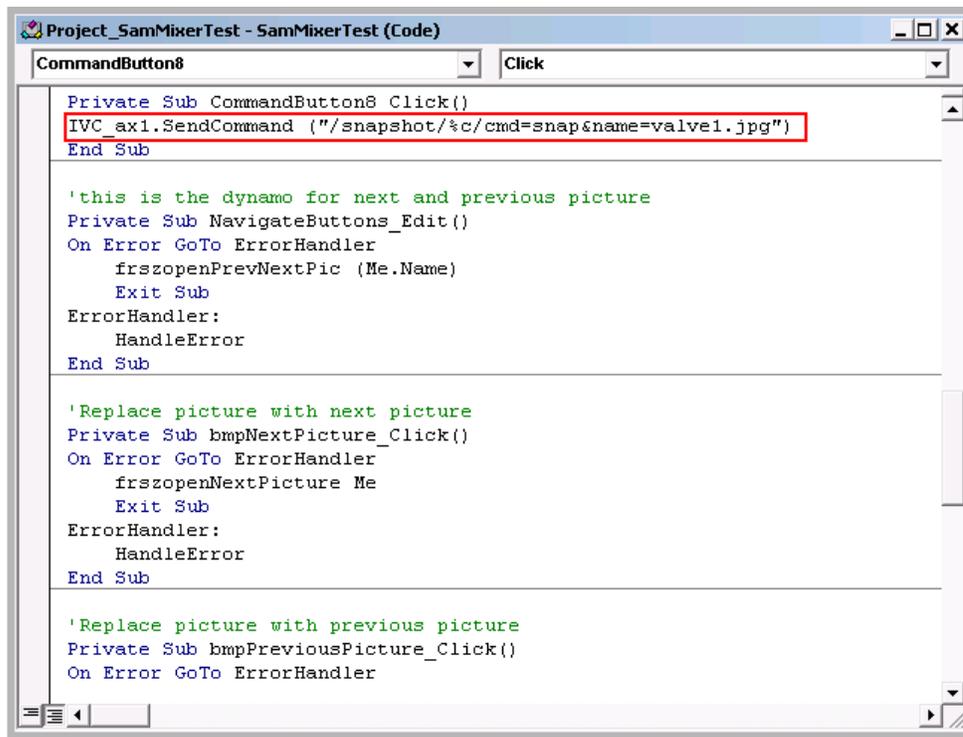


Under **Private Sub CommandButton8\_Click** (the number 8 is a sequential ID number assigned by DeltaV) enter "IVC\_ax1." Once you type the period, a drop down menu will be presented with available options for this command. Scroll down and double click on **SendCommand**.



Complete the command string by typing ("*"/snapshot/%c/cmd=snap&name=valve1.jpg"*). Where:

- snapshot** indicates the type of command string to follow
- %c** is a substitution parameter indicating the current camera display in the live video window; a specific camera ID number may also be used here
- cmd=snap** commands the Relay Server to save a JPEG image from the specified camera
- name=valve1.jpg** commands the Relay Server to name the JPEG image from the specified camera with the base name **valve1**. Not specifying a base name, causes the Relay Server to save the file without a base name and only a data and time stamp.



```
Project_SamMixerTest - SamMixerTest (Code)
CommandButton8 Click
Private Sub CommandButton8 Click()
IVC_ax1.SendCommand ("/snapshot/%c/cmd=snap&name=valve1.jpg")
End Sub

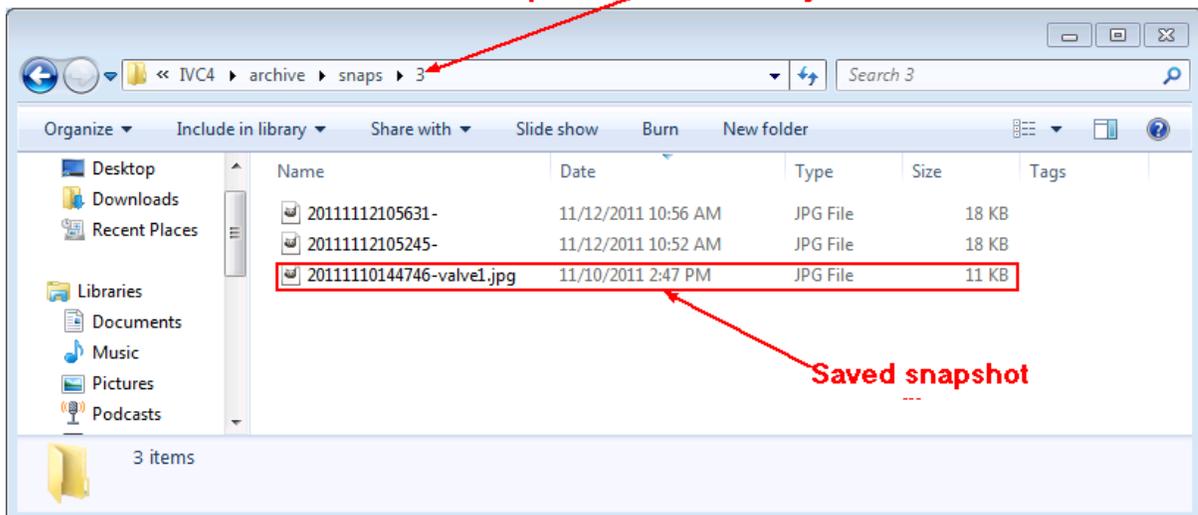
'this is the dynamo for next and previous picture
Private Sub NavigateButtons_Edit()
On Error GoTo ErrorHandler
    frszopenPrevNextPic (Me.Name)
    Exit Sub
ErrorHandler:
    HandleError
End Sub

'Replace picture with next picture
Private Sub bmpNextPicture_Click()
On Error GoTo ErrorHandler
    frszopenNextPicture Me
    Exit Sub
ErrorHandler:
    HandleError
End Sub

'Replace picture with previous picture
Private Sub bmpPreviousPicture_Click()
On Error GoTo ErrorHandler
```

When this control is used the Relay Server will save a date and time stamped JPEG file for the selected camera in the snapshot directory specified in the Relay Server configuration. See the Relay Server Help documentation for more details on archiving video and snapshots.

### Saved snapshot folder for Relay Server camera ID# 3

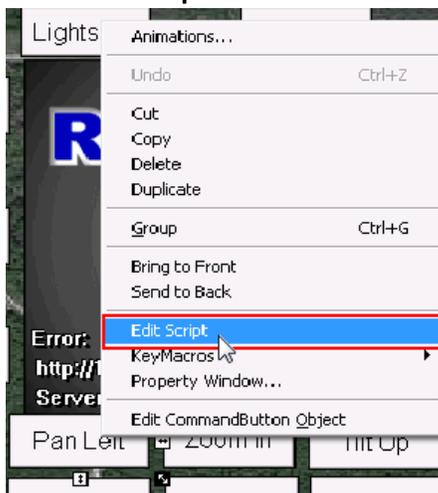


See also:  
Save Video

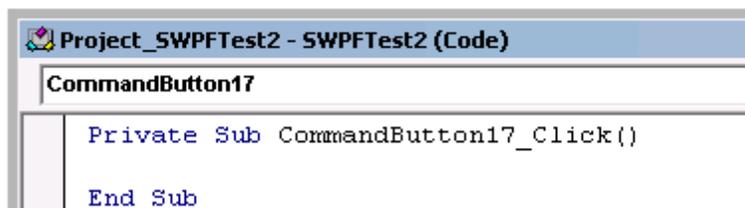
### 3.4.3 Continuous PTZ Camera Movements

Some Pan/Tilt/Zoom cameras do not support single stepping of camera movements and only support starting and stopping of a desired movement. IVC's software provides the facility to control these cameras using specialized on-screen controls. This section describes how to add continuous PTZ movement controls to your DeltaV Operate screen.

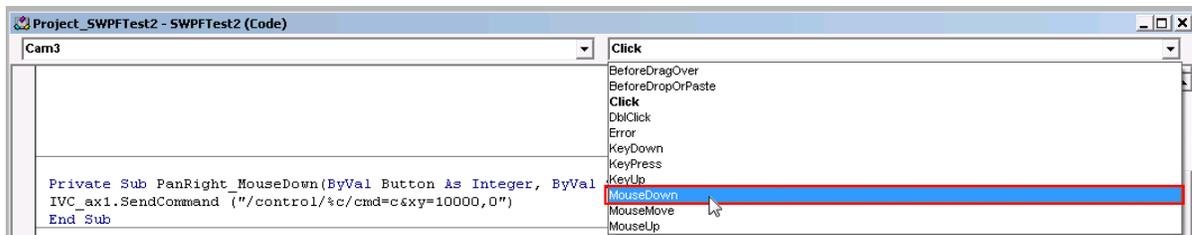
The following example illustrates how to add a **Pan Left** continuous control. For these type of cameras, we want to create a button that performs a start operation command when the mouse button is depressed and a stop operation when the mouse button is released. As described in the **Create Camera Controls** chapter, create a button for a "Pan Left" control. After you have created and named the button, point to it and click the right mouse button. In the resulting menu select **Edit Script**.



Microsoft Visual Basic is invoked and displays the VB scripts for this window with a code template for the selected button.



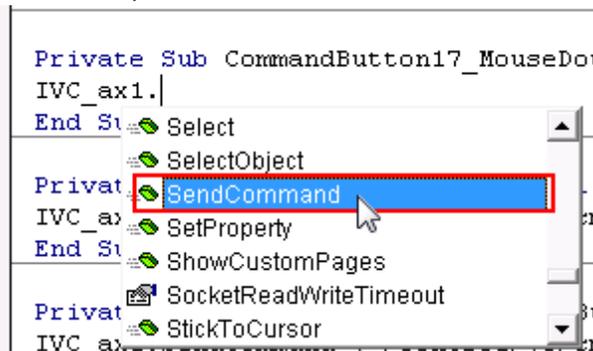
Delete this entry and from the drop down menu on the top right of the window select **MouseDown**.



Note that the header now reads as shown below.

```
Private Sub CommandButton17_MouseDown(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal Y As Single)
|
End Sub
```

Under **Private Sub CommandButton9\_MouseDown(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal Y As Single)** (the number 17 is a sequential ID number assigned by DeltaV) type "IVC\_ax1." Once you type the period, a drop down menu will be presented with available options for this command. Scroll down and double click on **SendCommand**.

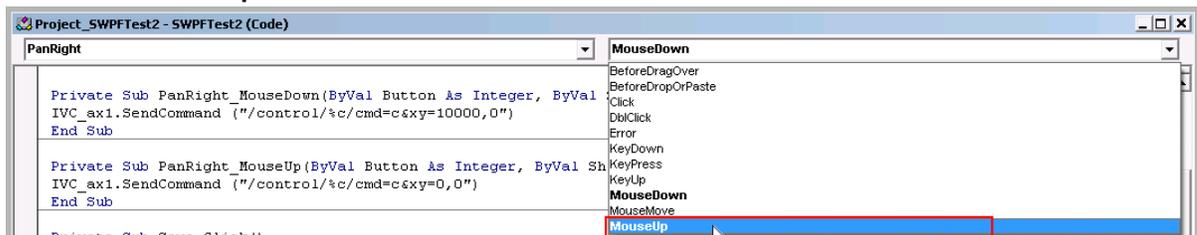


Complete the command string by typing ("**/control/%c/cmd=c&xy=-10000,0**"). Where:

- control** indicates the type of command string to follow
- %c** is a substitution parameter indicating the current camera displayed in the live video window; a specific camera ID number may also be used here
- cmd=c** commands the Relay Server to start a continuous movement.
- &xy=-10000,0** tells the Relay Server the movement should be in the pan direction to the left with no movement in the tilt direction.

```
Private Sub CommandButton17_MouseDown(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal Y As Single)
IVC_ax1.SendCommand ("/control/%c/cmd=c&xy=-10000,0")
End Sub
```

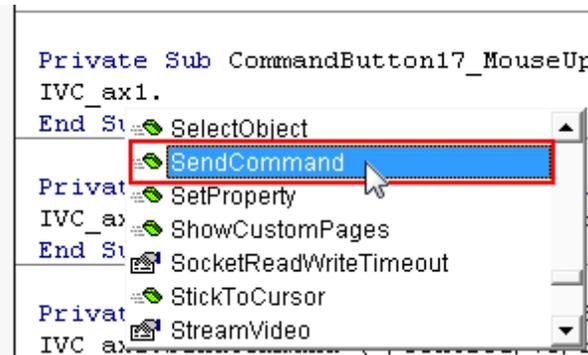
Return to the top of the page and open the drop down menu containing the word **MouseDown** and select **MouseUp** from the list.



Note that a new code template appears:

```
Private Sub CommandButton17_MouseUp(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal Y As Single)
|
End Sub
```

Under **Private Sub CommandButton9\_MouseUp(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal Y As Single)** enter "IVC\_ax1." Once you type the period, a drop down menu will be presented with available options for this command. Scroll down and double click on **SendCommand**.



Complete the command string by typing ("**/control/%c/cmd=c&xy=0,0**"). Where:

**control** indicates the type of command string to follow

**%c** is a substitution parameter indicating the current camera display in the live video window; a specific camera ID number may also be used here

**cmd=c** commands the Relay Server that this is a continuous movement.

**&xy=0,0** tells the Relay Server to stop all pan/tilt movements.

```

Private Sub CommandButton17_MouseUp(ByVal Button As Integer, ByVal Shift As Integer, ByVal X As Single, ByVal Y As Single)
  IVC_ax1.SendCommand("/control/%c/cmd=c&xy=0,0")
End Sub

```

Save these edits and test the operation of this control. Use this MouseDown and MouseUp method described above to add other continuous pan/tilt/zoom controls to your DeltaV Operate screens. The command strings for other operations are listed below.

#### **Continuous Pan Right**

- MouseDown: IVC\_ax1.SendCommand ("/control/%c/cmd=c&xy=10000,0")
- MouseUp: IVC\_ax1.SendCommand ("/control/%c/cmd=c&xy=0,0")

#### **Continuous Tilt Up**

- MouseDown: IVC\_ax1.SendCommand ("/control/%c/cmd=c&xy=0,-10000")
- MouseUp: IVC\_ax1.SendCommand ("/control/%c/cmd=c&xy=0,0")

#### **Continuous Tilt Down**

- MouseDown: IVC\_ax1.SendCommand ("/control/%c/cmd=c&xy=0,10000")
- MouseUp: IVC\_ax1.SendCommand ("/control/%c/cmd=c&xy=0,0")

#### **Continuous Zoom In**

- MouseDown: IVC\_ax1.SendCommand ("/control/%c/cmd=c&z=-10000")
- MouseUp: IVC\_ax1.SendCommand ("/control/%c/cmd=c&z=0")

#### **Continuous Zoom Out**

- MouseDown: IVC\_ax1.SendCommand ("/control/%c/cmd=c&z=10000")
- MouseUp: IVC\_ax1.SendCommand ("/control/%c/cmd=c&z=0")

Consult IVC support for more details on other available options for these commands. Details on these and other Relay Server commands are contained in the IVC Relay Server HTTP API

document. Consult IVC Support for more information.

See also:

Create Camera Controls

---



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