



Impact ActiveX
VB.NET
Getting Started

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This product is covered by one or more of the following patents: Utility patents: US6,512,218 B1; US6,616,039 B1; US6,808,114 B1; US6,997,385 B2; US7,053,954 B1; US7,387,246 B2; US8,058,600 B2; EP996,284 B1; EP999,514 B1; EP1,014,292 B1; EP1,128,315 B1; EP1,396,811 B1; EP1,413,971 B1; JP4,435,343 B2; JP4,571,258 B2.

Additional patents pending.

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Technical Support

If you have technical questions about the operation of any Datalogic product, contact your distributor or Datalogic. Please have the following information available before you call:

- The model and serial number of the Datalogic vision device, located on the bottom of the unit. The version number of the Impact software you are running, found in the title bar of the software.
- The type and version number of the operating system software you are running on the client computer.

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Using VB.NET with Impact ActiveX

This manual documents the VB.NET sample programs provided by Datalogic that uses the Impact ActiveX interface. The interface allows VB.NET programmers to access data and events on Datalogic Cameras and machine vision systems.

Using ActiveX, a VB.NET programmer can monitor and operate a Datalogic Impact device, including the ability to read and write tool and task inputs and outputs, load and unload programs, trigger the device to snap an image, and respond to device events.

This manual shows several examples of a VB.NET implementation of the Impact ActiveX interface.

For a more general overview of Impact ActiveX installation, configuration, and use, refer to the Impact ActiveX Reference Guide (Publication # 843-0119).

NOTE: This manual does not provide detailed operation about Datalogic Impact Cameras. It assumes you have some knowledge of how vision programs and Impact tools and tasks are structured, how to access tool and task data, and that you understand Impact terminology.

For more details about using Impact Vision Program Manager (VPM) and Datalogic Impact cameras, refer to the Datalogic Hardware Guides and the Impact Software Reference Guide.

NOTE: Impact ActiveX cannot be used on the Datalogic model A30, T4x-Series, or P-Series Smart Cameras.

VB.NET Programming Environment

To initially configure the Datalogic Impact camera and create Impact vision programs and control panels, you need to install Impact software, including Vision Program Manager (VPM) and Control Panel Manager (CPM) on a host computer. If you do not intend to create or modify vision programs, you do not need to install the Impact software (VPM and CPM) on the host computer. Refer to the Impact Software Reference Guide for the client computer's requirements.

The Impact Active X Application Programming Interface (API) lets you write a program in Visual Basic to access vision device data by using the necessary function calls. That data can then be sent directly from an Datalogic Impact camera to other devices, such as a Quality Control monitoring system.

Several sample programs are also provided to help you use the APIs. This includes the Visual Basic code, the executable program, and a sample Impact vision program. To view and modify the program code, you need to install Visual Basic 9 or greater. Refer to the Visual Basic software installation and configuration guide for details on installing Visual Basic software. To access these sample programs, you need to install the Impact ActiveX components on the host computer.

To access the Impact ActiveX API, you must install Impact Software Release 8.3.0 or greater on the Datalogic Impact vision device.

You must also include the Impact dynamic link library (Impact.dll) in your program or project. This dll is installed and registered by the Impact ActiveX install. See "Impact dll" on page 1-2.

You may copy, modify, and use this sample program code, subject to the terms of Datalogic's Software End User License Agreement.

.NET Framework and Interop files

For the sample ActiveX programs to work, several files must be installed on your computer. If it was not already there, Microsoft's .Net Framework 3.5 was installed by the ActiveX installer.

Additionally, you must install a group of library files called Primary Interop Assemblies. A program, named vs90_piaredist.exe, was added to the Datalogic redistribution directory by the ActiveX install to help you install the library files. The directory is under the "install folder."

C:\install folder\IMPACT\Vision Device APIs\ActiveX\Sample Applications\redist

To use the vs90_piaredist.exe file, navigate to the redistribution directory and run it. It will install and register the necessary files.

Target Computer Installation

Before you deploy your VB.NET project to a target computer, you need to insure that the Microsoft.Net Framework 3.5 and the Interop Assembly library files have been installed on that computer. You can obtain the .Net Framework install from Microsoft. We have provided a redistributable install program that will help you put the Interop library files on your target computer. The file, named vs90_piaredist.exe, is located in the redistribution directory (see the previous section for directory location).

To use this install program, copy it to the target computer, then run it. It will install and register the necessary files on the target computer.

After they are installed, the Interop library files are located in the following directory on the target computer.

C:\Program Files\Microsoft.NET\Primary Interop Assemblies

When you uninstall ActiveX from the target computer, you can also uninstall the Interop library files.

To uninstall the Interop library files

1. From the Windows Start menu select Settings - Control Panel - Add/Remove Programs
2. Select Microsoft Primary Interoperability Assemblies and press the Remove button

Impact dll

The Impact ActiveX dynamic link library (Impact.dll) is installed and registered when Impact ActiveX is installed. When you create a new VB.Net project, you must include the dll so you can use the Impact ActiveX method calls in your program. These instructions are for Visual Basic 2008.

To include the dll in your program

1. Open your project.
2. From the menu, select Project.
3. Select Add Reference.
4. Select the COM tab.
5. Scroll down the list to Impact 1.0 Type Library and select it.
6. Click OK

Project Files

All the files you need to create a working program are included in the sample project files. The sample project files are installed in a directory under the "install folder":

C:\install folder\IMPACT\Vision Device APIs\ActiveX\Sample Applications\VBNet35ActiveX\VBNet35Demo\My Project

Sample Executable File

A sample VB.NET executable program named VBNet35ActiveXSample.exe is included as an example for your use in writing your own program. This file is installed in a directory under the "install folder":

C:\install folder\IMPACT\Vision Device APIs\ActiveX\Sample Applications\VBNet35ActiveX\bin

The Impact library file named Interop.ImpactLib.dll is installed in the VBNet35Demo directory. The sample executable file requires the library file in order to operate.

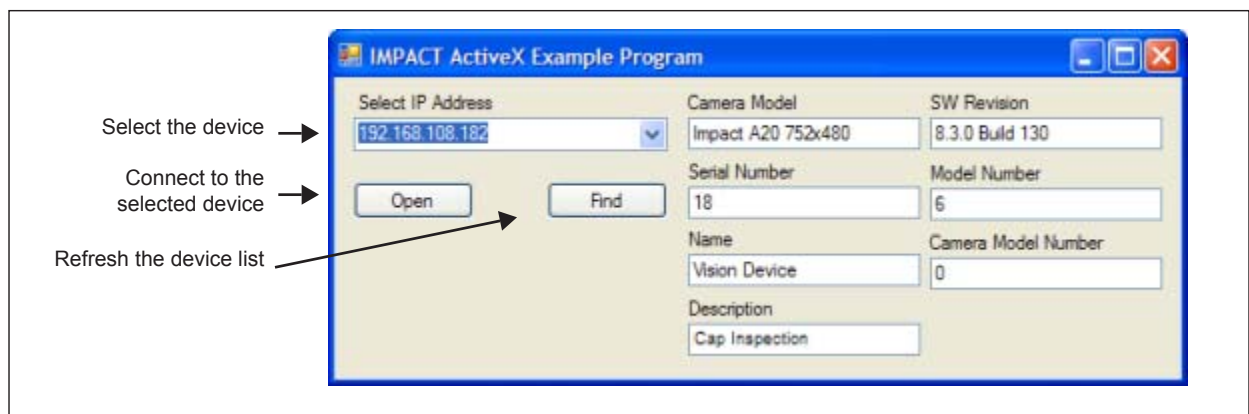
Sample Vision Program File

A sample Impact vision program name VBNet35ActiveXSample.vp is included for use with the sample executable program. If you load the sample vision program on the vision device or Emulator, the sample executable will display information when you connect to the Emulator or vision device. This sample vision program file is installed in a directory under the "install folder":

C:\install folder\IMPACT\Vision Device APIs\ActiveX\Sample Applications\VBNet35ActiveX\VBNet35Demo

Device Connection Interface

The sample programs provided let you monitor and control an Datalogic Impact camera. When you start the sample program named VBNetActiveXSample.exe, the device connection interface is displayed. This section briefly explains parts of the interface and the Visual Basic code behind it.



NOTE: All fields on this interface are display only.

Select IP Address

This field lists all the Datalogic Impact vision devices on the network. Use the up and down scroll arrows to the right of the field to display the entire list of devices. Click the Find button to refresh this device list.

Open

Click this button to connect to the device currently selected in the Select IP Address list. The sample program connects to the selected device, then displays the Impact Application Selection interface. (See “Application Selection Interface” on page 1-4.) If security is enabled on the device, an error message "Connect: User not authorized to perform this function" is displayed.

Find

When you click this button, the sample program searches the network for vision devices, then displays the IP Addresses of all the devices that respond.

Camera Model

This is the selected device’s model name or the model name of the camera connected to a C-Series device.

SW Revision

The software version number currently running on the connected vision device.

Serial Number

The connected vision device’s serial number.

Model Number

This is the connected device’s model number or the model number of the camera connected to a C-Series device.

Name

The connected vision device’s name as defined on the Settings - General panel in Vision Program Manager (VPM).

Camera Model Number

The model number of the camera connected to a C-Series device.

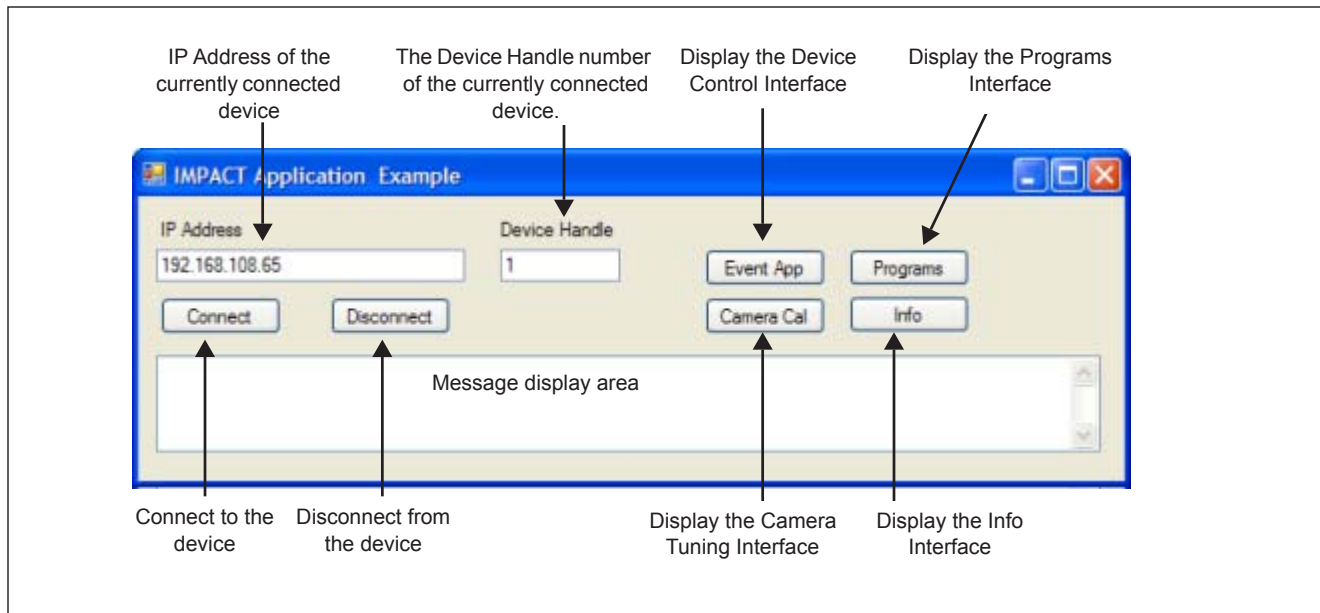
Description

The connected vision device’s description as defined on the Settings - General panel in VPM.

Application Selection Interface

The Application Selection interface lets you select the part of the sample program that you want use. It also displays messages from actions taken in other parts of the sample program.

This section briefly explains the interface.



IP Address

This field lists the Datalogic Impact vision device you selected on the Device Connection Interface, or the IP Address last entered manually. You can enter an IP Address in this field, then click the Connect button.

Device Handle

This field displays the Device Handle number of the currently connected device. This number is used in the program code to refer to the device when making method calls.

Connect

Click this button to connect to the device at the IP Address currently entered in the IP Address field.

Disconnect

Click this button to disconnect from the currently connected device.

Message Display Area

Messages about the most recent action are displayed in this area.

Event App

Click to display the Device Control Interface. See "Device Control Interface" on page 1-6 for more details.

Programs

Click to display the Programs Interface. See "Programs Interface" on page 1-8 for more details.

Camera Cal

Click to display the Camera Tuning Interface. See "Camera Cal Interface" on page 1-9 for more details.

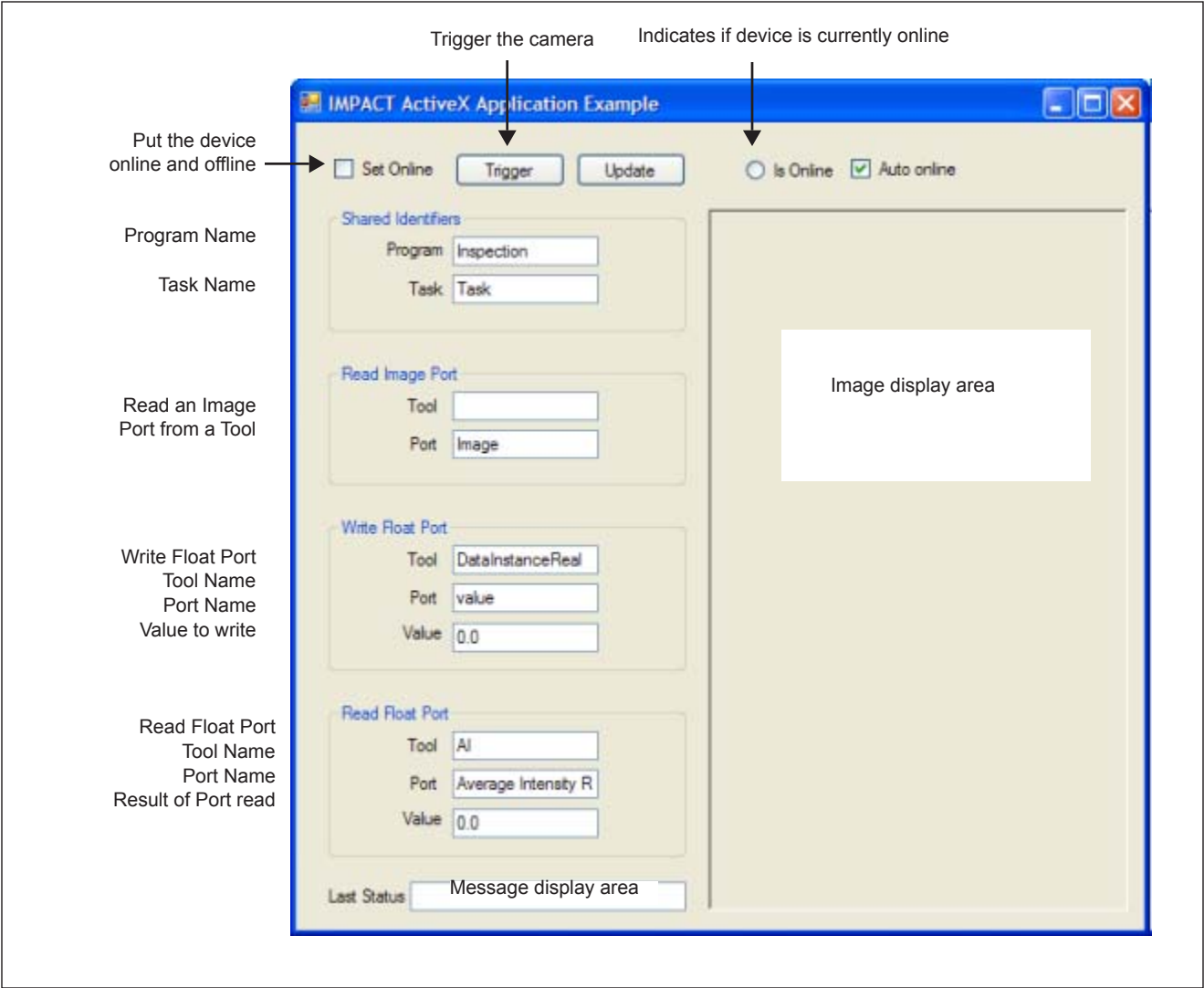
Info

Click to display the Info Interface. See “Info Interface” on page 1-10 for more details.

Device Control Interface

The sample program Device Control interface lets you monitor and control an Datalogic Impact camera. This interface is displayed when you click the Event App button in the Application Selection Interface. You must use the Device Connection or Application Selection Interface to connect to a device.

This section briefly explains the interface.



NOTE: All name entry fields on this program interface are case sensitive. The name entered in the field must match the name in the vision program.

Set Online

When this check box is checked, the device is put online and the Is Online radio button is selected. When it is unchecked, the device is put offline. This check box must be checked for the Trigger button to create triggers.

Trigger

Click this button to trigger the device, capture an image, and run the vision program. The Set Online check box must be checked for the trigger to succeed.

Update

Click this button to refresh the displayed port values, including the image.

Is Online

When this radio button is selected, it means the device is online.

Auto online

If this box is checked, the device is put online automatically when it is restarted.

Image Display Area

The image indicated by the Read Image Port fields is displayed in this area. This image placement and size are determined by the GetImagePort method call.

Shared Identifiers

- Program - Enter the name of the program that contains the task you want to access
- Task - Enter the name of the task that contains the tool you want to access.

Read Image Port

The image contained in the tool and port named here is displayed in the Image Display area.

If the Tool field is blank and the Port name is "Image," the image is read from the Image Port of the task named in Shared Identifiers.

- Tool - Enter the name of the tool that contains the image here.
- Port - Enter the name of the tool port that contains the image you want to display.

Write Float Port

Use this function to write a real value to a tool's floating point port. After you enter the value, click the Trigger button to send the value to the tool port.

- Tool - Enter the name of the tool that has the port you want to access.
- Port - Enter the name of the tool port that contains the value you want to write. You can only write to a tool input port that has a type of Real.
- Value - Enter the value that you want to write to the tool port. You may enter a whole or decimal number.

Read Float Port

Use this function to read a real value from a tool's floating point port. After you enter the tool and port name, click the Trigger or Update button to read the value from the tool port. You can read a tool's input or output ports. The value is displayed in the value field.

- Tool - Enter the name of the tool that has the port you want to access.
- Port - Enter the name of the tool port that has a type of Real.
- Value - The value read from the tool port is displayed in this field.

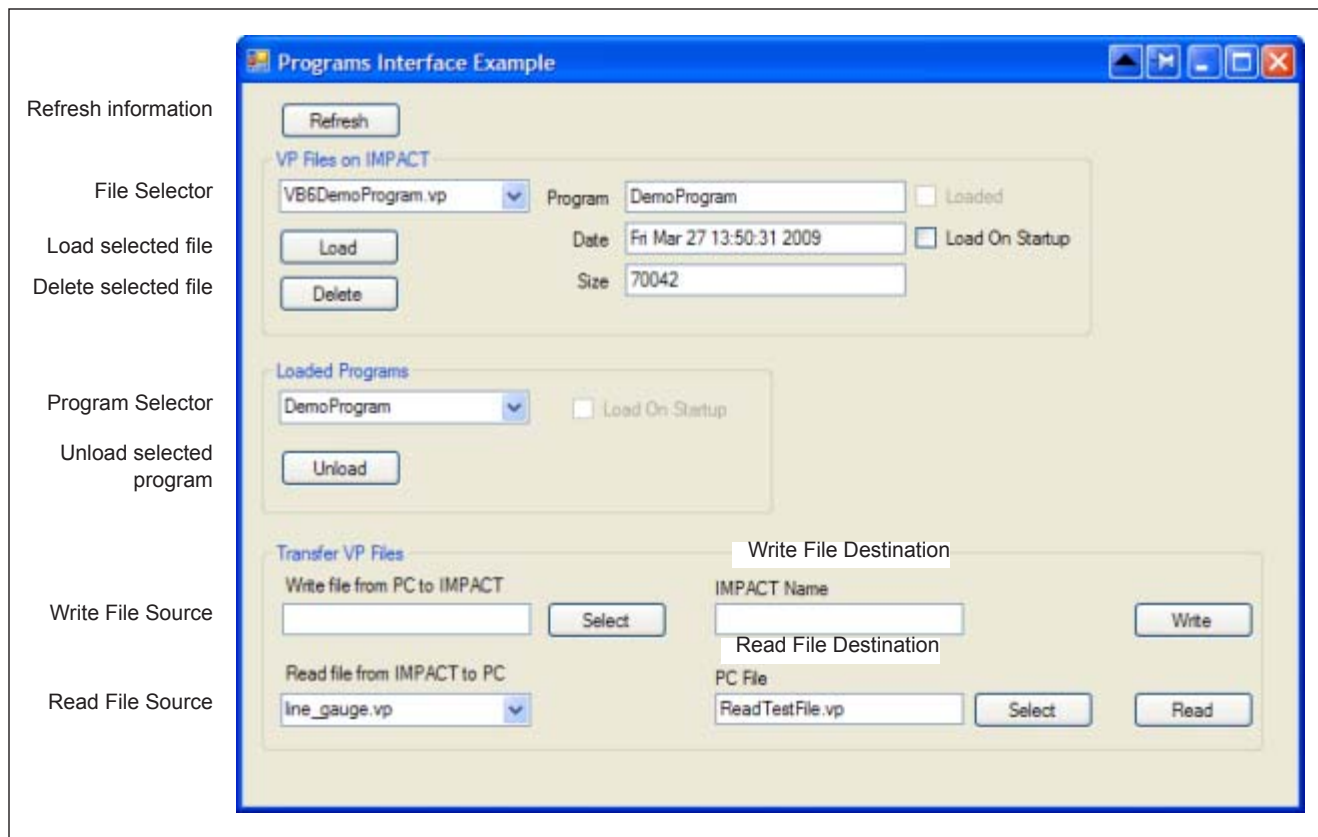
Last Status

Messages about the most recent action are displayed in this area.

Programs Interface

The sample program Programs interface lets you access and manipulate files on an Datalogic Impact camera. This interface is displayed when you click the Programs button in the Application Selection Interface. You must use the Device Connection or Application Selection Interface to connect to a device and display information in this interface.

This section briefly explains the interface.



Refresh

Click this button to refresh the displayed values.

VP files on Impact

- **Selector:** From the drop down, select the vision program file on the device that you want to load.
- **Program:** This is the name of the selected program.

- **Loaded:** If this box is checked, the file is currently loaded.
- **Load:** To load the selected program, click this button .
- **Delete:** To delete the selected file from the device, click this button.
- **Date:** The selected file date.
- **Load on Startup:** Check this box to mark the selected program to load when the device restarts.
- **Size:** The selected file size.

Loaded Programs

- **Selector:** From the drop down, select the vision program file on the device that you want to unload.
- **Load on Startup:** If this box is checked, the program is marked to load when the device restarts.
- **Unload:** To unload the selected program, click this button .

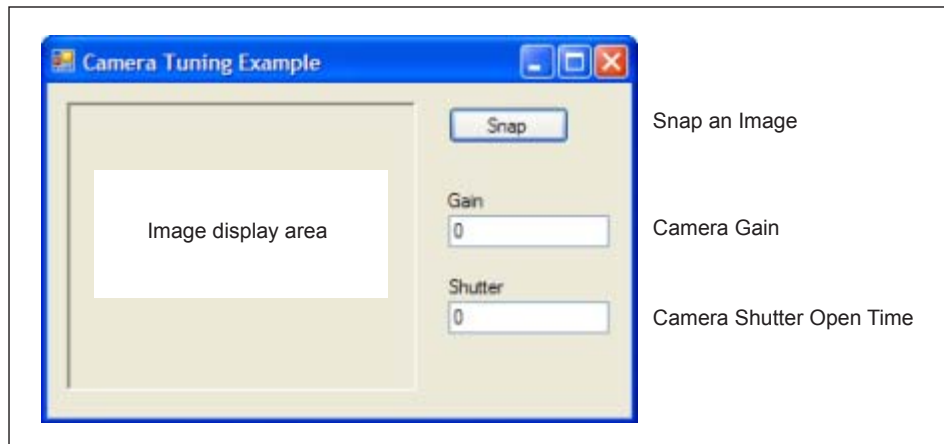
Transfer VP Files

- **Write File from PC to Impact:** Enter the path and name of a file currently on the PC, or click the Select button to navigate to a file.
- **Select:** To select a file on the PC to transfer, click this button.
- **Impact Name:** Enter a new name for the file when it written to the device.
- **Write:** To write the new file from the PC to the device, click this button.
- **Read File from Impact to PC:** Click the drop down to select a file currently on the device.
- **PC File:** Enter a path and name for the file when it is written to the PC, or click the Select button to navigate to a directory.
- **Select:** To select a directory on the PC to contain the transferred file, click this button.
- **Read:** To read the file from the device and write it to the PC, click this button.

Camera Cal Interface

The sample program Camera Calibration (or Camera Tuning) interface lets you adjust the Gain and Shutter settings on the Datalogic Impact camera. This interface is displayed when you click the Camera Cal button in the Application Selection Interface. You must use the Device Connection or Application Selection Interface to connect to a device and display information in this interface.

This section briefly explains the interface.



Snap

Click this button to acquire and display an image and send new Gain and Shutter values to the camera.

Gain

Enter the Camera Gain in this field, then click Snap. The minimum and maximum values you can enter depend on the camera type.

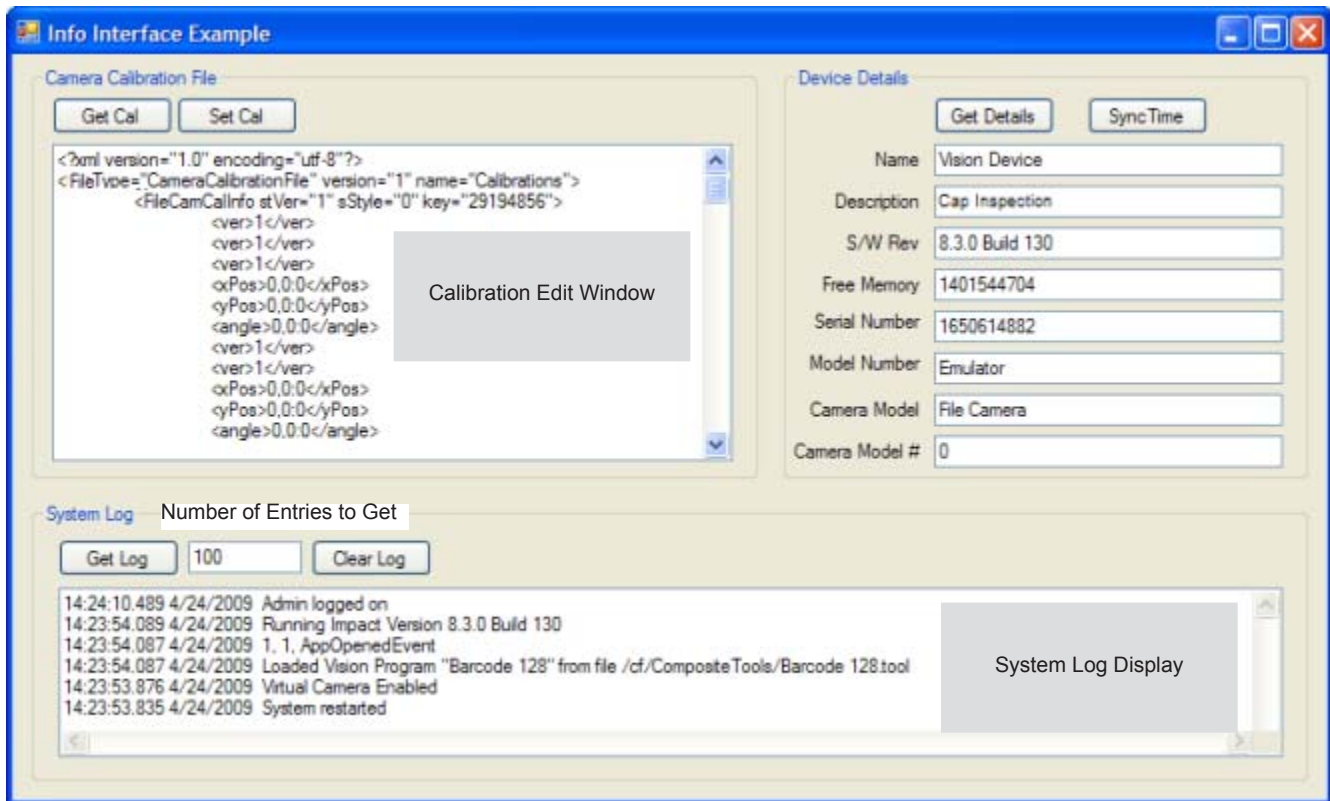
Shutter

Enter the Shutter Open Time in this field, then click Snap. The minimum and maximum values you can enter depend on the camera type. This indicates the amount of time the shutter will be open. The higher the number, the longer the shutter is open and the brighter the image.

Info Interface

The sample program Info interface displays detailed information about settings on the Datalogic Impact camera. This interface is displayed when you click the Info button in the Application Selection Interface. You must use the Device Connection or Application Selection Interface to connect to a device and display information in this interface.

This section briefly explains the interface.



Camera Calibration File

- **Get Cal:** Click this button to read the camera calibration file from the camera.
- **Set Cal:** Click this button to write the camera calibration file to the camera. Any changes you have made in the Calibration Edit Window are saved on the camera.
- **Calibration Edit Window:** You can make changes to the camera calibration information in this window. When you click the Set Cal button, these changes are saved on the camera.

Device Details

- **Get Details:** Click this button to read device information from the vision device. The information is displayed in the detail fields below the button.
- **Sync Time:** When you click this button, the current time on the PC is written to the vision device.

See “Device Connection Interface” on page 1-3 for more information about the remaining device details.

System Log

The log listings are sorted in descending time order and contain information about the vision device and tasks such as online and offline events, system restarts, vision device and image acquisition errors, trigger overruns, tool failures, and other types of system events and failures.

- **Get Log:** Click this button to read the system log from the vision device. The information is displayed in the System Log Display below the button.
- **Number of Entries to Get:** Enter the number of log entries you want to display.

- **Clear Log:** Click this button to delete all the system log entries from the camera.

Sample Program Code

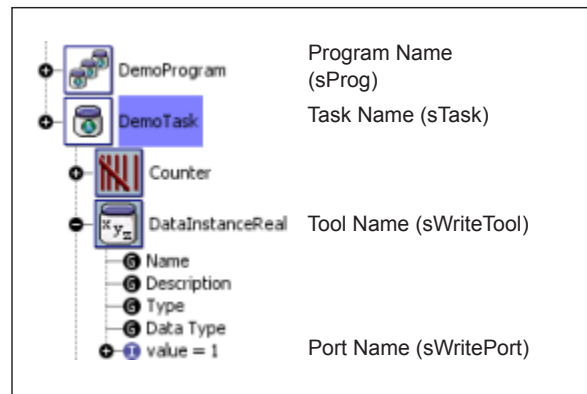
The sample program code shown here is extracted from the VB.Net project installed with Impact ActiveX. When you create your own VB.Net project, you will need to add the Impact library reference to your project so you can make Impact API calls. See “Impact dll” on page 1-2 for details.

See the remainder of the sample program code for the appropriate variable and procedure declarations.

Vision Program

When you connect to a device with the sample program, it automatically copies a sample vision program to the device and loads it. The program, task, and port names in the VB API call to read and write data must match the names in the vision program.

When you create your own VB program, you need to use the names from the vision program to access the data. For example, here is a portion of the sample vision program referred to in the code.



Write Float Port

Here is the section of the Device Control Interface sample program code that runs the Write Float Port function. See the rest of the program for variable and procedure declarations. It uses the Impact API call named SetRealPort. Refer to the Impact ActiveX Reference Guide for more details.

```
'
' This writes a floating point value to the IMPACT
'
Private Sub WriteFloat()
    Dim sWriteTool As String
    Dim sWritePort As String
    Dim lRes As ImpactErrorCode
    Dim fData As Single

    ' Get the program and task names and then the tool and port from TextBoxes
    ' The Program, Task, Tool, and Port names must match those in the VPM
    ' vision program
    GetProgTask()
    sWriteTool = WriteTool.Text
    sWritePort = WritePort.Text

    ' Get the value to be written
```

```
fData = WriteFloatTextBox.Text

' Have the value sent to the IMPACT
' parentDevForm.GetDevHnd gets the device handle returned from Connect()
lRes = impactOper.SetRealPort(parentDevForm.GetDevHnd(), sProg, sTask,
sWriteTool, sWritePort, "", fData)
ShowStatus("SetRealPort", lRes)
End Sub
```


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