



Impact ActiveX CSharp Getting Started

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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 CSharp with Impact ActiveX

This manual documents the CSharp sample programs provided by Datalogic that uses the Impact ActiveX interface. The interface allows CSharp programmers to access data and events on Datalogic T-Series Intelligent Cameras and the M-Series machine vision system.

Using ActiveX, a CSharp programmer can monitor and operate a Datalogic 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 CSharp 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 devices. 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 cameras, refer to the 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.

CSharp Programming Environment

To initially configure the Datalogic 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 CSharp to access vision device data by using the necessary function calls. That data can then be sent directly from a Datalogic 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 CSharp code, the executable program, and a sample Impact vision program. To view and modify the program code, you need to install Visual CSharp. Refer to the Visual CSharp software installation and configuration guide for details on installing Visual CSharp 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 vision device.

You must 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 program is in the "install folder."

C:\install folder\IMPACT\VisionDevice APIs\ActiveX\Sample Applications\redist

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

Target Computer Installation

Before you deploy your CSharp project to a target computer, you need to insure that those same files (Microsoft's .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 under the "install folder."

C:\install folder\IMPACT\VisionDevice APIs\ActiveX\Sample Applications\redist

To use this file, 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 CSharp project, you must include the dll so you can use the Impact ActiveX method calls in your program. These instructions are for Visual CSharp 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 the directories under the "install folder":

C:\install folder\IMPACT\Vision Device APIs\ActiveX\Sample Applications\CSharpActiveX\bin\CSharpActiveX\Properties\LEDControl\Properties

Sample Executable File

A sample CSharp executable program named CSharpActiveXSample.exe is included as an example for your use in writing your own program. This file is installed in the directories under the "install folder":

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

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

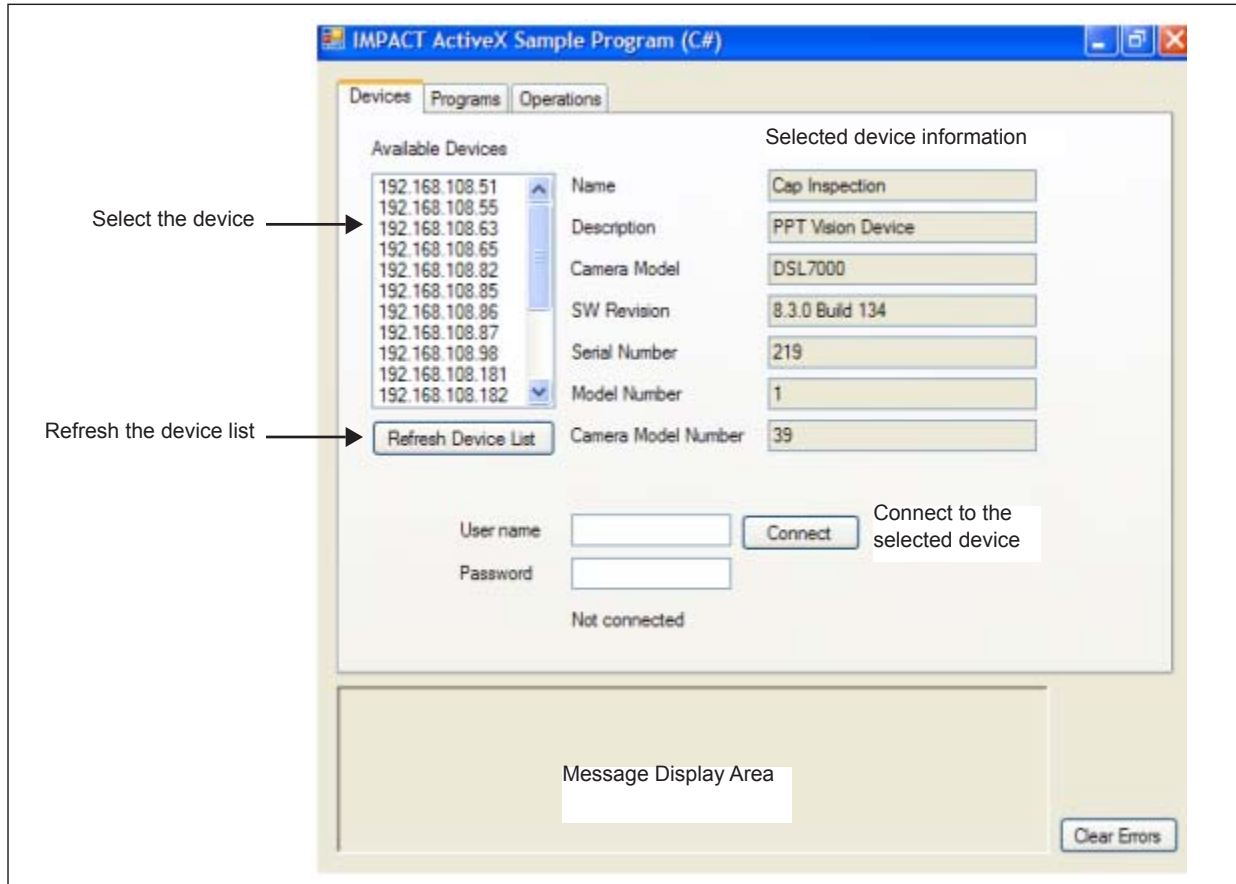
Sample Vision Program File

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

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

Devices Interface

The sample programs provided let you monitor and control a Datalogic camera. When you start the sample program named CSharpActiveXSample.exe, the Devices Interface is displayed. This section briefly explains the interface.



Programs Tab

Click this tab to display the Impact Programs interface. (See “Programs Interface” on page 1-8.)

Operations Tab

Click this tab to display the Impact Operations interface. (See “Operations Interface” on page 1-5.)

Available Devices

This area lists all the Datalogic vision devices on the network. Use the scroll bar to the right of the field to display the entire list of devices. Click the Refresh Device List button to refresh this device list.

Refresh Device List

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.

Name

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

Description

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

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.

Camera Model Number

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

User name and Password

If security is enabled on the device, enter a valid User name and password. When you try to connect to the vision device, if the User name or Password is incorrect, an error message "ImpactNotAuthorized" will be displayed.

Connect

Click this button to connect to the device currently selected in the Available Devices list. If security is enabled on the device, if the User name or Password is incorrect, an error message "ImpactNotAuthorized" will be displayed.

Message Display Area

Status messages are displayed in this area.

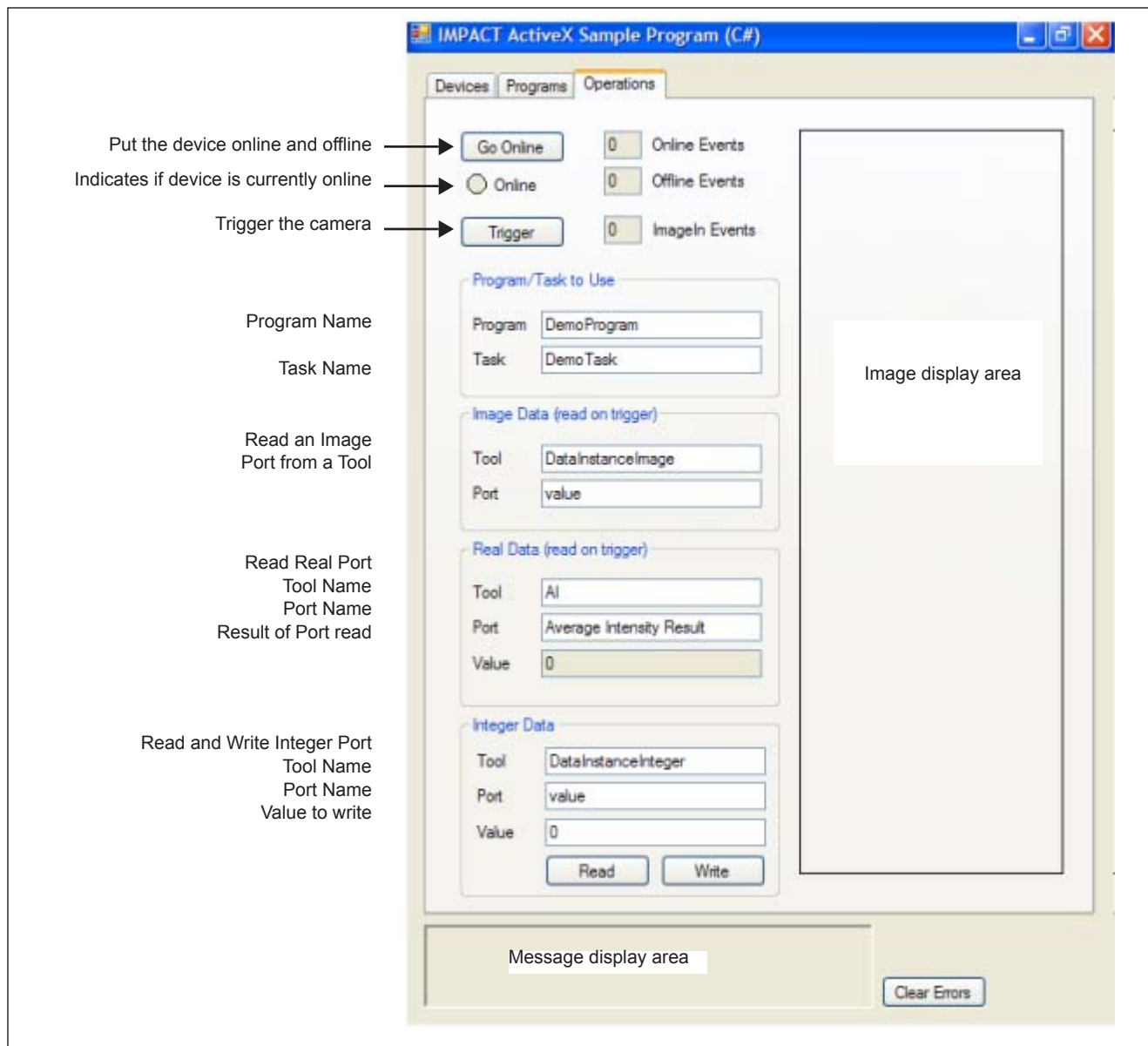
Clear Errors

Click this button to clear the status messages in the message display area.

Operations Interface

The sample program's Operation Interface lets you monitor and control a Datalogic camera. This interface is displayed when you click the Operations tab. You must use the Devices 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.

Programs Tab

Click this tab to display the Impact Programs interface. (See “Programs Interface” on page 1-8.)

Devices Tab

Click this tab to display the Devices interface. (See “Devices Interface” on page 1-4.)

Go Online

When this button is pressed, the device is put online, the label changes to "Go Offline," and the Online simulated LED is green. When it is pressed again, the label changes to "Go Online," the simulated LED is grey, and the device is put offline. This button must be On for the Trigger button to create triggers.

Online

When this simulated LED is green, it means the device is online.

Trigger

Click this button to trigger the device, capture an image, and run the vision program. The Go Online button must be On for the trigger to succeed.

Update

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

Online Events

This is the number of times the device has been put online since the most recent connection.

Offline Events

This is the number of times the device has been put offline since the most recent connection.

ImageIn Events

This is the number of times the device has acquired an image since the most recent connection.

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.

Program/Task to Use

- 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.

Image Data (read on trigger)

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

If the Tool field is blank and the Port name is "Image," the image will be read from the Image Port of the task named in Program/Task to Use.

- 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.

Real Data (read on trigger)

Use this function to read a real value from a tool's floating point port when the device is triggered.

- 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 Real value you want to read. You can read a tool's input or output ports. The value is displayed in the value field.

- Value - Enter the value that you want to write to the tool port. You may enter a whole or decimal number.

Integer Data

Use this function to read or write an integer value to or from a tool's integer port. After you enter the tool and port name, click the Read or Write button to read or write the value from or to the tool port. You can read a tool's input or output ports. You can only write a tool's input ports. The read 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 Integer.
- Value - If you are writing to a port, enter the value in this field. If you are reading a port, the value read from the tool port is displayed in this field.

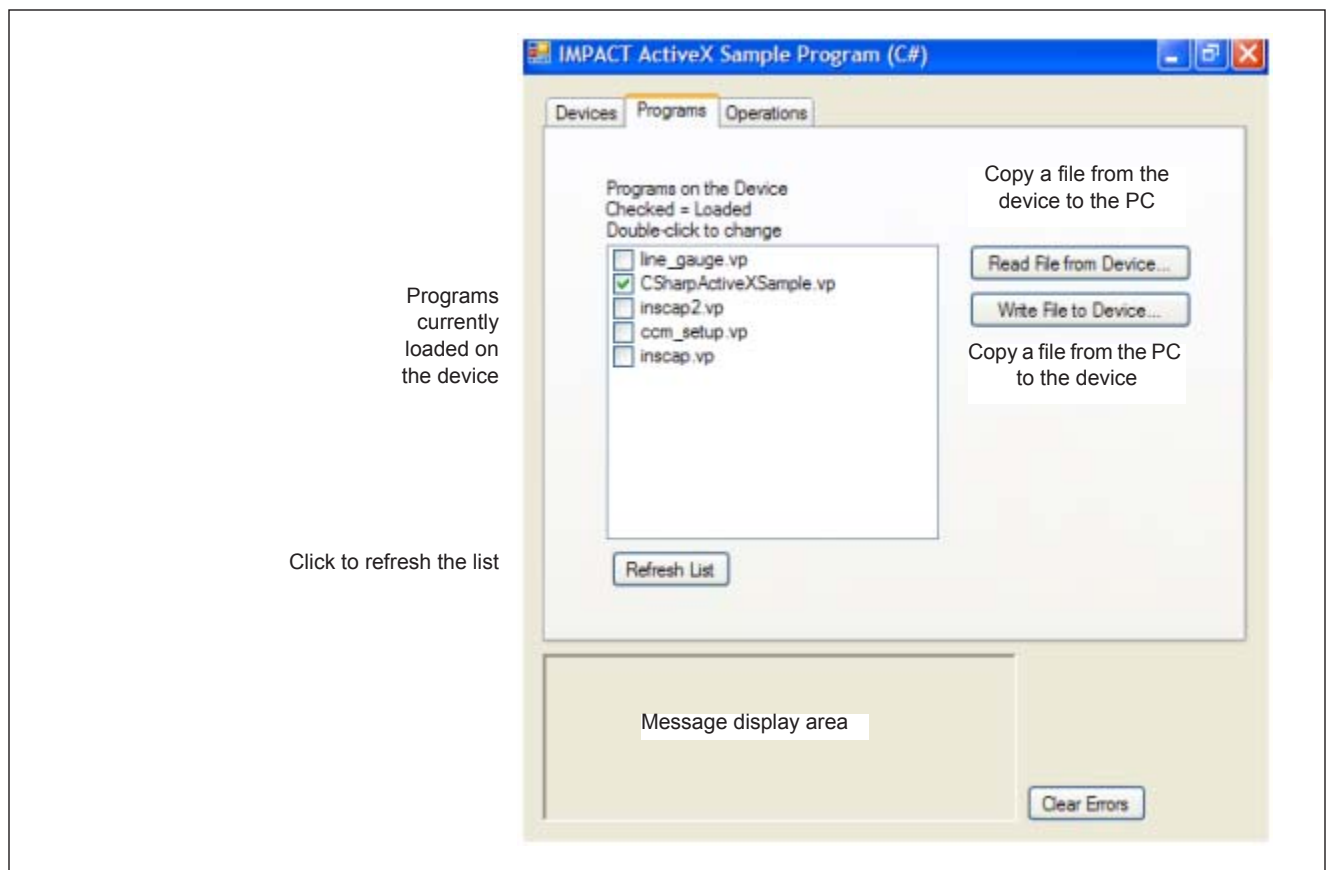
Read and Write Buttons

When you click one of these buttons, the Integer Data value is either written to or read from the tool's port.

Programs Interface

The sample program's Programs interface lets you access and manipulate files on a Datalogic camera. This interface is displayed when you click the Programs tab in the Devices Interface. You must use the Devices Interface to connect to a device and display information in this interface.

This section briefly explains the parts of the interface.



Operations Tab

Click this tab to display the Impact Programs interface. (See “Operations Interface” on page 1-5.)

Devices Tab

Click this tab to display the Devices interface. (See “Devices Interface” on page 1-4.)

Programs on the Device

The box lists all the vision program files currently present on the device. If the box next to the file name is checked, the file is currently loaded.

To load a file on the device

1. If the desired vision program file name is not selected, click on it to select it.
2. Click on the file name again to load it.

To unload a file from the device

1. If the desired vision program file name is not selected, click on it to select it.
2. Click on the file name again to unload it.

Refresh List

Click this button to refresh the displayed list of files.

Read File from Device

Click this button to copy the selected vision program file from the vision device to the PC.

To copy a file to the PC

1. Click on a file name in the list to select it.
2. Click the Read File from Device button.
3. When the Save Device Program File dialog is displayed, select a folder to contain the vision program file.
4. If desired, enter a new name for the file.
5. Click OK to save the file.

Write File to Device

Click this button to copy the selected vision program file from the PC to the vision device.

To copy a file to the vision device

1. Click the Write File to Device button.
2. When the Write Program File to Device dialog is displayed, select the vision program file you want to copy.
3. Click OK to write the file to the device.

Sample Program Code

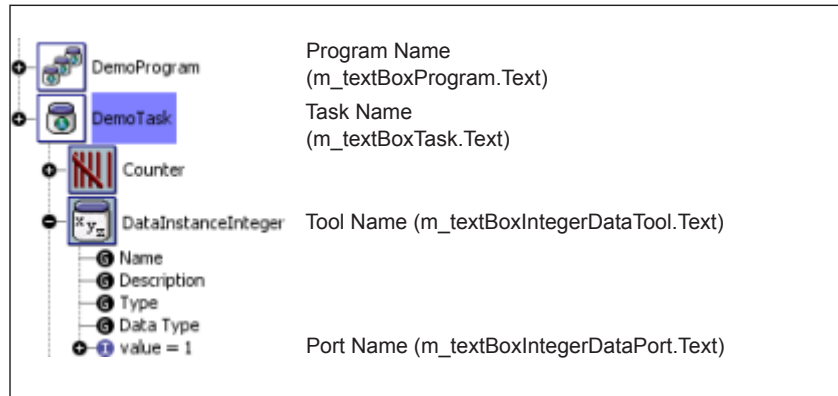
The sample program code shown here is extracted from the CSharp project installed with Impact ActiveX. When you create your own CSharp project, you will need to add the Impact library reference to your project so you can make Impact API calls. See “Impact dll” on page 1-2 for details.

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

Vision Program

After you connect to a device with the sample program, you can copy the sample vision program to the device and load it. The program, task, and port names in the CSharp API call to read and write data must match the names in the vision program.

When you create your own CSharp 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.



Read Integer Data

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

```

/// <param name="sender"></param>
/// <param name="e"></param>
private void m_buttonReadIntegerData_Click(object sender, EventArgs e)
{
    ImpactErrorCode errCode = ImpactErrorCode.ImpactOK;

    int iData = 0;

    // Read an integer from the device at the specified port
    // The Program, Task, Tool, and Port names must match those in the VPM
    // vision program
    Operate iOperate = new Operate();
    errCode = iOperate.GetIntPort(m_hDevice, m_textBoxProgram.Text,
m_textBoxTask.Text,
    m_textBoxIntegerDataTool.Text, m_textBoxIntegerDataPort.Text, "", out
iData);

    if (ImpactErrorCode.ImpactOK == errCode)
    {
        m_textBoxIntegerDataValue.Text = iData.ToString();
    }
    else
    {
        m_textBoxIntegerDataValue.Text = "";
        AddErrorMessage("GetIntPort failed - Error code: " +
errCode.ToString());
    }
}

```

ACTIVE X C S H A R P R E F E R E N C E

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