



3000 Series PXI Modules

Using Aeroflex PXI ActiveX

Controls In Visual C++6.0

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Introduction

This document describes how to use Aeroflex PXI ActiveX controls (for example, afDigitizer, afSpectrum, afSigGen) in a Microsoft Visual C++ project.

Associated documentation

The following documentation covers specific aspects of this product:

PXI Modules CD-ROM	Part no. 46886/028	Compilation containing soft front panels, drivers, application software, data sheets and operating manuals for this and other modules in the 3000 Series — see below.
Operating manuals	Part no. 46892/637 46892/638 46892/639 46892/640	Operating manual for: 3010 RF Synthesizer 3020 Digital RF Signal Generator 3030 RF Digitizer 3060 RF Combiner
Getting Started with afDigitizer ActiveX Control	46882/676	Setting up and using the digitizer application for the 3010 and 3030 modules.

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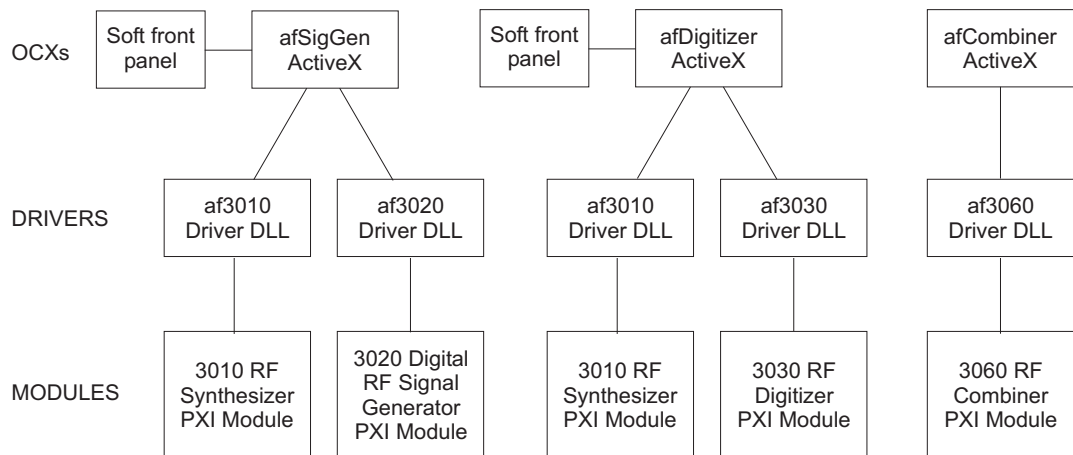
Using Aeroflex PXI ActiveX controls in Visual C++6.0

Compatibility

- Microsoft Visual C++ Version 6.0
- Microsoft Windows 2000: Service Pack 4

Prerequisites

Before you start using any Aeroflex PXI ActiveX control, make sure that the control and its dependent drivers are already installed on the computer. The following figure shows the dependent drivers for the afDigitizer, afSigGen and afCombiner Aeroflex PXI ActiveX Controls.



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The 3000 Series PXI Modules Common Installation Guide (part no.46882/663) provides information on installing the controls and drivers.

Using ActiveX controls: the Microsoft Visual C++ problem

When a variable is created in Visual C++ from an ActiveX control using the ClassWizard, it creates wrapper classes. During this process the ClassWizard fails to generate correct wrapper code for the control classes in the following cases:

- The ClassWizard does not generate methods that take a SAFEARRAY or SAFEARRAY* as a parameter. The wizard does place a comment in the wrapper class header file, stating that the method was not emitted due to an invalid return type or parameter type.

Microsoft is aware of this problem. A description of the problem can be found in the Microsoft Knowledge Base, article 241862. Alternatively, follow this link: <http://support.microsoft.com/default.aspx?scid=kb:en-us;241862>

- ClassWizard ignores the enumeration types defined in the class while generating a class wrapper.
- All the instances of enumeration types in the function argument list are replaced with the 'long' type.

Solution to the ClassWizard problem

Aeroflex has modified the incorrect class wrapper files generated by the Visual C++ ClassWizard. These modified files, named 'Visual C++ Wrapper', are on the PXI Modules CD-ROM, part no. 46886/028. There is a file for each OCX.

However, although missing enumeration definitions are added to the corresponding wrapper class, its member function signatures are not updated to the enumeration type (as in original controls) and are left as 'long', as generated by ClassWizard.

Follow the following steps to copy correct wrapper class files to your Visual C++ project.

- 1 Add the Aeroflex PXI ActiveX control (on a form/dialog) into the Visual C++ project.
- 2 Start ClassWizard (by right-clicking on the form/dialog where the Aeroflex PXI ActiveX control is added).
- 3 Create a variable of the Aeroflex PXI ActiveX control (under the Member Variables tab, select Aeroflex PXI ActiveX Control ID and click the **Add Variable...** button).
- 4 Press **OK** to generate wrapper classes.
- 5 Press **OK** to confirm the classes.
- 6 Give the member variable a name and press **OK**.
- 7 Press **OK** to close the ClassWizard.
- 8 Exit the Visual C++ project.
- 9 Copy the wrapper class files from the Aeroflex PXI ActiveX Control installation directory into your project. This will overwrite the incorrect files.
- 10 Delete the project's .ncb file (this is necessary to force Visual C++ to re-parse the wrapper classes).
- 11 Reopen the Visual C++ project. You should now have correct versions of the wrapper classes.

Example

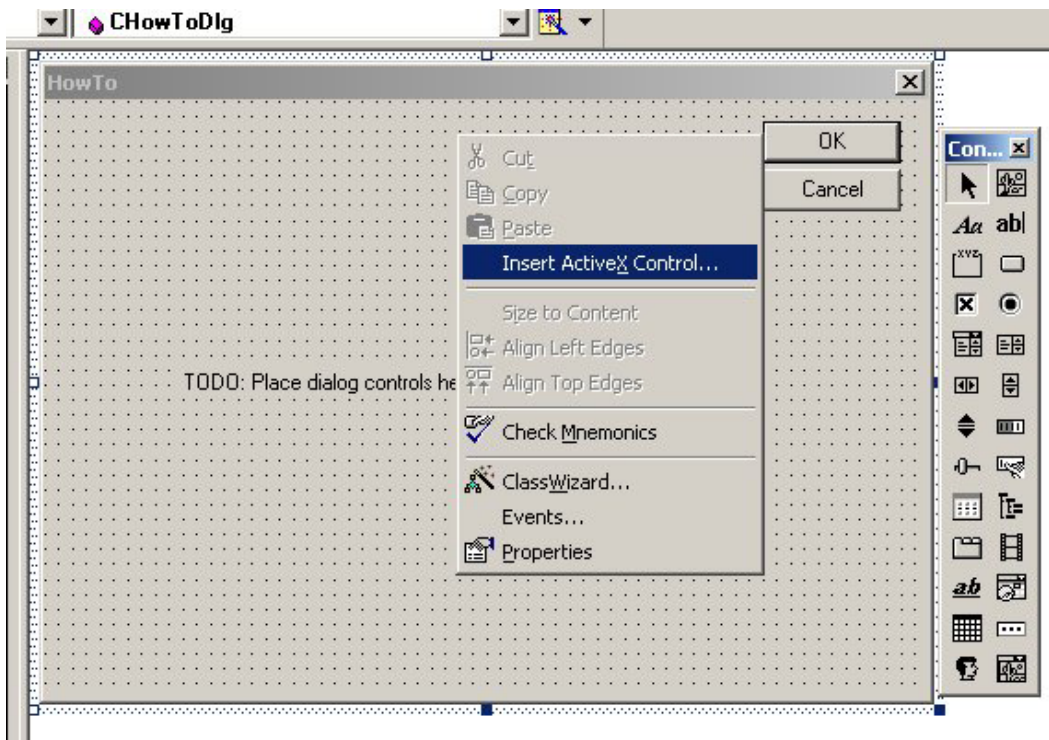
The following example uses the Aeroflex PXI ActiveX Control 'afDigitizer' in a Visual C++ project. This example describes the insertion of the afDigitizer control into a simple Dialog Box project called 'HowTo'.

Notes:

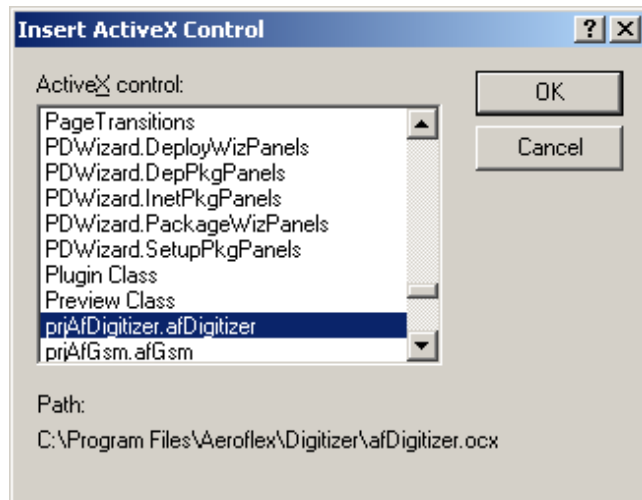
- This is just an illustration of using an Aeroflex PXI ActiveX control in Visual C++.
- The actual details (for example, the number of wrapper files/corrections) may vary depending on the current version of the afDigitizer control.
- Use a similar process to insert other Aeroflex PXI ActiveX controls into your Visual C++ project.
- Visual C++ examples supplied by Aeroflex have already been modified.

Step 1: locate and insert the control

Right-click on the dialog box and select Inset ActiveX Control...

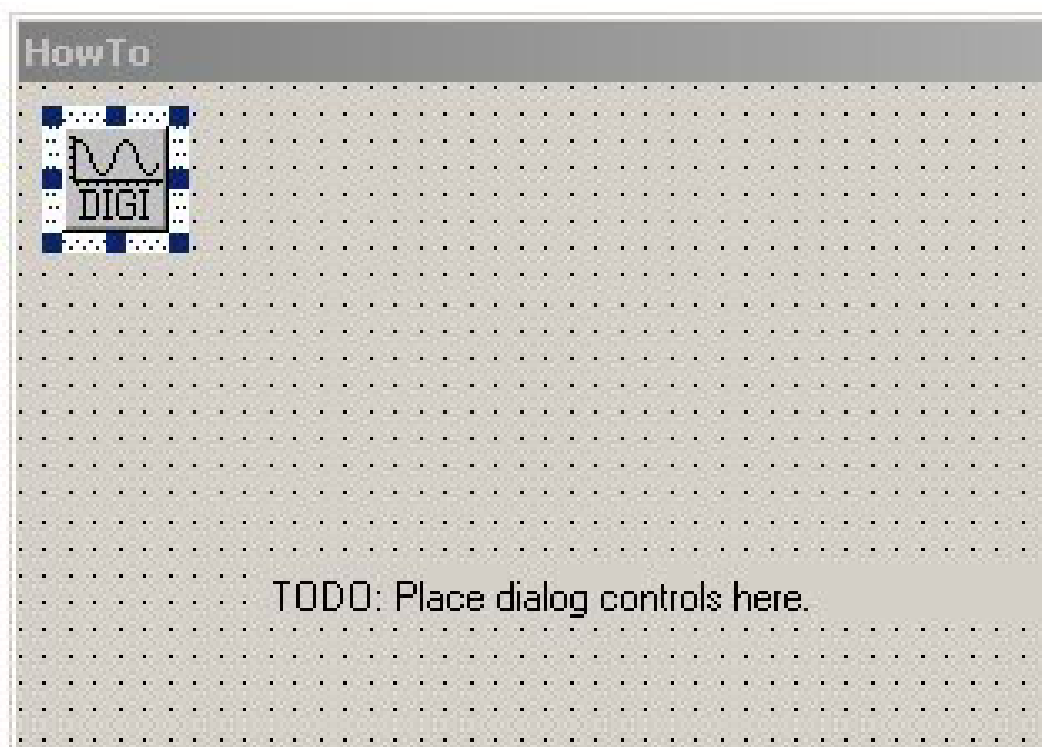


Move down the list of available controls and select:
prjAfDigitizer.afDigitizer.



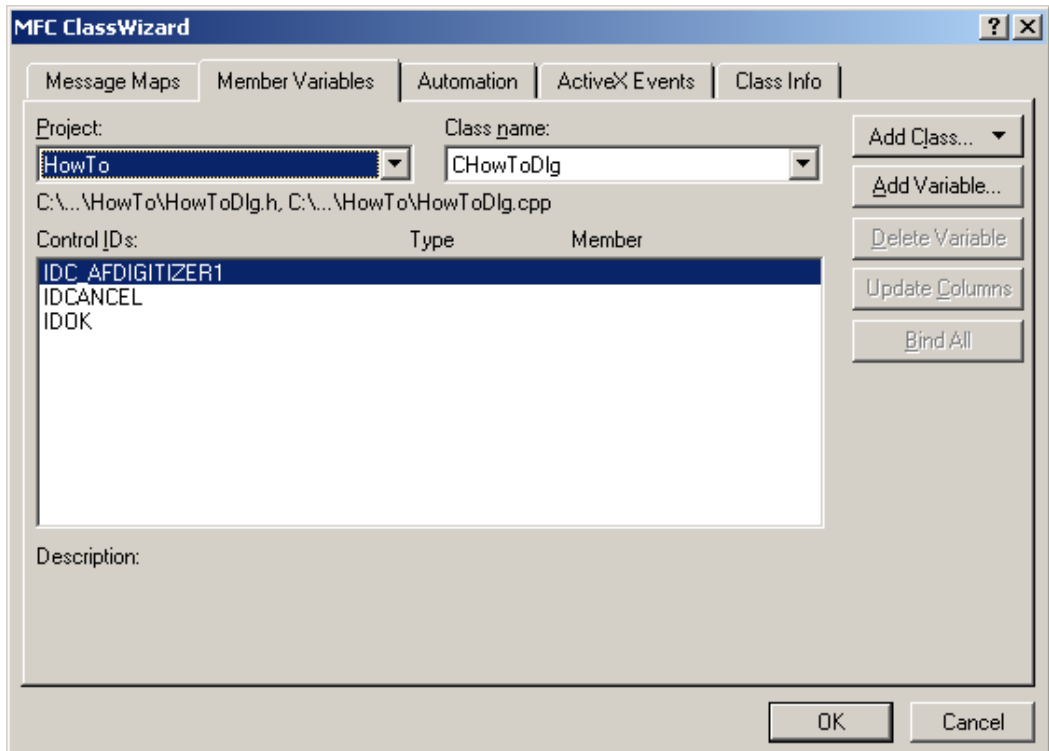
Click **OK**.

This should result in the control appearing on the dialog box:

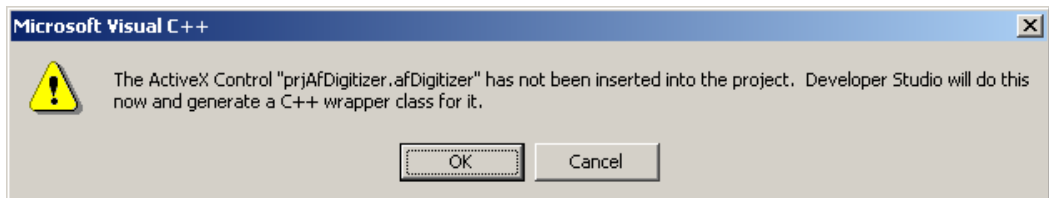


Step 2: create a variable

Start the ClassWizard and select the Member Variables tab.



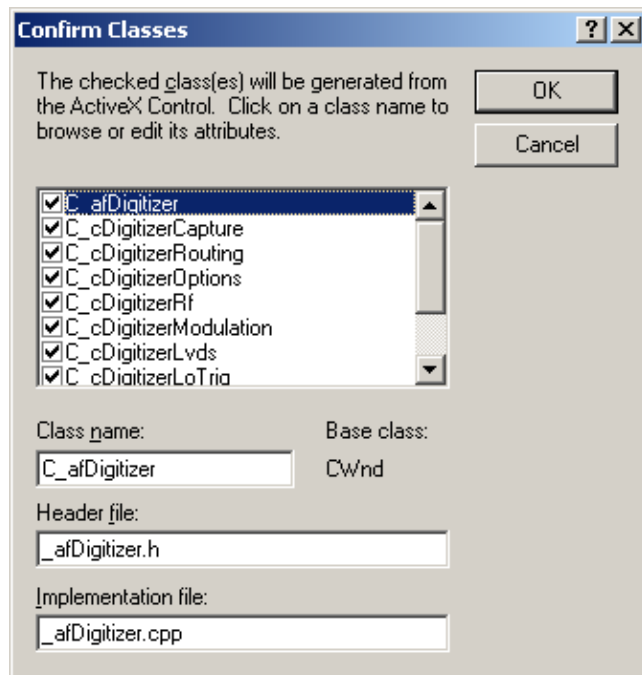
Select the afDigitizer Control ID, then press Add Variable...



This triggers the creation of the C++ wrapper classes.

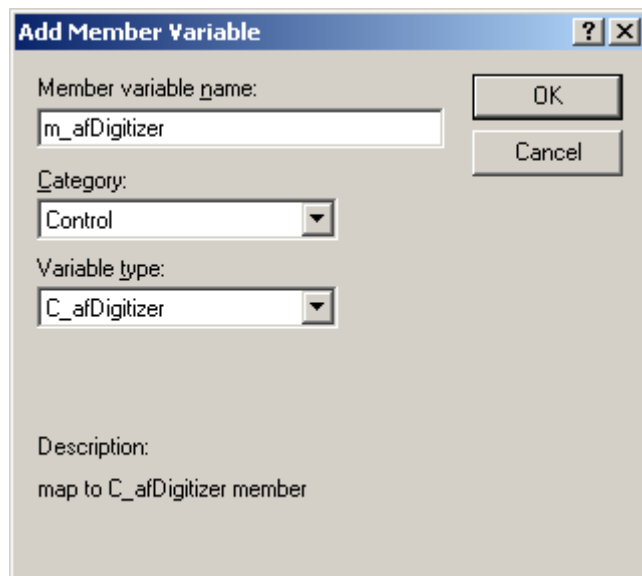
Press **OK**.

Confirm the classes:



Use the default setting and then click **OK**.

The variable needs a name:



Give the variable a name (for example, m_afDigitizer) and press **OK**.

Close the ClassWizard.

Step 3: examining the files

Look at the project's FileView:

Error! Objects cannot be created from editing field codes.

The effect of the ClassWizard bug can be seen by opening the header file `_cdigitizercapture.h`:

```

// Operations
public:
    void SetIQResolution(long nNewValue);
    long GetIQResolution();
    void SetSampleDataType(short nNewValue);
    short GetSampleDataType();
    // method 'CaptMemIQ' not emitted because of invalid return type or parameter type
    // method 'CaptMemIF' not emitted because of invalid return type or parameter type
};
    
```

The ClassWizard has not created two methods (arrowed).

The reason for this is a failure by the ClassWizard to recognise the data type `SAFEARRAY`. This is a valid COM data type and is supported by other products without problems (Microsoft Visual Basic, National Instruments LabVIEW and LabWindows/CVI).

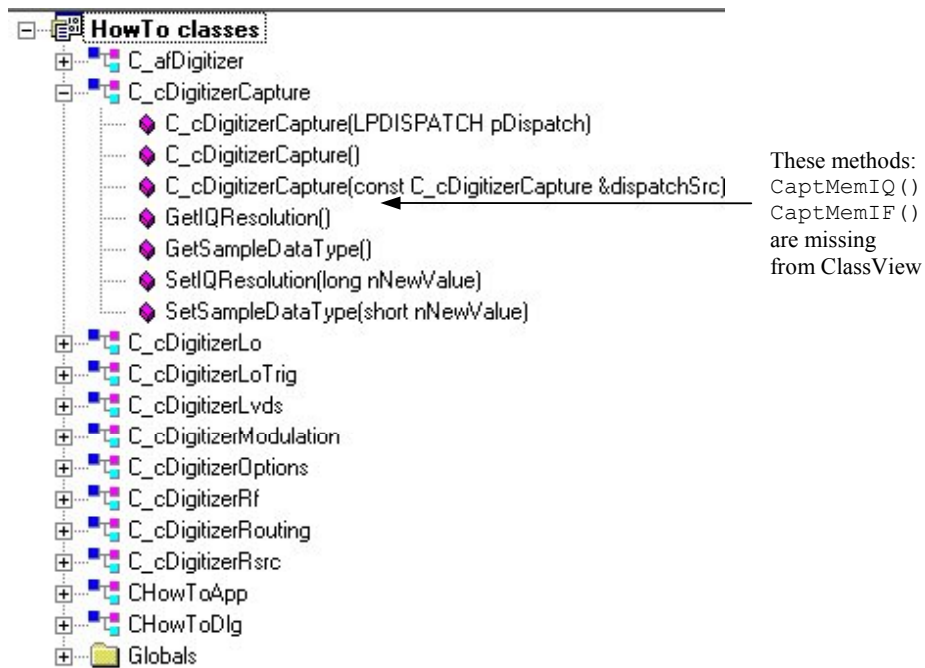
Step 4: changing source and header files

Corrected versions of these files are supplied on the installation CD and should be copied into the project to replace the ClassWizard versions.

Exit/Close the Visual C++ project before copying the files.

Step 5: getting the Visual C++ environment in sync

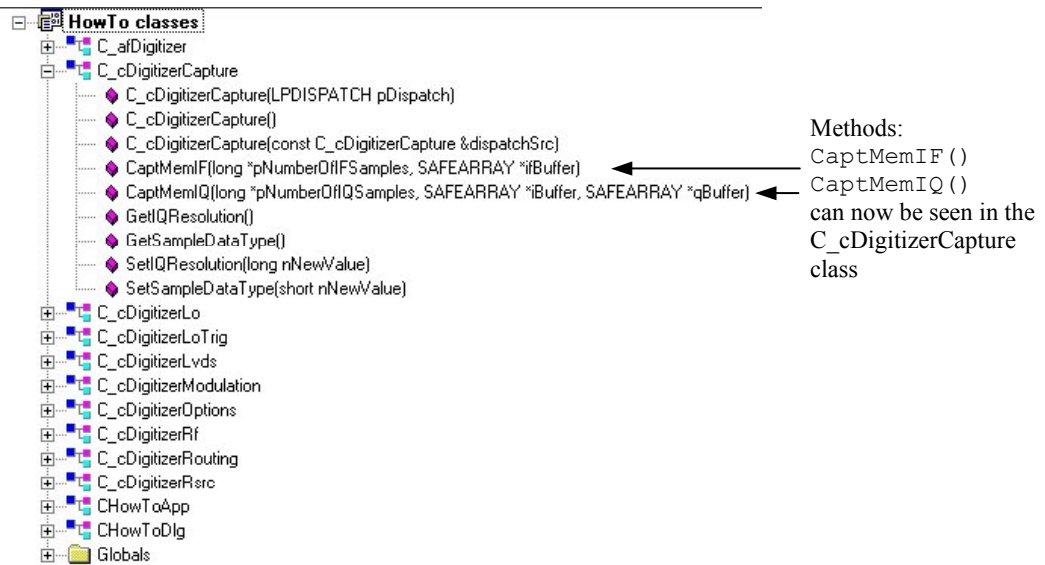
The Visual C++ environment has a problem when copying replacement files. The missing methods do not show up in the ClassView window:



In order to bring the ClassView window in sync with the new files:

- 1 Quit the Visual C++ design environment.
- 2 Delete the project's `.ncb` file.

3 Reopen the project.



Now you are ready to use the afDigitizer ActiveX control in your Visual C++ project.