



AREMBEUSB

**ActiveX Control for Velleman K8055
USB Experiment Interface Board**

Instruction Manual

10000-MNL-A

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Business Name

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1.1 Overview

The AREMBEUSB ActiveX Control and Software Development Kit (SDK) is designed to allow up to four Velleman K8055 USB Experiment Interface Boards to be controlled from a PC computer. It offers an alternative to the software supplied by Velleman with the boards and makes it easier to incorporate control for them into programs written in many different languages.

The control is supplied with several different examples showing how to use it in C# and Visual Basic for Visual Studio 2010, C++ for Visual Studio 6.0, HTML with JScript, Excel using VBA, and LabVIEW, any of which may be used as the basis for further development.



Velleman K8055 USB Experiment Interface Board

1.2 Board Capabilities

The K8055 board has the following capabilities:

Five digital inputs (0= ground, 1= open) (on board test buttons provided). Two of these inputs can also be counted via 16-bit counters with adjustable debounce times: 0 ms, 2 ms, 10 ms and 1 s

Two 8-bit analog inputs with attenuation and amplification option (internal test +5 V provided)

Eight digital open collector output switches (max. 50V/100mA) (on board LED indication)

Two 8-bit analog outputs: 0 V to 5 V, output resistance 1.5 k Ω

PWM 0 to 100% open collector outputs max 100 mA / 40 V (on board LED indication)

General conversion time: 20 ms per command

Power supply through USB: approx. 70 mA

Dimensions: 145 x 88 x 20 mm / 5.7 x 3 x 0.8"

The AREMBEUSB ActiveX control allows the status of the digital inputs, ADC values, and counter values to be read; the counter debounce times to be set and the counters reset, and the digital outputs and DAC values to be set. In addition the control can be set to display warning dialogs when a board is connected or disconnected, and/or notify these events to the containing program.

1.3 PC Requirements

The control has been verified as operating correctly on computers running Windows XP SP3, Windows Vista 32 bit, and Windows 7 (both 32 and 64 bit versions). No special device drivers or DLL's are needed to use it, and operation does not rely on any of the software supplied by Velleman (although this can also be installed and used, though obviously not at the same time as the AREMBEUSB control, without problem).

In order to modify the demonstration programs the computer must also have the relevant development environment, e.g. to use the LabVIEW driver LabVIEW must be installed on the PC. However, the HTML web page example can be run on any computer that has Internet Explorer installed, and since it a simple HTML text file, can be edited using any text editor, such as Notepad that is part of a standard Windows installation.

1.4 Typical Applications

The applications for systems built using the Velleman board and the control are limited only by the user's imagination. Possible uses include:

- Creating Excel spreadsheets that record up to eight analog voltages and the status of twenty digital inputs over a period of time
- Home and business automation projects
- Model railway control systems using control panels implemented as HTML pages allowing speed control and signal interlocking
- Security alarm systems
- Temperature monitoring and control systems
- Controlling Christmas tree lights
- Robotics
- Automotive monitoring

In addition to this instruction manual, the control has a fully compiled HTML help system that delivers context sensitive help on properties and methods as the control is being used. This makes it very easy to check what each method and property does, and aids when debugging programs.

Installation & Initial Checks

2.1 Introduction

This chapter describes how to install the AREMBEUSB ActiveX Control and supporting software on a personal computer running a Windows operating system (Windows XP, Vista, or Windows 7).

2.2 Installation

2.2.01 Media and Setup Program

The AREMBEUSB ActiveX Control software is typically supplied as a zip file containing the full setup program. Unzip the contents of this file to an empty folder. Use Windows Explorer to navigate to this folder and double-click on the file `SETUP . EXE`

The Setup program should start. If the User Account Control (UAC) is active a warning dialog, similar to that shown in figure 2-1, will be shown. Click **Yes** to continue.



Figure 2-1, Setup.exe UAC Warning Dialog

The main setup dialog, figure 2-2, will then be shown.

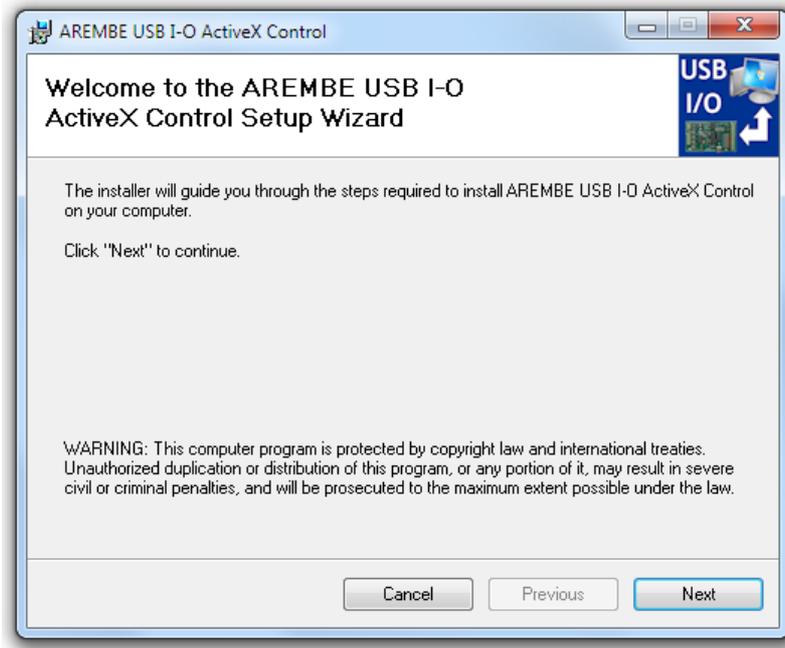


Figure 2-2, Main Setup Dialog

Follow the instructions on this and subsequent dialogs until the control installation is complete.

2.2.02 Installed Files

The Setup program places the AREMBEUSB ActiveX control and supporting files in the System folder (typically C:\Windows\System32), and in addition creates a folder called C:\Program Files\AREMBE\AREMBEUSB that in turn contains folders for the different demonstration software packages.

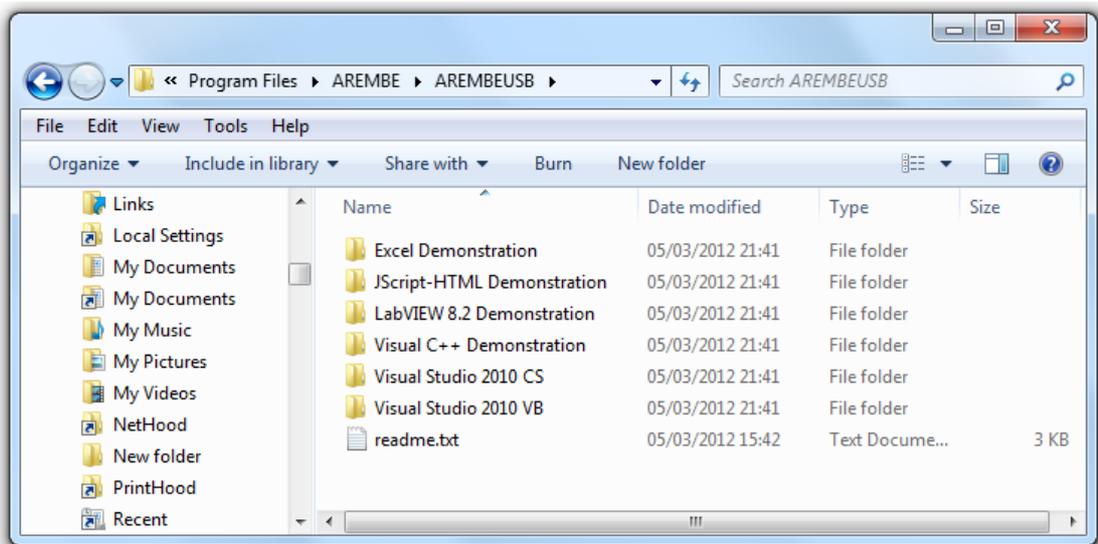


Figure 2-3, Demonstration Folder Structure

Once the installation is complete, use Windows Explorer to verify that this folder structure exists.

2.3 Initial Checks

2.3.01 Procedure

The simplest way of checking that the AREMBEUSB control is properly installed is to use one of the supply demonstration programs to control a Velleman K8055 USB Experiment Interface Board. Proceed as follows.

- 1) Take the K8055 board and connect it to a free USB port on the computer using a suitable cable. If this is the first time it has been connected then Windows will automatically install the required USB HID driver. This driver is included with Windows - it does not need loading from disk or downloading from the web.
- 2) Use Windows Explorer to navigate to C:\Program Files\AREMBE\AREMBEUSB\JScript-HTML Demonstration and locate the file AREMBEUSB I-O Web Page.htm
- 3) If Internet Explorer (IE) is the default browser on the PC then simply double click the file to load it, If not, right click, and use the pop-up menu item Open with.. to chose to open the file with IE
- 4) If IE's security settings are at their default level then a warning message will be displayed, like that shown in figure 2-4 for IE version 9.0. Other versions of IE show the same information but in a different format.



Figure 2-4, Internet Explorer Active Content Warning Message

- 5) Click the **Allowed blocked content** (or equivalent) button.

When first installed the AREMBEUSB control functions in a demonstration mode, in which it is fully functional except that there is a limit of 25 data transfers between the board and the computer before the control needs reinitializing. This allows the user to test that the control will work in the intended application before purchasing an activation code. If the demonstration mode is active, the dialog shown in figure 2-5 will be displayed.

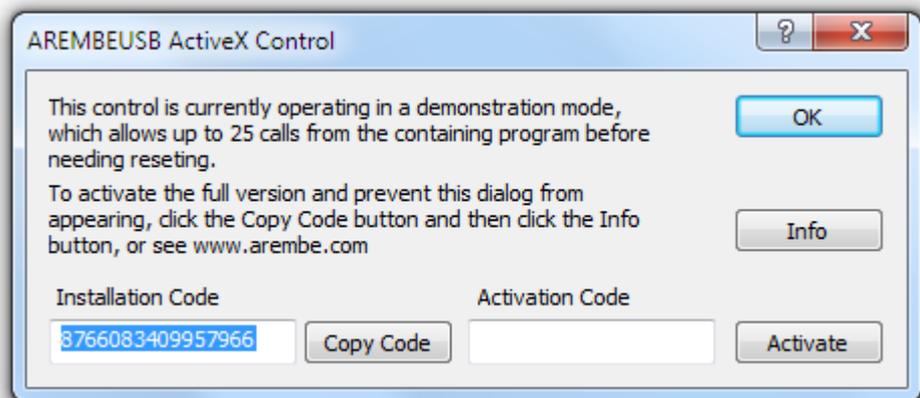


Figure 2-5, Activation Dialog

- 6) Click the **OK** button to close the dialog and the demonstration dialog, shown in figure 2-6, will be displayed.

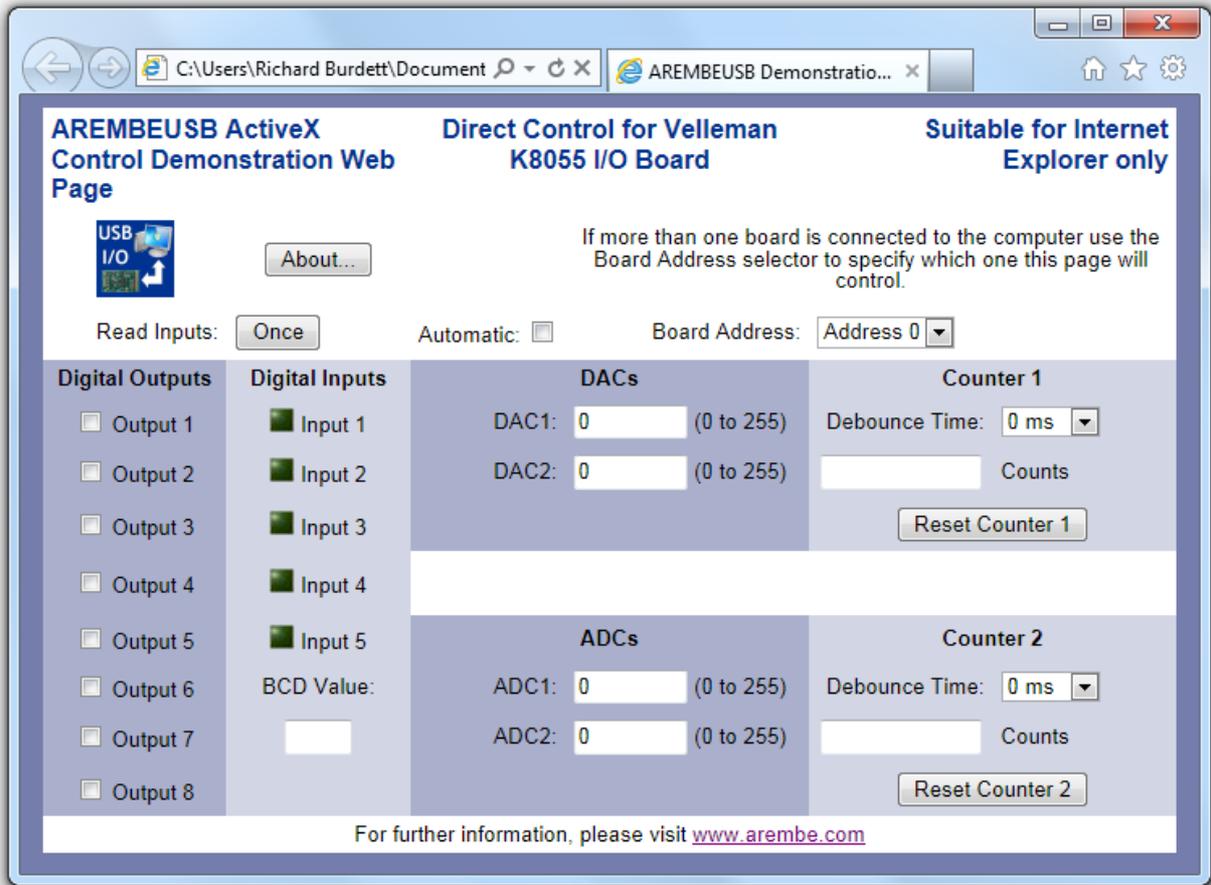


Figure 2-6, Web Page Demo Dialog

- 6) If a K8055 board is connected and set by its on-board jumpers to Address 0 then the **Board Address** selector should also read **Address 0**, as shown.

During the following tests, if the control is operating in the demonstration mode, then a warning dialog, figure 2-7 will be shown once the number of data transfers to the board exceeds 25.

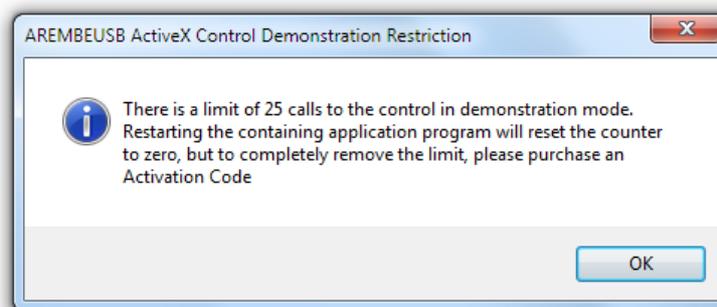


Figure 2-7, Demonstration Mode Warning Dialog

When this happens, click the **OK** button and then refresh the page in Internet Explorer (F5 key or the refresh button). The dialog shown above in figure 2-5 will be shown again. Click **OK** to continue.

- 7) Click the **Digital Outputs** checkboxes in turn and verify that the corresponding LED's on the board light.
- 8) Press and hold the **Inp1** switch on the board and click the **Read Inputs Once** button. The **Input 1** indicator should change to the lighted state: ■

- 10) Click the **Reset Counter 1** button. The Counter 1 **Counts** indicator should read **0**
- 11) Press and release the **Inp1** switch on the board and click the **Read Inputs Once** button. The Counter 1 **Counts** indicator should read **1** (although if the **Inp1** switch bounced the count might be **2** or more).
- 12) Ensure that the jumpers **SK2** and **SK3** are fitted to the board. This sets the ADC1 and ADC2 input voltages to be internal test voltages set by **ATT1** and **ATT2** preset potentiometers. Using a small screwdriver, set the potentiometers to their mid positions.
- 13) Click the **Read Inputs Once** button. The **ADC1** and **ADC2** indicators should show values in the range 100 - 150.
- 14) Click in the **DAC1** text box control and enter the value **125**. Using a multimeter, measure the voltage between the **GND** and **DAC1** analog output terminals on the board. It should read $2.4\text{ V} \pm 0.2\text{ V}$
- 15) Repeat test 14) for the **DAC2** output.

Assuming that above tests operate as described then you can be certain that the underlying AREMBEUSB ActiveX control has been installed correctly and is functioning properly.

2.3.02 Control Activation

As mentioned in section 2.3.01 above, when first installed the control functions in a demonstration mode. To upgrade the control to the full version, proceed as follows:

- 1) When the dialog shown in figure 2.5 is displayed, write down (or click the **Copy Code** button to copy the code to the Windows clipboard, and paste into another document) the **Installation Code**
- 2) If the computer is connected to the internet, click the **Info** button, which will open in the default web browser a registration page on the **www.arembe.com** website. If the computer has no internet connection then please visit the site using a computer that has a connection and follow the links to the AREMBEUSB product registration page.
- 3) Use the registration page to submit the Installation Code and pay for the full version of the control.
- 4) Once the Installation Code has been verified, you will receive an e-mail containing an Activation Code.
- 5) In order to activate the control, it needs to be running in a program that is itself running with full administrative privileges. On Windows XP this will be achieved if the user account has such privileges, in which case starting Internet Explorer and loading the file `AREMBEUSB I-O Web Page .htm` will suffice.

On machines running Vista and Windows 7 with User Account Control in operation, go to the **Start Menu**, select the Internet Explorer icon, right click, and select **Run as administrator**. Accept the warning dialog to start Internet Explorer. Then locate the file `AREMBEUSB I-O Web Page .htm` from the browser's history to reload it (if you double click on the file when it is shown in Windows Explorer then you will simply start another instance of IE that will not run in administrative mode).

The dialog shown in figure 2.5 will be displayed again.

- 6) Enter the **Activation Code** and click the **Activate** button. If the code is correct then

the Code Accepted dialog, figure 2-8, will be shown.

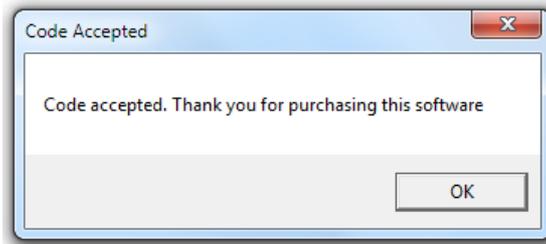


Figure 2-8, Code Accepted Confirmation Dialog

If for some reason the code is not correct, the Invalid Code dialog, figure 2-9, will be shown.

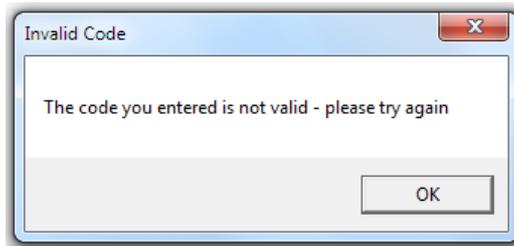


Figure 2-9, Invalid Code Dialog

If the containing program is not running in administrative mode then the Control Activation Error dialog, figure 2-10, will be shown.

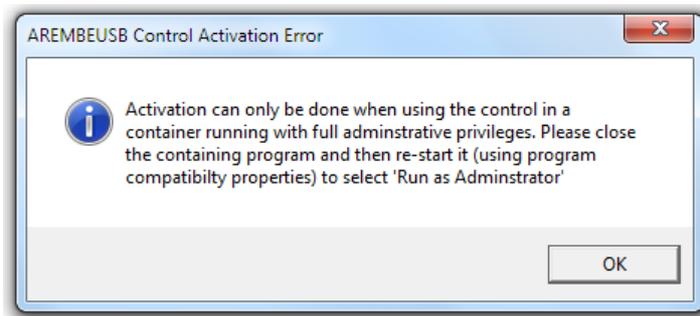


Figure 2-10, Activation Error Dialog

If this occurs, click OK, close the containing program, and restart it in full administrative mode.

2.3.03 Upgrading an Existing Installation

If you are upgrading from an earlier version of AREMBEUSB then you **must** remove the previous software version first. This is done by using the Windows Control Panel Programs and Features (or Add or Remove Programs) dialog. Select the AREMBEUSB item from the list of installed programs and click **Uninstall** or **Remove**. Removing an existing installation using this method will not delete the activation information, or any versions of the demonstration files that you may have created by editing the originals.

3.1 Introduction

This chapter describes how the AREMBEUSB ActiveX control operates and gives details of its methods and properties that containers can access.

3.2 Technical Description

3.2.01 Overview

The AREMBEUSB ActiveX Control is designed to allow up to four Velleman K8055 USB Experiment Interface Boards to be controlled from a computer.

The boards have a USB vendor ID (VID) of 10CFh and a product ID (PID) that depends on the settings of the address jumpers SK5 and SK6, as follows:

Address	PID
0	5500h
1	5501h
2	5502h
3	5502h

The board is of the Human Interface Device HID class and so is supported by the standard USB drivers included within the operating system, which also support the mouse and keyboard.

When a board is connected to the computer, the HID driver is loaded and the device appears as **HID compliant device** in the Device Manager display, as shown in figure 3-1.

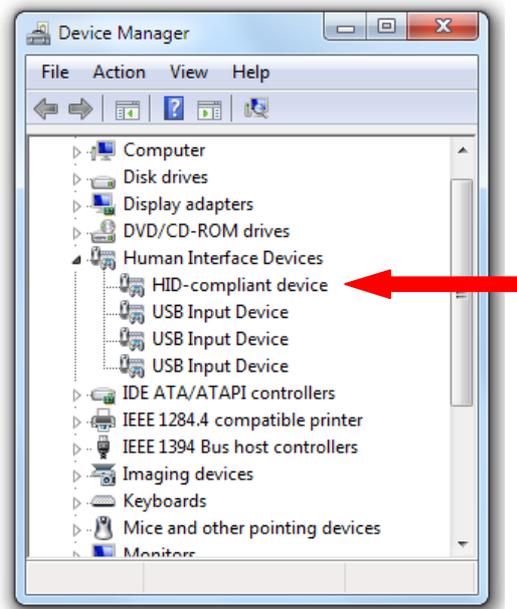


Figure 3-1, Device Manager Dialog

Once a board is connected a controlling program can use the AREMBEUSB ActiveX Control to access it, via a set of properties and methods that are described in the following sections of this manual

3.3 Methods

3.3.01 Introduction

The AREMBEUSB Control provides twelve methods (or functions), two properties, and two event notifications to control containers. This section describes the methods in detail. Section 3.4 describes the properties, and section 3.5 the event notifications.

3.3.02 OpenBoard

short OpenBoard(short nBoardAddress)

Description:

Before communicating with a board the USB communication channel to it must be opened, in the same way as opening a file handle is required before accessing a file.

This method attempts to open communication with a Velleman K8055 USB Experiment Interface Board that is set to the address specified by the **nBoardAddress** parameter. The address is set on the board by using the jumpers SK5 and SK6.

Returns:

0 if successful, 1 if unsuccessful

Notes:

If more than one board is connected to the computer then the control can only access one board at a time. If one board has been opened (e.g. at address 0) then calling this method with the address of the second (e.g. 1) will close communications with the first and all subsequent communications will be addressed to the second.

Call the corresponding method **CloseBoard(void)** to close any open communications channel before terminating the program.

3.3.03 SetDigitalOutputs

short SetDigitalOutputs(short nSettings)

Description

This method sets the eight digital outputs according to the BCD value of parameter **nSettings**. For example, if **nSettings** = 1, output 1 will be ON but all other outputs will be OFF; if **nSettings** = 255 then all outputs are ON

Returns:

0 if successful, 1 if unsuccessful

3.3.04 ReadDigitalInputs

short ReadDigitalInputs(void)

Description

This method reads the BCD value of the digital signals applied to the inputs **I1** to **I5**. Note that the test switch **Inp1** to **Inp5** can be used to simulate signals connected to the inputs.

Returns:

Integer in the range 0 to 31 corresponding to the BCD value of the inputs

3.3.05 Read ADC1

short ReadADC1(void)

Description

This method reads the value of an 8-bit digitization of the analog voltage applied to the ADC1 input

Returns:

Integer in the range 0 to 255 corresponding to the applied voltage.

3.3.06 Read ADC2

short ReadADC2(void)

Description

This method reads the value of an 8-bit digitization of the analog voltage applied to the ADC2 input

Returns:

Integer in the range 0 to 255 corresponding to the applied voltage.

3.3.07 SetDAC1

SetDAC1(short nDAC1Level)

Description

This method sets the 8-bit value, specified by parameter **nDAC1Level**, of the DAC1 analog output

Returns:

0 if successful, 1 if unsuccessful

3.3.06 SetDAC2

SetDAC2(short nDAC2Level)

Description

This method sets the 8-bit value, specified by parameter **nDAC2Level**, of the DAC2 analog output

Returns:

0 if successful, 1 if unsuccessful

3.3.08 SetCounterDebounceTime

**short SetCounterDebounceTime(short nCounter,
short nDebounceTimeIndex)**

Description

The board includes two 16-bit counters, which count the pulses applied to digital inputs I1 (counter 1) and I2 (counter 2). This method sets the debounce time applied to the input for the counter specified by parameter **nCounter** according to the **nDebounceTimeIndex** parameter, which has the following possible values:

nDebounceTimeIndex	Debounce Time
0	0 ms
1	2 ms
2	10 ms
3	1s

Returns:
0 if successful, 1 if unsuccessful

3.3.09 ReadCounter

int ReadCounter(short nCounter)

Description

The board includes two 16-bit counters. This method reads the accumulated count value for the counter specified by parameter **nCounter**

Returns:

Integer in the range 0 to 65,535 corresponding to the count. When the count reaches 65535 the next value will be 0

Note

Use **ResetCounter(short nCounter)** to reset the selected counter to zero.

3.3.10 ResetCounter

short ResetCounter(short nCounter)

Description

The board includes two 16-bit counters. This method resets the counter specified by parameter **nCounter** to zero.

Returns:

0 if successful, 1 if unsuccessful

3.3.11 CloseBoard

short CloseBoard(void)

Description

This method closes any open communications channel.

Returns:

0 if successful, 1 if unsuccessful

Notes:

Use **OpenBoard** to open communications to a given board

Any open channel should be closed before terminating your program.

3.3.12 AboutBox()

void AboutBox(void)

Description:

This method displays the controls **About...** information dialog, as shown below in figure 3-2. Use this dialog to determine the software version of the control.



Figure 3-2, AREMBEUSB About dialog

3.4 Properties

3.4.01 bMonitorPNP

boolean bMonitorPNP

Description

The **bMonitorPNP** property allows the AREMBEUSB control to be set to monitor connection or disconnection of Velleman K8055 USB Experiment Interface Boards. It is used in conjunction with the **bShowConnectionDialogs** property, according to the following table:

bMonitorPNP Setting	bShowConnectionDialogs Setting	Effect
FALSE	FALSE	No monitoring of board connection or disconnection occurs.
TRUE	FALSE	Board connection or disconnection is monitored. If it occurs, the corresponding events BoardConnected and BoardDisconnected are fired, but no warning dialogs are displayed by the control.
TRUE	TRUE	Board connection or disconnection is monitored. If it occurs, the corresponding events BoardConnected and BoardDisconnected are fired, and warning dialogs are displayed by the control.

The warning dialogs that can be shown by the control when **bShowConnectionDialogs** and **bMonitorPNP** are TRUE are as follows. When a board is connected to the USB bus, the following dialog will be shown (figure 3-3). The address referred to will be either 0, 1, 2 or 3, depending on the settings of the card address jumpers on the board.

Each board must have a unique address.

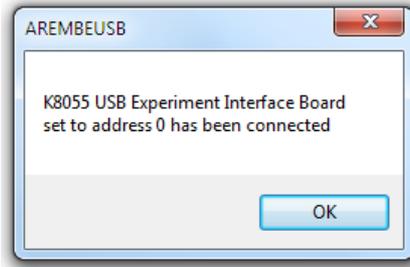


Figure 3-3, Board Connected Dialog

When a board is unplugged, the following dialog will be shown (figure 3-4):

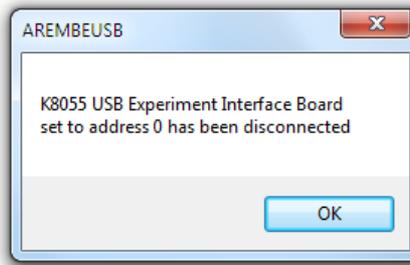


Figure 3-4, Board Disconnected Dialog

In this case the board is also closed if it had been open.

Note that when the control's Property Page dialog is displayed (in design mode) the warning dialogs are always shown, regardless of the settings of **bShowConnectionDialogs** and **bMonitorPNP**

3.4.02 bMonitorPNP

boolean **bShowConnectionDialogs**

Description

If the **bMonitorPNP** property is set to TRUE then the **bShowConnectionDialogs** property determines whether a warning dialog is displayed by the control when boards are connected or disconnected from the computer. It operates according to the following table:

bMonitorPNP Setting	bShowConnectionDialogs Setting	Effect
FALSE	FALSE	No monitoring of board connection or disconnection occurs.
TRUE	FALSE	Board connection or disconnection is monitored. If it occurs, the corresponding events BoardConnected and BoardDisconnected are fired, but no warning dialogs are displayed by the control.
TRUE	TRUE	Board connection or disconnection is monitored. If it occurs, the corresponding events BoardConnected and BoardDisconnected are fired, and warning dialogs are displayed by the control.

See section 3.5.01 for details of the warning dialogs that are shown by the control when **bShowConnectionDialogs** and **bMonitorPNP** are TRUE

3.5 Events

3.5.01 BoardConnected

BoardConnected(short **nBoardAddress**)

Description:

This event fires if the property **bMonitorPNP** is set TRUE and a Velleman K8055 USB Experiment Interface Board is connected to the computer. It allows the control to notify a calling program that the event has occurred so that action can be taken. The value of **nBoardAddress** identifies which board has been connected.

3.5. 01 BoardDisconnected

BoardDisonnected(short **nBoardAddress**)

Description:

This event fires if the property **bMonitorPNP** is set TRUE and a Velleman K8055 USB Experiment Interface Board is disconnected from the computer. It allows the control to notify a calling program that the event has occurred so that action can be taken. The value of **nBoardAddress** identifies which board has been disconnected.

3.6 Operation

In the simple case when only a single board is connected, the application program need do only the following:

- 1) Call **OpenBoard** with a parameter of 0, 1, 2 or 3 specifying the address as set by the jumpers SK5 and SK6 on the board. If the board is found and communications are possible then the method will return "0"
- 2) If the control is to signal board connection or disconnection events to the container program, set the property **bMonitorPNP** to TRUE. If, in addition, it is to show message boxes in such cases, set the property **bShowConnectionDialogs** to TRUE as well
- 3) Call the required methods to set and read the analog and digital inputs, or to reset the counters.
- 4) At the end of the program, call **CloseBoard** to close communications

If two or more boards are connected, set each of them to a unique address. Operation is then exactly as for a single board, except that to change which board is being addressed, simply call the **OpenBoard** method again with the address of the new board. This will also close the previously-opened board.

Example

The following sequence of calls will open communications with a board set to address 0, set the DAC1 voltage to about 2.5V, set the D8 digital output to 1, with all other outputs 0, and read the ADC1 value into a variable named vADC1.

```
OpenBoard (1)
SetDAC1 (127)
SetDigitalOutputs (128)
vADC1 = ReadADC1 ()
CloseBoard ()
```

3.7 Property Page

The control incorporates a property page that can be displayed when in the design mode of the containing application. For example, in Excel, selecting the control while in design mode, and right-clicking displays a pop-up menu, shown in figure 3-5.

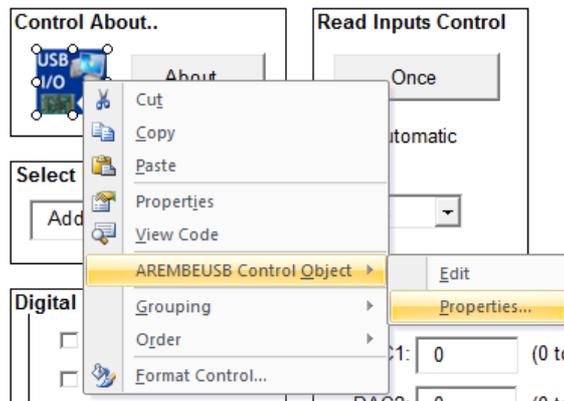


Figure 3-5, Accessing Control Property Page in Excel Design Mode

Click the AREMBEUSB Control object - Properties item to display the property page, shown in figure 3-6.

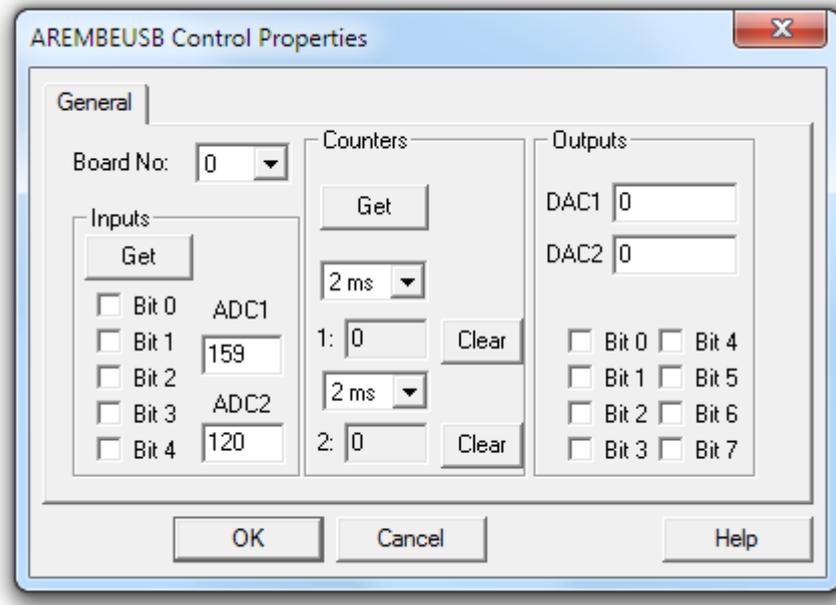


Figure 3-6, AREMBEUSB Control Property Page

The property page allows the connected board to be fully controlled and its outputs read and displayed, without needing to write any code.

Clicking the **Help** button opens the help system and displays context-sensitive help.

3.8 Help System

On screen help is available for the control. It can be accessed via the **Help** button on the property page, or in some development environments via direct links. For example, in LabVIEW if help is required on the OpenBoard method then clicking on the relevant item in the right click menu (figure 3-7) will display the help on that item (figure 3-8)

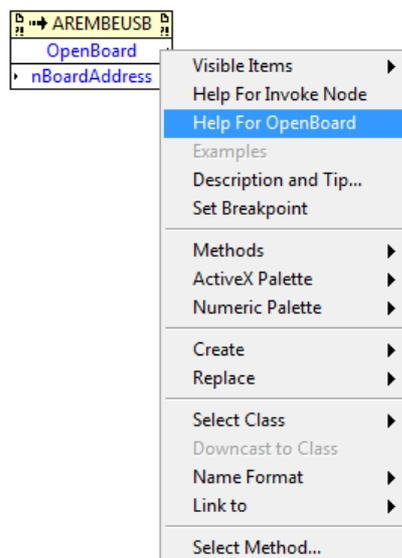


Figure 3-7, Accessing Context Sensitive Help in LabVIEW

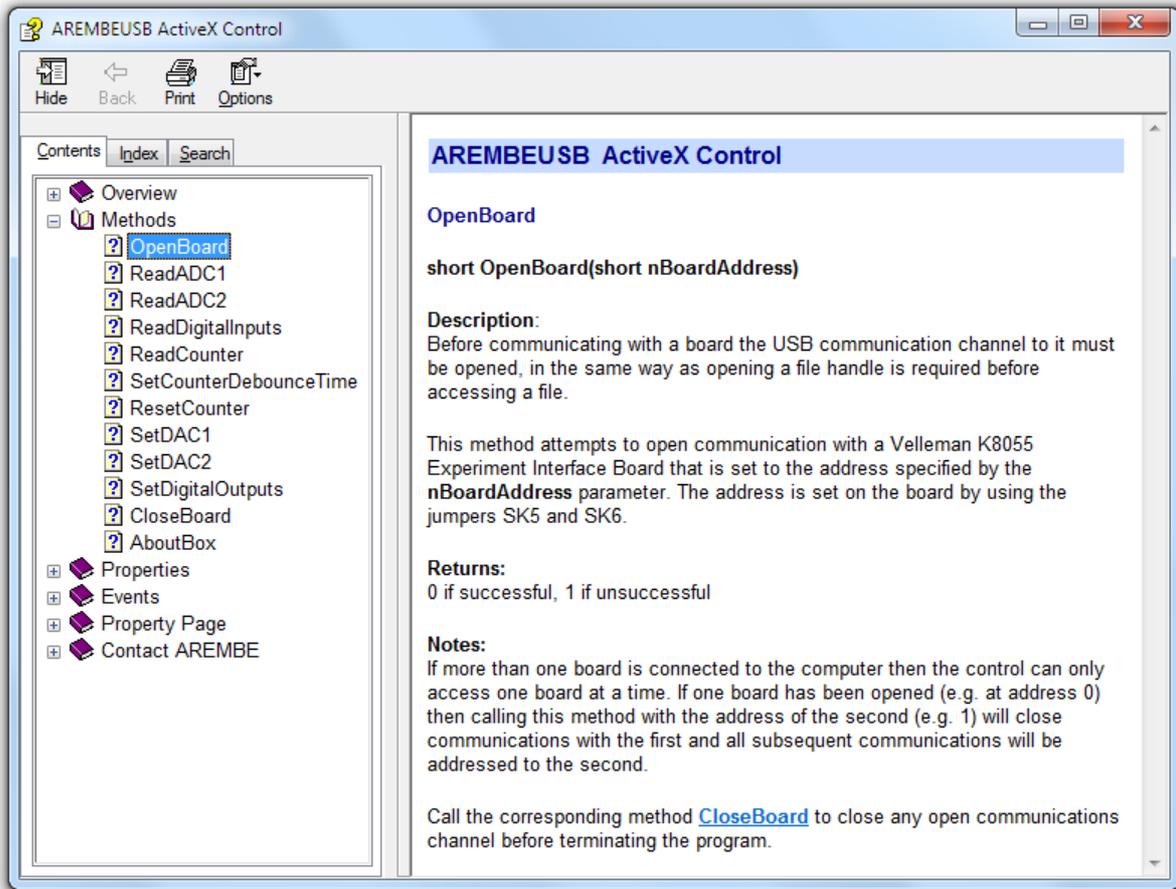


Figure 3-8, AREMBEUSB Control On-Screen Help

4.1 Introduction

The control is supplied with several different examples showing how to use it in C# and Visual Basic for Visual Studio 2010, C++ for Visual Studio 6.0, HTML with JScript, Excel using VBA, and LabVIEW, any of which may be used as the basis for further development. These files are installed by default in subfolders of the `c:\Program Files\AREMBE\AREMBEUSB` folder.

Note that when User Account Control is active it will not normally be possible to save files to this location. Hence if the files are to be used as the basis for further development they should be copied to the user's Documents folder or other location within the user's account.

4.2 Demonstration Files

4.2.01 C# and Visual Basic for Visual Studio 2010

The files supplied form Visual Studio 2010 solutions. When compiled, the result is a simple dialog box application that allows the inputs and outputs on the board to be set and read. Figure 4-1 shows the dialog for the C# solution; that for the Visual Basic version is virtually identical.

If multiple boards are connected a combo box control allows selection of which board will be controlled by the dialog.

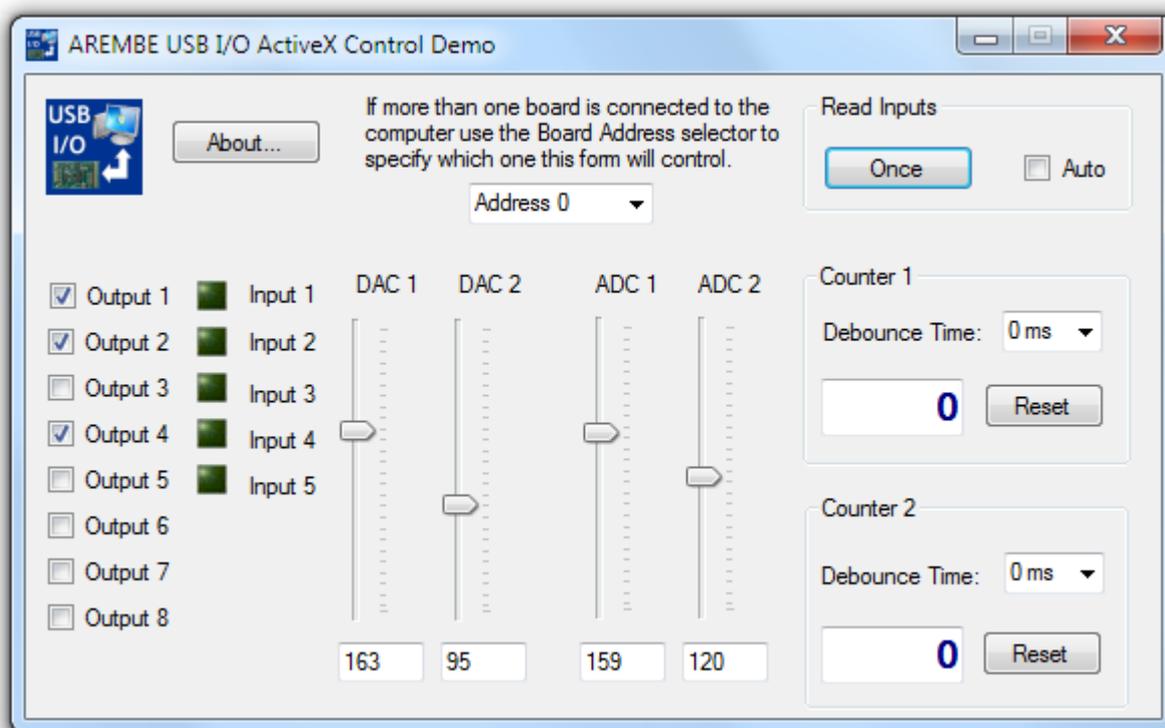


Figure 4-1 AREMBEUSBI-ODemo.exe C# Demo Dialog

If an output control (all eight digital outputs and the two DAC's) is changed then the board is immediately updated. To read one of the inputs (i.e. the five digital signals, two ADC's and the counter) click the **Once** button. If the **Auto** check box is checked, read operations are performed automatically every 200 ms

Note that in order to run these demo applications on a computer that does not have the Visual Studio 2010 IDE installed, the Microsoft .Net framework version 4.0 must be installed. If this is not present it can be downloaded free of charge from the Microsoft website.

4.2.02 C++ for Visual Studio 6.0

The files supplied form a project which may be opened in Visual Studio 6.0 When compiled, the result is a simple dialog box application that allows the inputs and outputs on the board to be set and read. Figure 4-2 shows the main dialog box for this application.

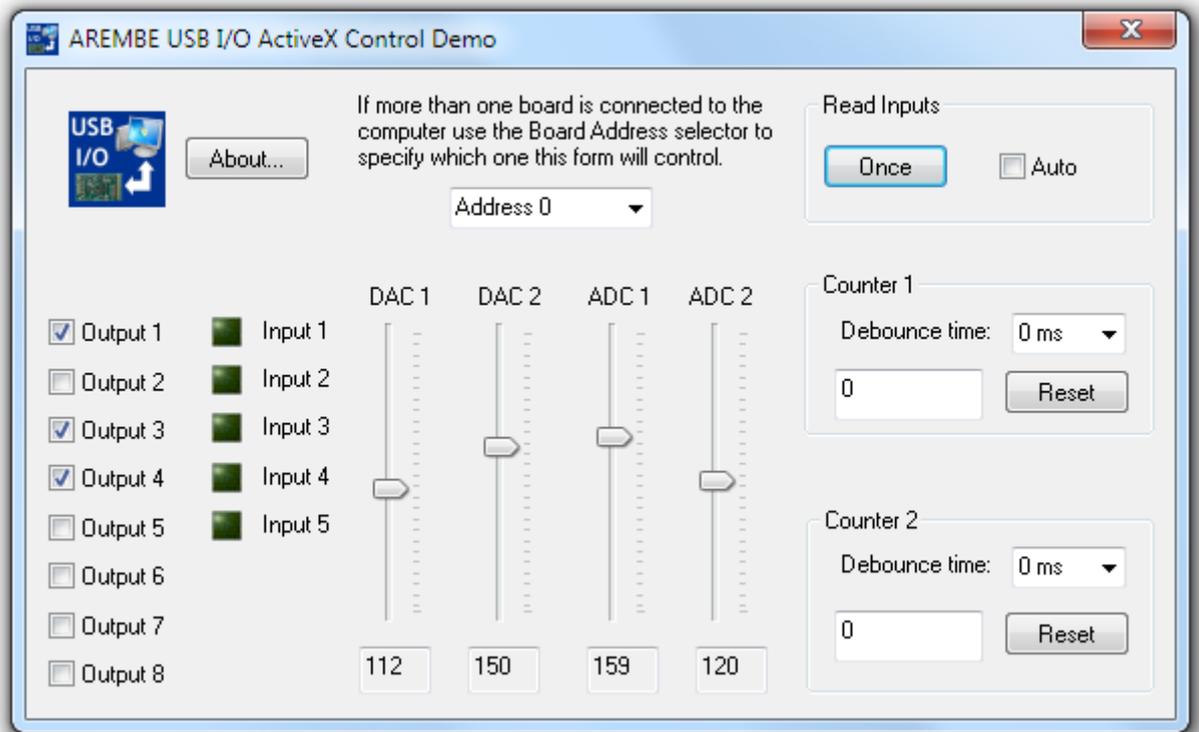


Figure 4-2 AREMBEUSBI-ODemo.exe C++ Main Dialog Box

Apart from size of the counter displays the dialog is essentially the same as that generated by the VS2010 solutions.

4.2.03 HTML with JScript

The AREMBEUSB I-O Web Page .htm file can be run under Internet Explorer and provides a simple interface routine to communicate with the instrument. It uses JScript to process button clicks and communicate with the control. The image files OnLED .jpg and OffLED .jpg should be stored in the same folder as the HTML file in order for the input indicators to display correctly.

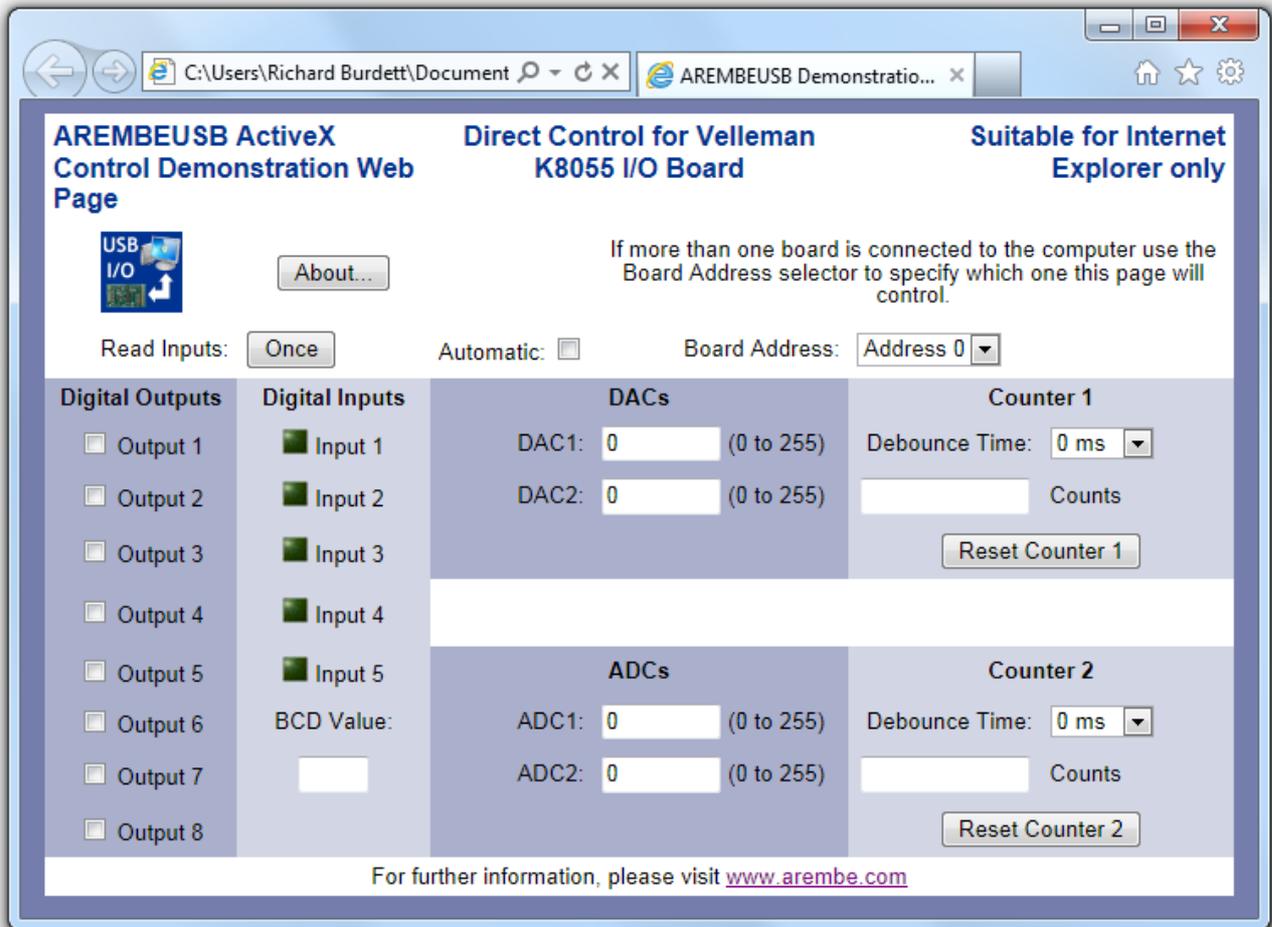


Figure 4-3 AREMBEUSB I-O Web Page.htm Demonstration File

Security Considerations

Because the page uses an ActiveX control and scripting, Internet Explorer when set to its default settings prevents the page from opening and displays the following warning dialog, shown in figure 4-4.



Figure 4-4, Internet Explorer Active Content Warning Message

To prevent this happening, use Internet Explorer's **Internet Options** settings **Advanced** tab and check the option under Security marked **Allow active content to run from files on My Computer**, as shown in figure 4-4.

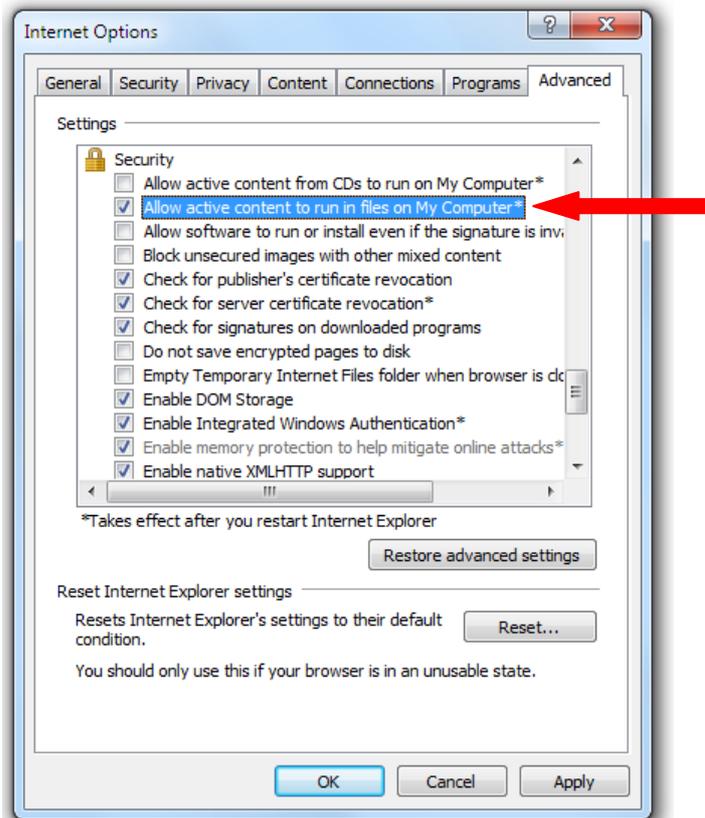


Figure 4-5, Internet Explorer Advanced Settings Dialog

Close Internet Explorer after setting this option; the next time it starts the option will be effective.

4.2.04 Excel 2003 - 2010 with VBA

The demonstration workbook contains one worksheet. The sheet offers similar capabilities as the other demonstration programs, using Visual Basic for Applications to implement the functionality.

As with the HTML sample file and Internet Explorer, the Excel security settings on the computer need to be set to allow execution of macros after prompting. In Excel 2003 this corresponds to the "Medium" security setting; in Excel 2007 and 2010 it is equivalent to the "Disable all macros with notification" setting.

When these settings are active and the AREMBEUSB Demo Spreadsheet.xls is opened, a warning message will be displayed

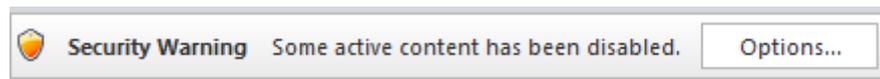


Figure 4-6, Excel Active Content Warning Message.

Click the Options button to display the security dialog, figure 4-7.



Figure 4-7, Excel Security Options Dialog.

Chose the **Enable this content option** and click **OK**. The demo worksheet will be displayed, figure 4-8

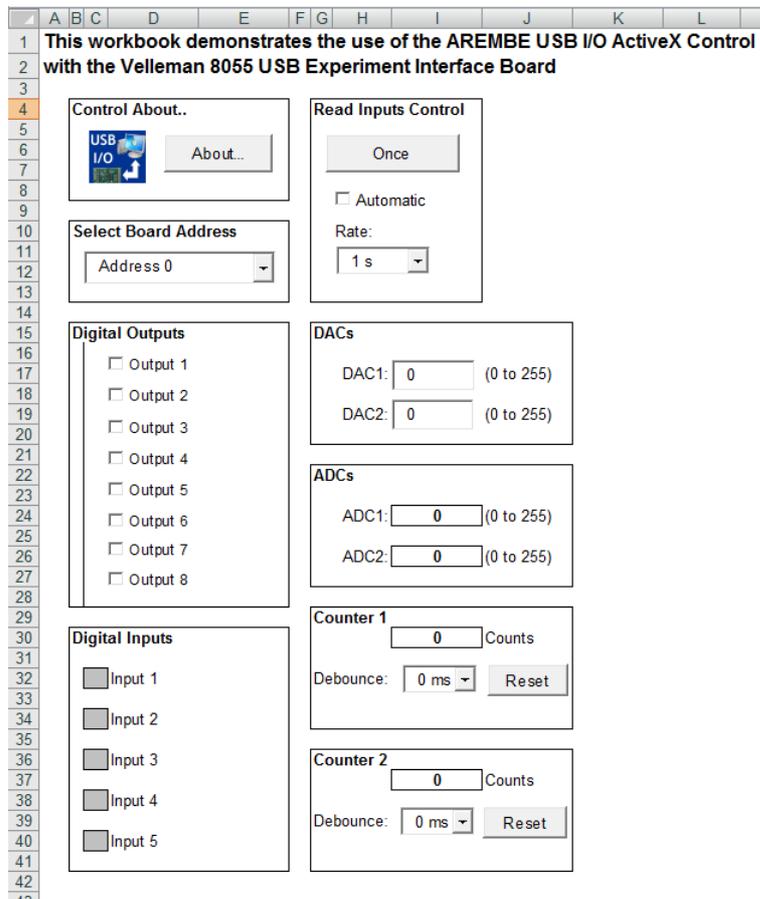


Figure 4-8, AREMBEUSB Demo Spreadsheet.xls

The workbook is an ideal starting point for building workbooks that can collect data as a function of time or other events, with the status of the digital inputs and the analog voltages at ADC1 and ADC2 being recorded directly into a worksheet. Excel's powerful graphing and data analysis functions can then be used to display or manipulate the data.

4.2.05 LabVIEW

The demonstration VI, figures 4-9 and 4-10, offers similar functionality to the other demonstration programs

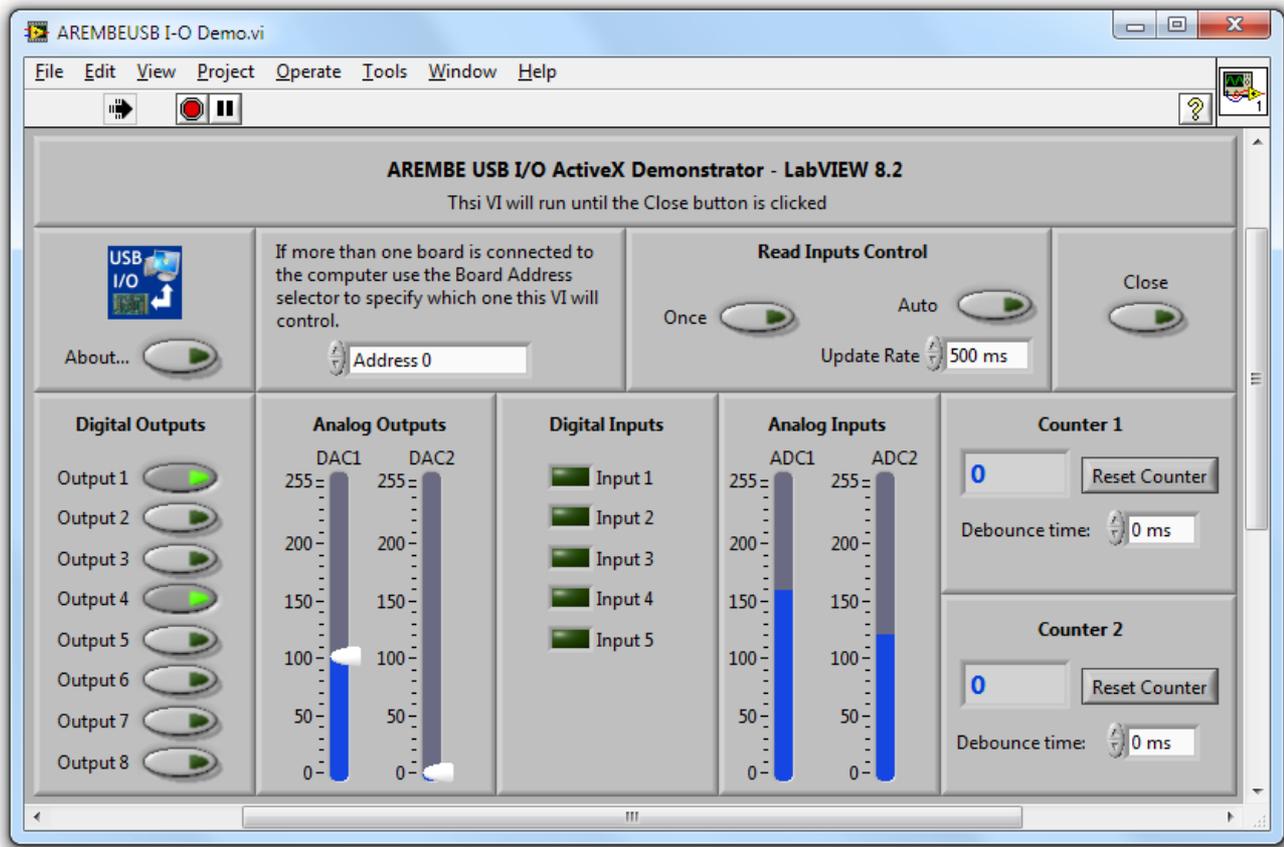


Figure 4-9 AREMBEUSB I-O Demo.vi - Front Panel

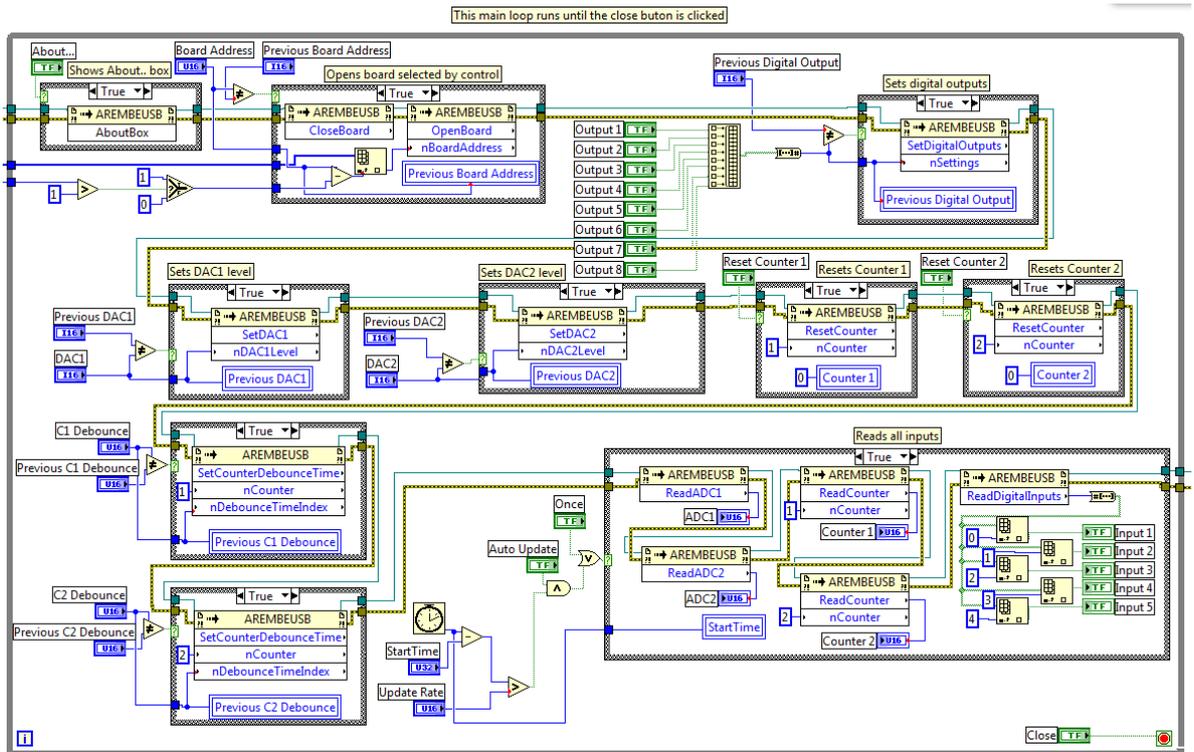


Figure 4-10 AREMBEUSB I-O Demo.vi - Diagram, Main Loop

A.1 Introduction

This appendix provides details of the software license and support policy which applies to the AREMBEUSB Active X control. AREMBE is granting you a non-exclusive license to use the software program and associated documentation (collectively, the "Software") for your internal use in accordance with the following terms:

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This Agreement will be governed by English law.

A.3 Software Registration

AREMBE will provide technical support in the use of the AREMBEUSB ActiveX control to one registered, named, user for each activation code that is purchased. In order to allow this to operate you must therefore complete the product registration form located on our website at **www.arembe.com**

Once registered, you may then e-mail any queries to AREMBE. You must give the product version, together with the registered user's name, on each occasion you contact us, or support will be denied.

Registered users of the software will also be informed of future product upgrades and enhancements.

A.4 Software Errors

The AREMBEUSB Active X control has been extensively tested prior to release, but it is possible that some errors remain which were not revealed by the testing process. We would very much appreciate receiving, by e-mail to **info@arembe.com**, notification of any problems you discover.

When reporting problems, please try to be as specific as possible. Include details of the type of board used, the revision level of the control and the type of operating system being used.

If you feel there is a specific feature which would add to the software's functionality then please let us know. Naturally we cannot commit ourselves to adding any given new feature, but even so such suggestions are useful in identifying those areas in which the product may be improved.

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