Getting Started with the LabVIEW™ PDA Module

Version 8.0

The LabVIEW PDA Module extends the LabVIEW graphical development environment to PDA devices so you can create PDA applications that run on Palm OS and Pocket PC devices, emulators, and simulators. Use the PDA Module to build applications that run in the smaller memory space common to PDA devices. You can create portable solutions for a wide spectrum of applications, such as field test systems, remote control and monitoring systems, and portable data acquisition systems.

This manual contains system requirements; installation instructions; new features for 8.0; and a tutorial that guides you through creating a LabVIEW project, adding a target and a PDA VI to the project, building, downloading, running, and debugging a PDA application.

Contents

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System Requirements

The PDA Module has the following requirements:

- A desktop computer with Windows 2000 with Service Pack 4 or later or Windows XP.

- LabVIEW 8.0 Full or Professional Edition.

- 2.5 GB available disk space.

- One of the following PDA devices:

  - A Palm OS device with Palm OS 4.0 or later.

  - A Pocket PC 2003 device. The PDA Module does not support Pocket PC 2002 devices.

- PDA synchronization software. For Palm OS devices, the PDA software is Palm Desktop and HotSync. For Pocket PC devices, the PDA software is ActiveSync.

- **(Pocket PC)** Microsoft eMbedded Visual Tools—Refer to the National Instruments KnowledgeBase at `ni.com/info` and enter the info code `pdaevc` for the most recent information about downloading and installing the Microsoft eMbedded Visual Tools.

- To debug a PDA application on a Palm OS device, you must have a serial cable or serial cradle. To debug a PDA application on a Pocket PC 2003 device, the device must be connected to ActiveSync on the host computer.

Refer to the *LabVIEW Release Notes*, available by selecting **Start»All Programs»National Instruments»LabVIEW 8.0»LabVIEW Manuals** and opening `LV_Release_Notes.pdf` for standard LabVIEW development system requirements.

Installing the PDA Module

Complete the following steps to install the PDA Module.

1. On Windows 2000/XP, log in as an administrator or as a user with administrator privileges.

2. Install the PDA software provided with the PDA device, if it is not already installed, on the host computer. For Palm OS devices, the PDA software is Palm Desktop and HotSync, which is in a single installer. For Pocket PC 2003 devices, the PDA software is ActiveSync.

3. Install LabVIEW 8.0. Refer to the *LabVIEW Release Notes*, available by selecting **Start»All Programs»National Instruments» LabVIEW 8.0»LabVIEW Manuals** and opening `LV_Release_Notes.pdf` for standard LabVIEW installation instructions.

4. **(Pocket PC 2003)** Download and install the Microsoft eMbedded Visual Tools. Refer to the National Instruments KnowledgeBase at `ni.com/info` and enter the info code `pdaevc` for the most recent information about downloading and installing the Microsoft eMbedded Visual Tools.

5. Install the PDA Module software.

    You must activate the PDA Module before you can build PDA VIs into PDA applications. The PDA Module runs in evaluation mode if you do not activate it, which means you can create PDA VIs, but you cannot build the PDA VIs into PDA applications. Use the NI License Manager, available by selecting **Start»All Programs»National Instruments»NI License Manager**, to activate National Instruments products. Refer to the *National Instruments License Manager* help, available by selecting **Help»Contents** in the NI License Manager, for more information about activating National Instruments products.

6. Restart the computer when the installer completes.

7. Install the additional tools you need, which depend on the platform you are using and the functionality you need. Refer to the *Installing the Additional Tools* section for more information about the additional tools.

Installing the Additional Tools

You must install additional tools depending on which platform you are using and the functionality you need.

Pocket PC

WIDCOMM Bluetooth DLLs

You must install the WIDCOMM Bluetooth DLLs on the Pocket PC 2003 device to build and run PDA applications that use Bluetooth communication.

📝 **Note** The PDA Module supports the WIDCOMM BTW-CE 1.4 or later driver.

Complete the following steps to install the WIDCOMM Bluetooth DLLs.

1. Place the Pocket PC 2003 device in the cradle.

2. On the host computer, run `LabVIEW 8.0\PDA\Utilities\ Bluetooth\setup.exe` to install the DLLs on the Pocket PC 2003 device.

You also can manually install the WIDCOMM Bluetooth DLLs by copying the following DLLs to the `\Windows` directory on the Pocket PC device:

*   `BtCoreIf.dll`
*   `BtSdkCE30.dll`
*   `LVBtw.dll`

LabVIEW SMS Client

You must install and run the LabVIEW SMS Client, which is located in `Labview 8.0\PDA\Utilities\SMS\Pocket PC\Setup.exe`, on the host computer to receive Short Message Service (SMS) messages or to use the Request Make Call VI. The LabVIEW SMS Client notifies the PDA application if there is an incoming SMS message and stores the incoming message in `LVSMSClient.dat`, which is located in the `\Program Files\National Instruments\labview\SMS` directory on the Pocket PC target.

Complete the following steps to install or uninstall the LabVIEW SMS Client on a Pocket PC target.

1. Perform a soft reset on the Pocket PC device. Refer to your Pocket PC device documentation for information about performing soft resets.

2. Connect the Pocket PC device to ActiveSync on the host computer.

3. Run `Setup.exe` on the host computer to install or uninstall the required DLLs.

Pocket PC Emulators

Emulators are useful tools you can use during development to quickly run and test PDA VIs without having to download the PDA application to the PDA device.

The Microsoft eMbedded Visual Tools you install in step 4 in the *Installing the PDA Module* section installs the Pocket PC 2003 emulator. The Pocket PC 2003 emulator launches automatically when you download a PDA application to the Pocket PC 2003 emulator from LabVIEW.

Select **Start»All Programs»Microsoft Pocket PC 2003 SDK» Pocket PC 2003 Emulator** to launch the Pocket PC 2003 emulator when LabVIEW is not running.

Palm OS

DatalogMgr.prc and Mathlib.prc

You must install `DatalogMgr.prc` and `Mathlib.prc`, located in the `LabVIEW 8.0\PDA\Utilities` directory, on the PDA device. `DatalogMgr.prc` is required to sync files between the host PC and the Palm OS target. `Mathlib.prc` is required to run PDA applications on a Palm OS target. Use the Palm Desktop and HotSync software to install these applications.

LabVIEW SMS Client

You must install and run the LabVIEW SMS Client, which is located in `Labview 8.0\PDA\Utilities\SMS\Treo 600\LV SMS Client.prc`, on the Palm OS target to receive Short Message Service (SMS) messages. The LabVIEW SMS Client notifies the PDA application if there is an incoming SMS message and stores the incoming message in the LVSMSClientDAT database.

Use HotSync to install `LV SMS Client.prc` on the PDA target. After you install the application, run `LV SMS Client.prc` on the PDA target to enable SMS support. If the Palm OS target does not support SMS, you receive an error. The **LabVIEW SMS Client On/Off** LED control in the PDA application is lit if the Palm OS target supports SMS.

Palm OS Emulators and Simulators

Emulators and simulators are useful tools you can use during development to quickly run and test PDA VIs without having to download the PDA application to the PDA device. Refer to the PalmSource Web site at `www.palmsource.com` for information about the differences between the Palm OS emulator and Palm OS simulator.

Palm OS Emulator and ROM Image

(Palm OS 4.*x*) Palm OS emulators use ROM images to enable the emulator to behave like a specific Palm OS device. You must have a ROM image to run the Palm OS emulator. You can transfer the ROM image from a Palm OS device or download ROM images from the PalmSource Web site at `www.palmsource.com`.

![note icon] **Note** You must register with PalmSource to download Palm OS emulators and ROM images.

Refer to the documentation on the PalmSource Web site for information about installing Palm OS emulators and ROM images.

Palm OS Simulator

(Palm OS 5.0 and later) If you are using a Palm OS simulator, you must configure the simulator to communicate over a serial port if you want to use LabVIEW to deploy PDA applications to a Palm OS simulator. Refer to the *Using a Palm OS Simulator with LabVIEW* topic in the *LabVIEW Help*, available by selecting **Help»Search the LabVIEW Help**.

PDA Module for Pocket PC Tutorial

Use this tutorial to learn how to create a LabVIEW project and build, run, and debug a Pocket PC application.

💡 **Tip** You also can use the PDA Project Wizard to create the project, the Pocket PC target, and the Pocket PC build specification. Refer to the *Creating a Project Using the PDA Project Wizard* topic in the *LabVIEW Help*, available by selecting **Help»Search the LabVIEW Help**, for information about the PDA Project Wizard.

Creating the LabVIEW Project

Use LabVIEW projects to group together LabVIEW files and non-LabVIEW files, create build specifications for building a Pocket PC VI into a Pocket PC application, and deploy the Pocket PC application to a Pocket PC device or emulator. You must use a project to build a Pocket PC VI into a Pocket PC application.

Complete the following steps to create a LabVIEW project, add a Pocket PC target, and add a Pocket PC VI to the project.

1. Launch LabVIEW. In the **Getting Started** window, select **Empty Project** to open an empty LabVIEW project in the **Project Explorer** window as shown in Figure 1. LabVIEW creates an empty project with a Windows target, shown in Figure 1 as **My Computer**.
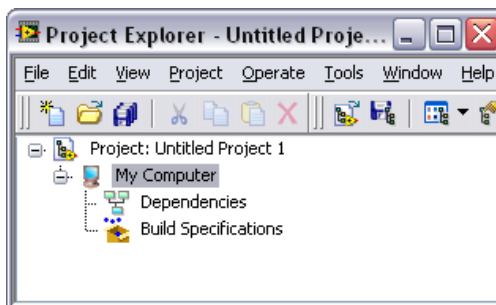

Figure 1. Project Explorer Window

2. Right-click the project, which is **Project:Untitled Project 1** in Figure 1, in the **Project Explorer** window and select **New»Targets and Devices** from the shortcut menu to open the **Add Targets and Devices** dialog box as shown in Figure 2.
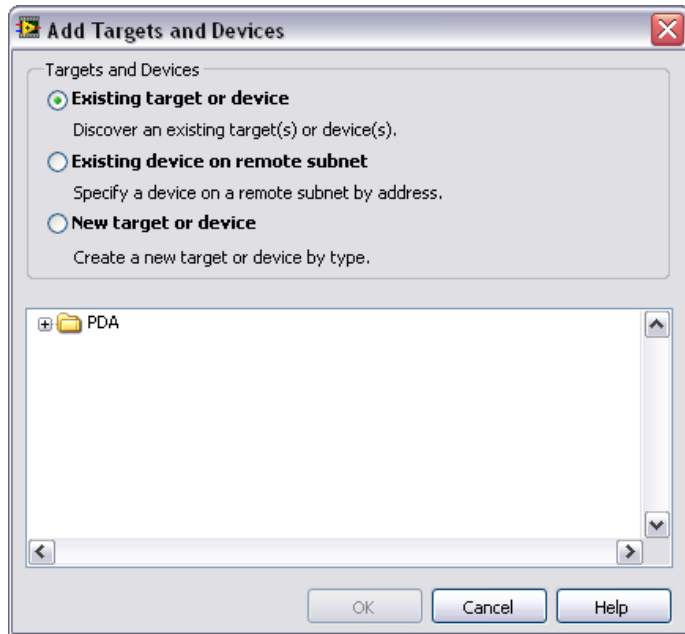

Figure 2. Add Targets and Devices Dialog Box

3. Expand the **PDA** folder and select either **Pocket PC 2003 Device** or **Pocket PC 2003 Emulator** as shown in Figure 3.

Note You might see additional Pocket PC targets if you configure additional devices through the Microsoft Windows CE Platform Manager.
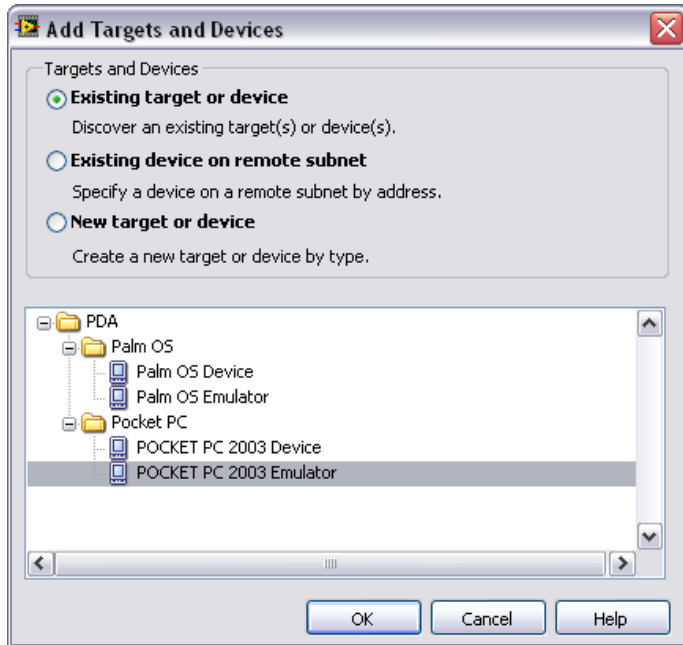
Figure 3. Adding a New Device

4. Click the **OK** button to add the target to the project. The target appears in the **Project Explorer** window as shown in Figure 4.
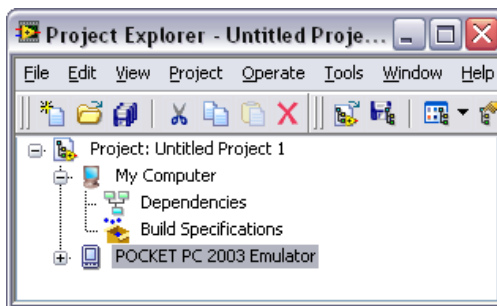

Figure 4. Adding the Pocket PC 2003 Emulator to the Project Explorer Window

5. Expand the Pocket PC target. In Figure 5, the Pocket PC target is **Pocket PC 2003 Emulator**. LabVIEW automatically adds **Dependencies** and **Build Specifications** under the target. SubVIs appear under **Dependencies** when you add a VI that contains subVIs to a project. Build specifications you create for a target in a project appear under **Build Specifications** in the **Project Explorer** window. Refer to the *Creating the Pocket PC Build Specification* section for more information about how to create a build specification.
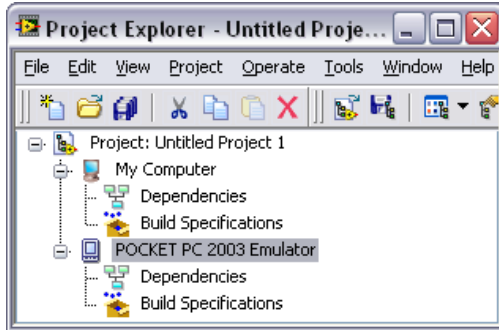

Figure 5. Expanding the Pocket PC Target in the Project Explorer Window

6. Right-click the Pocket PC target and select **Add File** from the shortcut menu to open a file dialog box.

7. Add the PDA Tutorial - Pocket PC VI to the project by navigating to `LabVIEW 8.0\examples\PDA\PocketPC\tutorial` and selecting `PDA Tutorial - Pocket PC.vi`. Click the **Add File** button to add the VI to the project. The VI appears in the **Project Explorer** window under the Pocket PC target as shown in Figure 6.
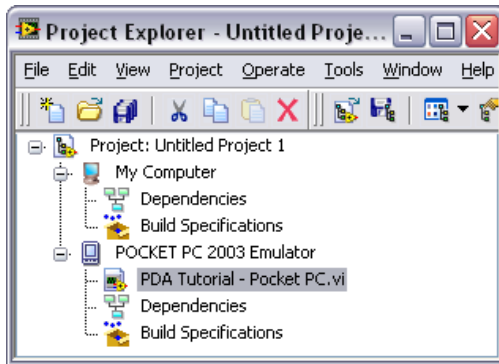

Figure 6. Adding a VI to the Project

8. Double-click the VI in the **Project Explorer** window to open the VI.

Creating the Pocket PC Build Specification

Build specifications contain the build settings and code generation options to use when you build a Pocket PC VI into a Pocket PC application. You can create the build specification when you create a project or wait until you are ready to build the Pocket PC VI into a Pocket PC application.

You can have multiple build specifications for the same target. For example, you might want one build specification that generates debugging information and another build specification that does not generate this extra information.

Complete the following steps to create a build specification.

1. Right-click **Build Specifications** under the Pocket PC target and select **New»Pocket PC Application** from the shortcut menu.

2. LabVIEW prompts you to save the project. Click the **Save** button when prompted and save the project as `PDA Tutorial - Pocket PC`.

3. Click the **Help** button to open the *LabVIEW Help* and read a description of each build setting.

4. Enter `PDA Tutorial - Pocket PC` in the **Build specification name** text box as shown in Figure 7.
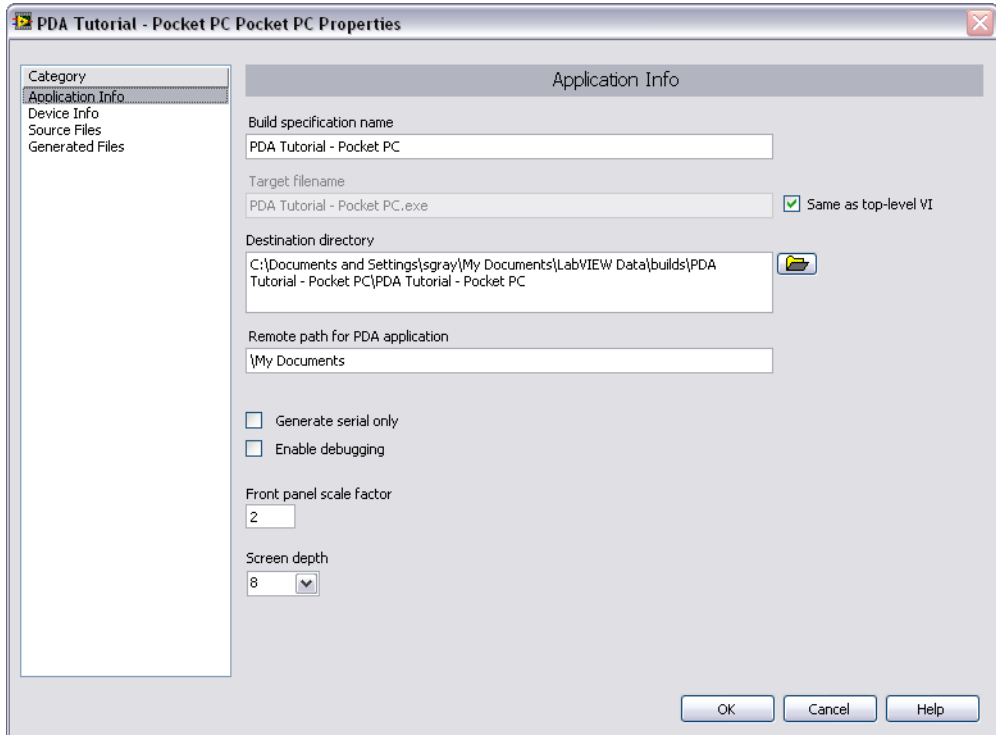

Figure 7. Creating the Build Specification

5. Select **Source Files** from the **Category** list and select **PDA Tutorial - Pocket PC.vi** in the source files list. Click the blue right arrow button, shown at left, to move the VI from the source files list to the **Top-level VI** text box as shown in Figure 8.
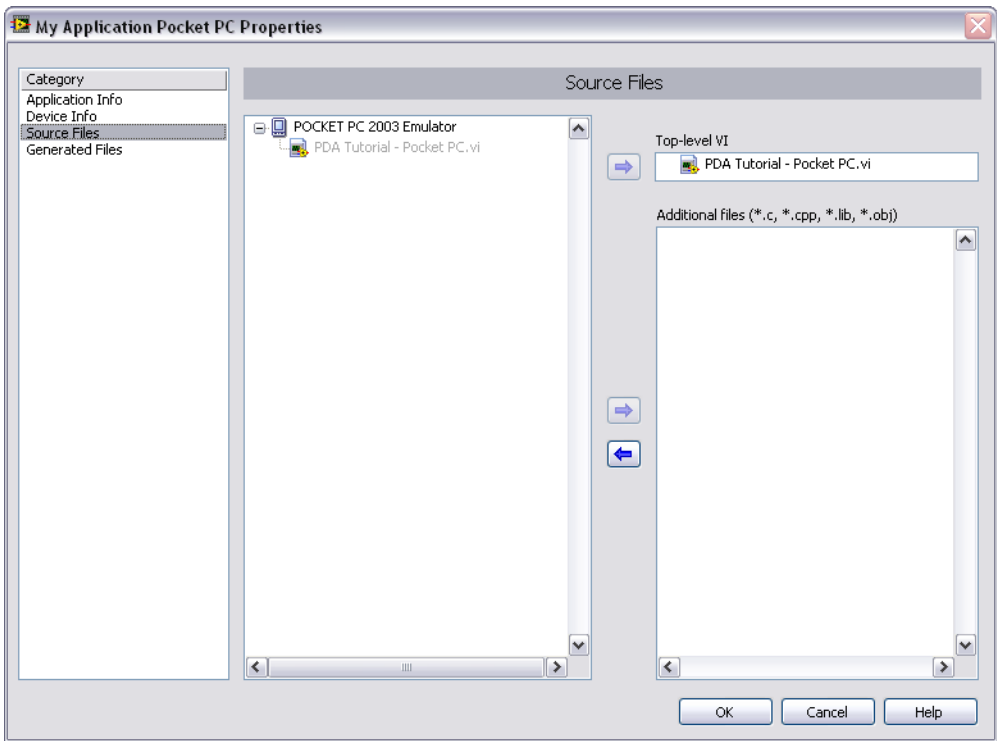
Figure 8. Selecting the Top-Level VI for the Build Specification

6. Click the **OK** button. The build specification you just created appears in the **Project Explorer** window under the Pocket PC target as shown in Figure 9.
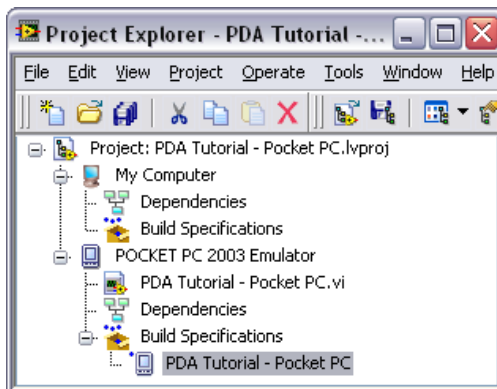

Figure 9. PDA Build Specification in the Project Explorer Window

7. Select **Save»Save Project** in the **Project Explorer** window to save the project. Build specifications are saved with the project.

Building the Pocket PC VI into a Pocket PC Application and Deploying

After you develop the VI on the host computer, you build the Pocket PC VI into an executable Pocket PC application that you can run on a Pocket PC target. Pick one of the options in the *Using the Shortcut Menu* section or the *Using the Run Button* section to build, run, and deploy a Pocket PC application.

Using the Shortcut Menu

Right-click the build specification and select one of the following from the shortcut menu:

- **Deploy**—Builds the Pocket PC VI into a Pocket PC application, if necessary, and deploys the application to the Pocket PC target. This option does not automatically run the Pocket PC application.

- **Run**—Builds the Pocket PC VI into a Pocket PC application, if necessary; deploys the application to the Pocket PC target, if necessary; and automatically runs the Pocket PC application.

- **Build**—Builds the Pocket PC VI into a Pocket PC application. This option does not deploy or automatically run the Pocket PC application.

Using the Run Button

The behavior of the **Run** button differs from LabVIEW for Windows:

- **If you want to build, run, and deploy**—Click the **Run** button in a Pocket PC VI to build the Pocket PC VI into a Pocket PC application, deploy the Pocket PC application to the Pocket PC target, and run the Pocket PC application on the Pocket PC target. LabVIEW prompts you to create a build specification if you do not have an existing build specification for the Pocket PC VI. If you have multiple build specifications, the PDA Module uses the default build specification, which the PDA Module indicates with a green square around the PDA build specification glyph in the **Project Explorer** window.

- **If you want to build without deploying or running**—Press the <Ctrl> key while you click the **Run** button in a Pocket PC VI to build the Pocket PC VI into a Pocket PC application without deploying or running the Pocket PC application. LabVIEW prompts you to create a build specification if you do not have an existing build specification for the Pocket PC VI. If you have multiple build specifications, the PDA Module uses the default build specification, which the PDA Module indicates with a green square around the PDA build specification glyph in the **Project Explorer** window.

Closing the Pocket PC Application

Tap the **Exit** button in the Pocket PC application on the Pocket PC target to close the Pocket PC application.

Debugging a Pocket PC Application

You must create a build specification that enables debugging before you can debug a Pocket PC application. Enabling debugging generates extra debugging information and can significantly increase the size of the Pocket PC application.

Creating a Debug Build Specification

Complete the following steps to create a debug build specification.

1. Right-click **Build Specifications** under the Pocket PC target and select **New»Pocket PC Application** from the shortcut menu.

2. Enter `(Debug) PDA Tutorial - Pocket PC` in the **Build specification name** text box.

3. Remove the checkmark from the **Same as top-level VI** checkbox so you can change the Pocket PC application name.

4. Enter `(Debug) PDA Tutorial - Pocket PC.exe` in the **Target filename** text box.

5. Place a checkmark in the **Enable debugging** checkbox to generate debugging information when you build the Pocket PC VI into a Pocket PC application as shown in Figure 10.
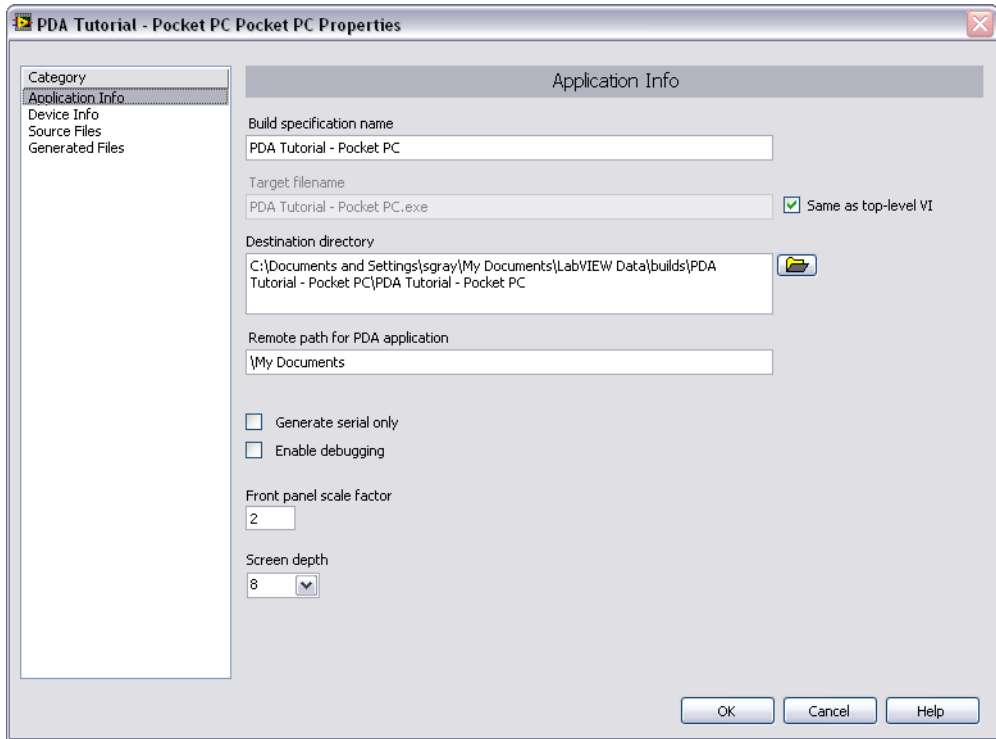

Figure 10. Creating the Debug Build Specification

6. Select **Source Files** from the **Category** list and select **PDA Tutorial - Pocket PC.vi** in the source files list. Click the blue right arrow button, shown at left, to move the VI from the source files list to the **Top-level VI** text box.

7. Click the **OK** button. The build specification you just created appears in the **Project Explorer** window as shown in Figure 11.
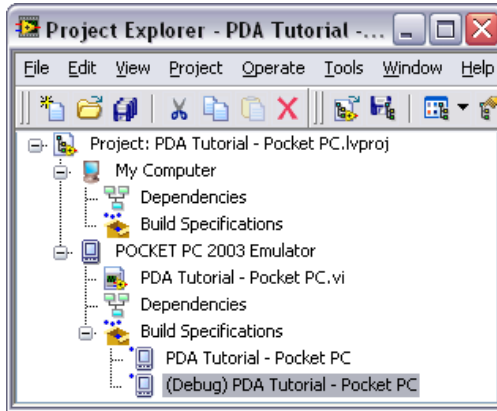

Figure 11. Two Pocket PC Build Specifications in the Project Explorer Window

Adding a Probe to the Pocket PC VI

Probes display information about the data that passes through a wire. As you interact with the Pocket PC application on the Pocket PC device, you can see the data passing through the wire in the Pocket PC VI on the host computer.

Complete the following steps to add a probe to the Pocket PC VI.

1. Select **Window»Show Block Diagram** in the VI to open the block diagram if it is not visible.

   The block diagram acts as a conduit between the Pocket PC application running on the Pocket PC target and the Pocket PC VI running on the host computer.

2. Change the event case in the Event structure to **"Frequency": Value Change**.

3. Right-click the wire flowing into the **frequency** input of the Sine Waveform VI and select **Probe** from the shortcut menu.

A floating **Probe** window appears after you create a probe. LabVIEW numbers the **Probe** windows automatically and displays the same number in a glyph on the wire you probe as shown in Figure 12.
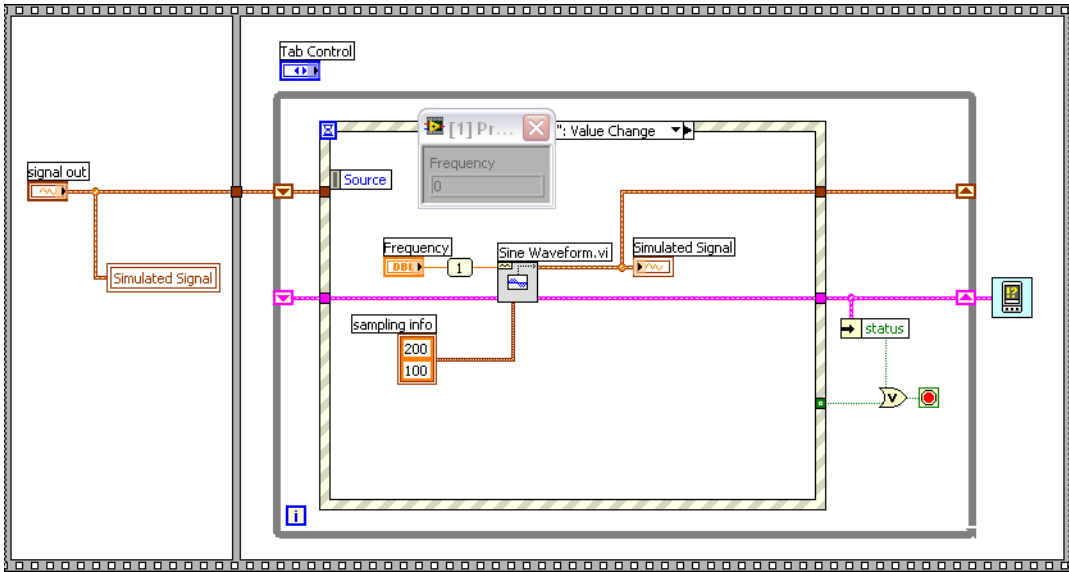

Figure 12. Adding a Probe to the Block Diagram

Deploying and Debugging the Pocket PC Application

You must deploy the Pocket PC VI, which contains debugging information, to the Pocket PC device before the probe in the Pocket PC VI on the host computer can update the values passing through the wire.

Complete the following steps to deploy and debug the Pocket PC application.

1. Right-click the build specification for the Pocket PC VI you want to build and deploy, which is **(Debug) PDA Tutorial - Pocket PC** in Figure 11, and select **Debug** from the shortcut menu. Save any VIs if prompted.

The PDA Module builds the Pocket PC VI into a Pocket PC application, deploys the Pocket PC application to the Pocket PC target, and runs the Pocket PC application on the Pocket PC target as shown in Figure 13.

Tip　You also can start a debugging session by clicking the **Step Over** or **Step Into** buttons or by clicking the **Pause** button and then clicking the **Run** button on the block diagram toolbar.

Figure 13. Running the Pocket PC Application on the Pocket PC Emulator

2. Move the **Frequency** slider in the Pocket PC application running on the Pocket PC target. The value in the **Probe** window on the block diagram updates as you move the slider in the Pocket PC application.

Note Any changes you make on the front panel of the Pocket PC VI have no effect on the Pocket PC application running on the Pocket PC target.

3. Tap the **Exit** button in the Pocket PC application on the Pocket PC target to stop the Pocket PC application and end the debugging session.

PDA Module for Palm OS Tutorial

Use this tutorial to learn how to create a LabVIEW project and build, run, and debug a Palm OS application.

💡 **Tip** You also can use the PDA Project Wizard to create the project, the Palm OS target, and the Palm OS build specification. Refer to *Creating a Project Using the PDA Project Wizard* topic in the *LabVIEW Help*, available by selecting **Help»Search the LabVIEW Help**, for information about the PDA Project Wizard.

Creating the LabVIEW Project

Use LabVIEW projects to group together LabVIEW files and non-LabVIEW files, create build specifications for building a Palm OS VI into a Palm OS application, and deploy the Palm OS application to a Palm OS device or emulator. You must use a project to build a Palm OS VI into a Palm OS application.

Complete the following steps to create a LabVIEW project, add a Palm OS target, and add a Palm OS VI to the project.

1. Launch LabVIEW. In the **Getting Started** window, select **Empty Project** to open an empty LabVIEW project in the **Project Explorer** window as shown in Figure 14. LabVIEW creates an empty project with a Windows target, shown in Figure 14 as **My Computer**.
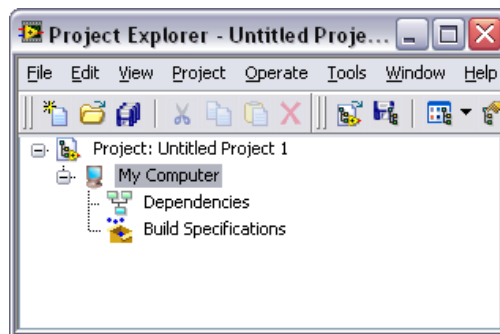

Figure 14. Project Explorer Window

2. Right-click the project, which is **Project: Untitled Project 1** in Figure 14, in the **Project Explorer** window and select **New»Targets and Devices** from the shortcut menu to open the **Add Targets and Devices** dialog box as shown in Figure 15.
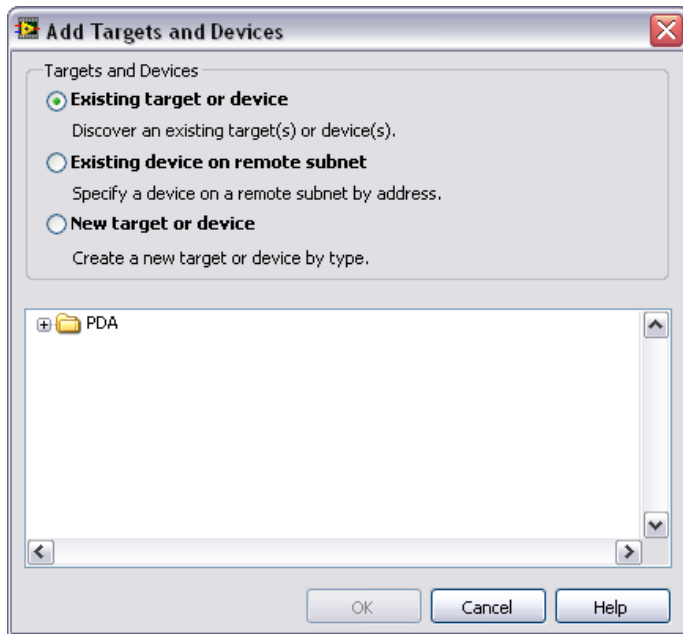

Figure 15. Add Targets and Devices Dialog Box

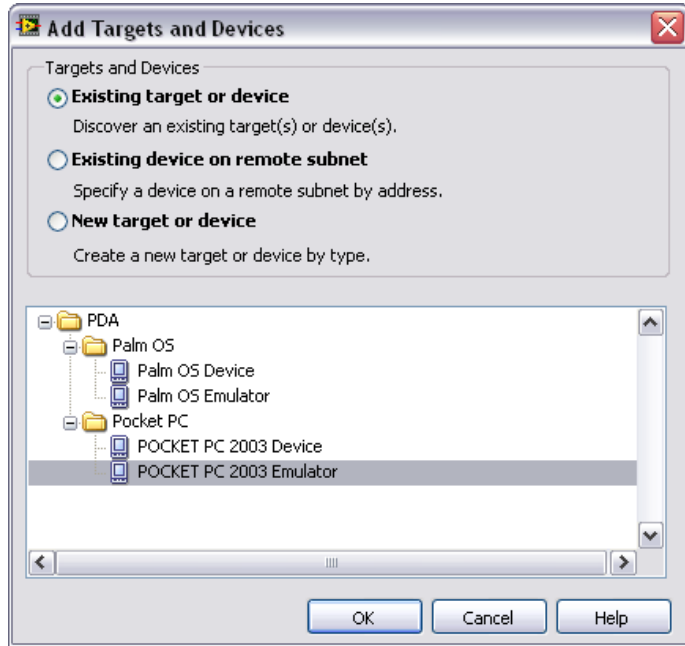3. Expand the **PDA** folder and select either **Palm OS Device** or **Palm OS Emulator** as shown in Figure 16.

Figure 16. Adding a New Device

4. Click the **OK** button to add the target to the project. The target appears in the **Project Explorer** window as shown in Figure 17.
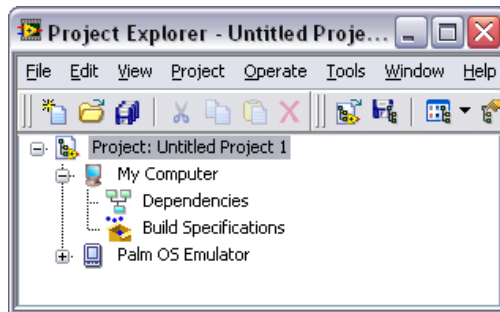

Figure 17. Adding the Palm OS Emulator to the Project Explorer Window

5. Expand the Palm OS target. In Figure 18, the Palm OS target is **Palm OS Emulator**. LabVIEW automatically adds **Dependencies** and **Build Specifications** under the target. SubVIs appear under **Dependencies** when you add a VI that contains subVIs to a project. Build specifications you create for a target in a project appear under

Build Specifications in the **Project Explorer** window. Refer to *Creating the Palm OS Build Specification* section for more information about how to create a build specification.
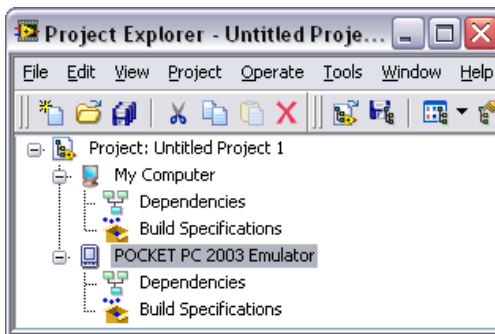

Figure 18. Expanding the Palm OS Target in the Project Explorer Window

6. Right-click the Palm OS target and select **Add File** from the shortcut menu to open a file dialog box.

7. Add the PDA Tutorial - Palm OS VI to the project by navigating to LabVIEW 8.0\examples\PDA\PalmOS\tutorial and selecting PDA Tutorial - Palm OS.vi. Click the **Add File** button to add the VI to the project. The VI appears in the **Project Explorer** window under the Palm OS target as shown in Figure 19.
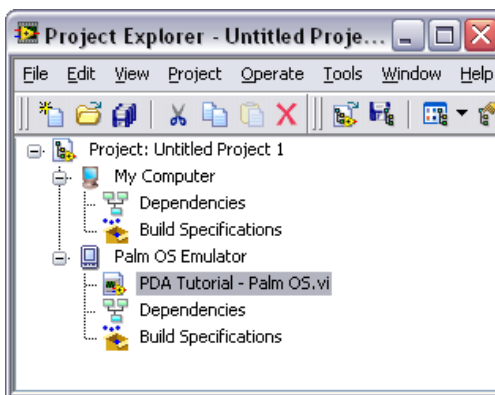

Figure 19. Adding a VI to the Project

8. Double-click the VI in the **Project Explorer** window to open the VI.

Creating the Palm OS Build Specification

Build specifications contain the build settings and code generation options to use when you build a Palm OS VI into a Palm OS application. You can create the build specification when you create a project or wait until you are ready to build the Palm OS VI into a Palm OS application.

You can have multiple build specifications for the same target. For example, you might want one build specification that generates debugging information and another build specification that does not generate this extra information.

Complete the following steps to create a build specification.

1. Right-click **Build Specifications** under the Palm OS target and select **New»Palm OS Application** from the shortcut menu.

2. LabVIEW prompts you to save the project. Click the **Save** button when prompted and save the project as PDA Tutorial - Palm OS.

3. Click the **Help** button to open the *LabVIEW Help* and read a description of each build setting.

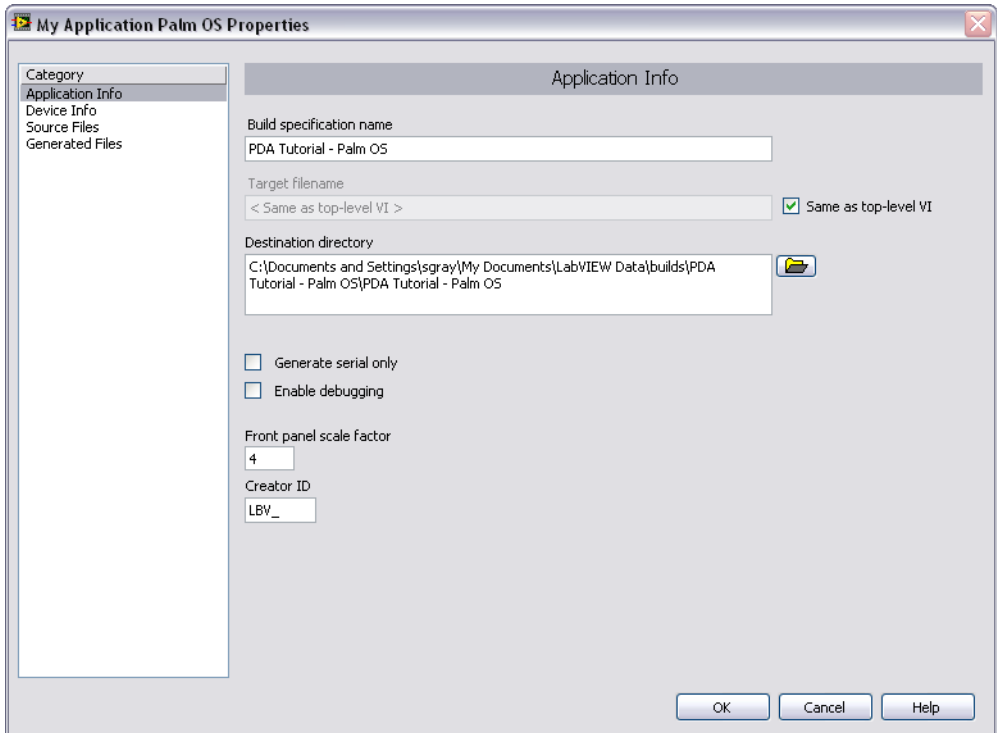4. Enter PDA Tutorial - Palm OS in the **Build specification name** text box as shown in Figure 20.

Figure 20. Creating the Build Specification

5. Select **Source Files** from the **Category** list and select
    PDA Tutorial - Palm OS.vi in the source files list. Click the blue
    right arrow button, shown at left, to move the VI from the source files
    list to the **Top-level VI** text box as shown in Figure 21.
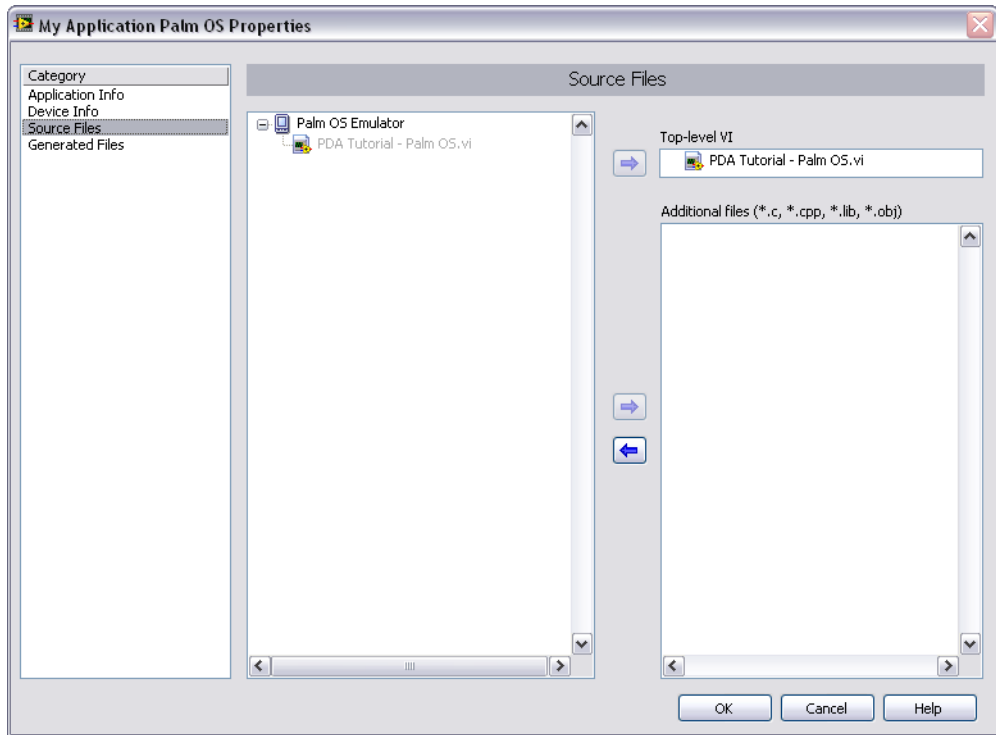

Figure 21. Selecting the Top-Level VI for the Build Specification

6. Click the **OK** button. The build specification you just created appears
    in the **Project Explorer** window under the Palm OS target as shown
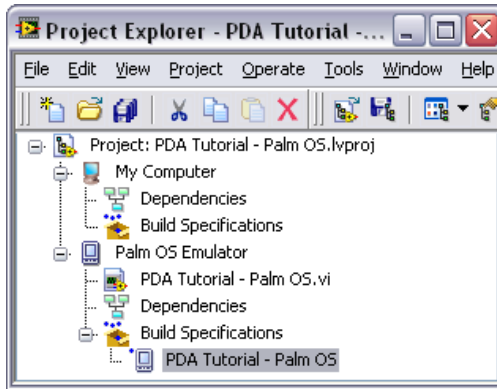   in Figure 22.

Figure 22. Palm OS Build Specification in the Project Explorer Window

7. Select **Save»Save Project** in the **Project Explorer** window to save the project. Build specifications are saved with the project.

Starting the Palm OS Emulator

The Palm OS emulator must be running before you can build and deploy a Palm OS application to a Palm OS target.

Complete the following steps to start the Palm OS emulator.

1. Right-click the Palm OS target, which is **Palm OS Emulator** in Figure 23, and select **Properties** from the shortcut menu.
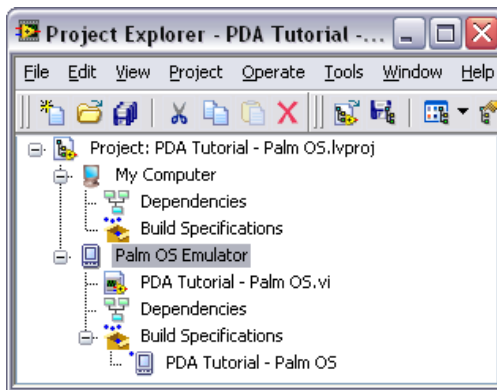

Figure 23. Selecting the Palm OS Target

2. Browse to or enter the path to the emulator in the **Emulator Path** path control.

3. Click the **Launch Emulator** button to start the Palm OS emulator as shown in Figure 24.
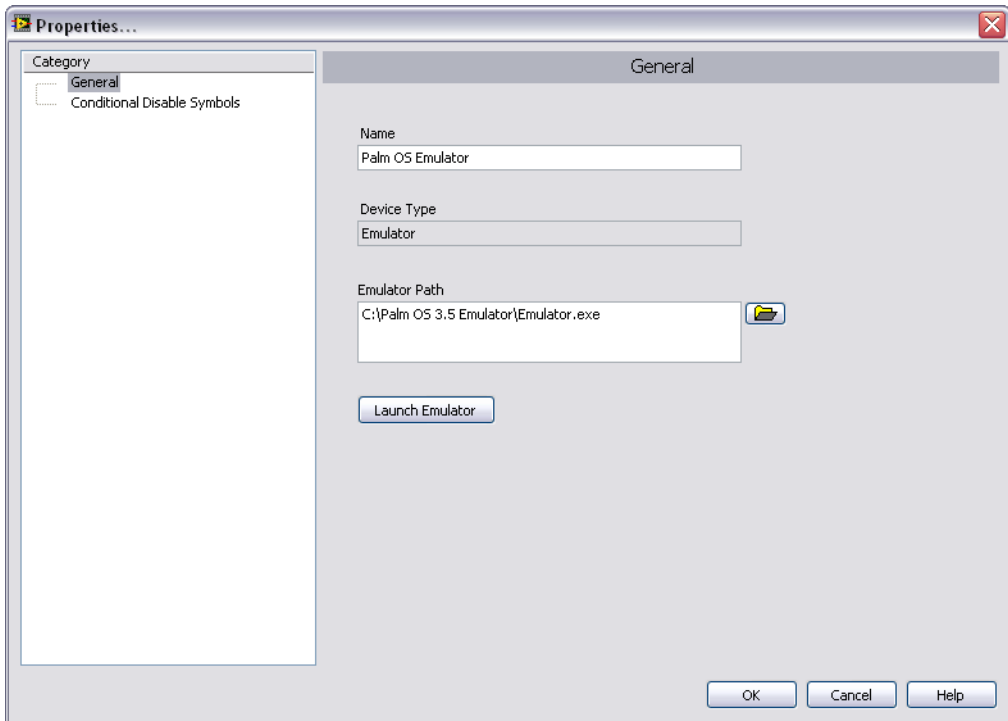

Figure 24. Starting the Palm OS Emulator

Building the Palm OS VI into a Palm OS Application and Deploying

After you develop the VI on the host computer, you build the Palm OS VI into an executable Palm OS application that you can run on a Palm OS target. Pick one of the options in the *Using the Shortcut Menu* section or the *Using the Run Button* section to build, run, and deploy a Pocket PC application.

Using the Shortcut Menu

Right-click the build specification and select one of the following from the shortcut menu:

• **Deploy**—Builds the Palm OS VI into a Palm OS application, if necessary, and deploys the application to the Palm OS target. This option does not automatically run the Palm OS application.

- **Run**—Builds the Palm OS VI into a Palm OS application, if necessary; deploys the application to the Palm OS target, if necessary; and automatically runs the Palm OS application.
- **Build**—Builds the Palm OS VI into a Palm OS application. This option does not deploy or automatically run the Palm OS application.

Using the Run Button

The behavior of the **Run** button differs from LabVIEW for Windows.

- **If you want to build, run, and deploy**—Click the **Run** button in a Palm OS VI to build the Palm OS VI into a Palm OS application, deploy the Palm OS application to the Palm OS target, and run the Palm OS application on the Palm OS target. LabVIEW prompts you to create a build specification if you do not have an existing build specification for the Palm OS VI. If you have multiple build specifications, the PDA Module uses the default build specification, which the PDA Module indicates with a green square around the PDA build specification glyph in the **Project Explorer** window.

- **If you want to build without deploying or running**—Press the <Ctrl> key while you click the **Run** button in a Palm OS VI to build the Palm OS VI into a Palm OS application without deploying or running the Palm OS application. LabVIEW prompts you to create a build specification if you do not have an existing build specification for the Palm OS VI. If you have multiple build specifications, the PDA Module uses the default build specification, which the PDA Module indicates with a green square around the PDA build specification glyph in the **Project Explorer** window.

Closing the Palm OS Application

Tap the **Exit** button in the Palm OS application on the Palm OS target to close the Palm OS application.

Debugging a Palm OS Application

You must create a build specification that enables debugging before you can debug a Palm OS application. Enabling debugging generates extra debugging information and can significantly increase the size of the Palm OS application.

Creating a Debug Build Specification

Complete the following steps to create a debug build specification.

1. Right-click **Build Specifications** under the Palm OS target and select **New»Palm OS Application** from the shortcut menu.

2. Enter `(Debug) PDA Tutorial - Palm OS` in the **Build specification name** text box.

3. Remove the checkmark from the **Same as top-level VI** checkbox so you can change the Palm OS application name.

4. Enter `(Debug) PDA Tutorial - Palm OS.prc` in the **Target filename** text box.

5. Place a checkmark in the **Enable debugging** checkbox to generate debugging information when you build the Palm OS VI into a Palm OS application as shown in Figure 25.
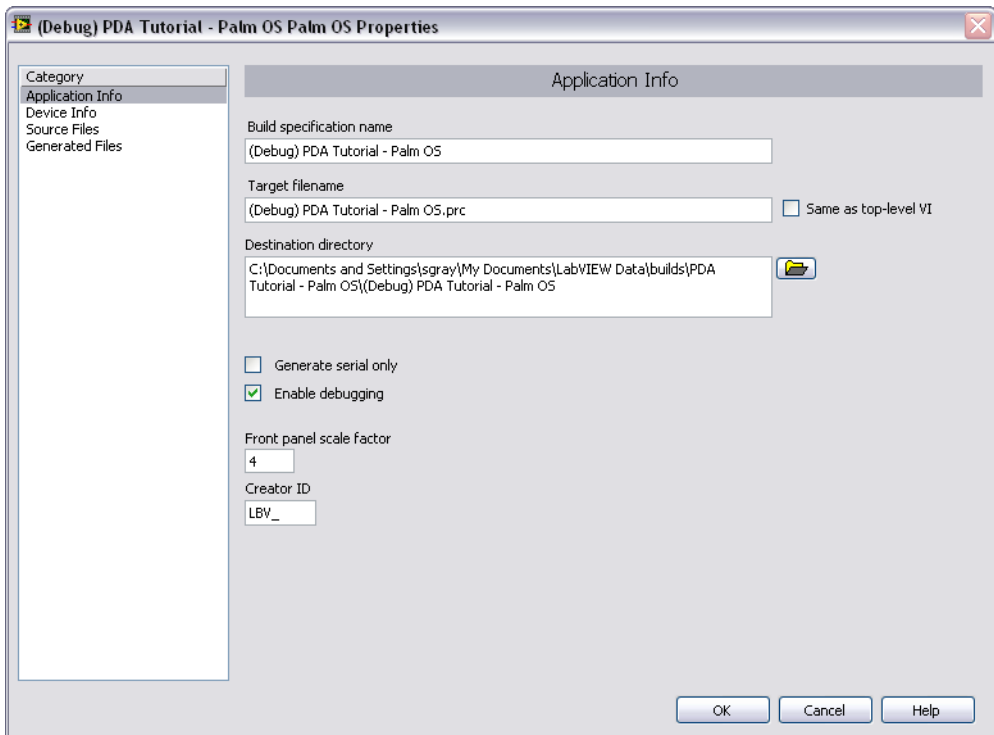

Figure 25. Creating the Debug Build Specification

6. Select **Source Files** from the **Category** list and select **PDA Tutorial - Palm OS.vi** in the source files list. Click the blue arrow button, shown at left, to move the VI from the source files list to the **Top-level VI** text box.

7. Click the **OK** button. The build specification you just created appears in the **Project Explorer** window as shown in Figure 26.
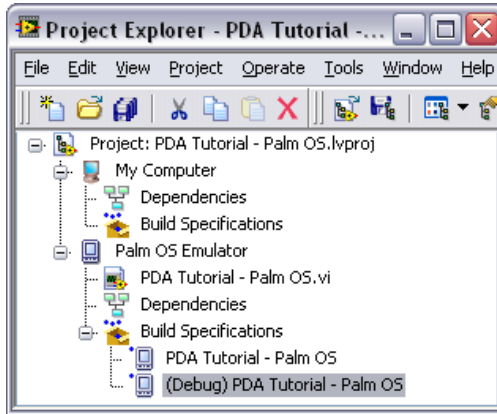

Figure 26. Two Palm OS Build Specifications in the Project Explorer Window

Adding a Probe to the PDA VI

Probes display information about the data that passes through a wire. As you interact with the Palm OS application on the Palm OS device, you can see the data passing through the wire in the Palm OS VI on the host computer.

Complete the following steps to add a probe to the Palm OS VI.

1. Select **Window»Show Block Diagram** in the VI to open the block diagram if it is not visible.

   The block diagram acts as a conduit between the PDA application running on the Palm OS target and the Palm OS VI running on the host computer.

2. Right-click the wire connecting the **number (0-1)** output of the Random Number (0-1) function to the **x** input of the Multiply function and select **Probe** from the shortcut menu.

A floating **Probe** window appears after you create a probe. LabVIEW numbers the **Probe** windows automatically and displays the same number in a glyph on the wire you probe as the portion of the block diagram in Figure 27 shows.
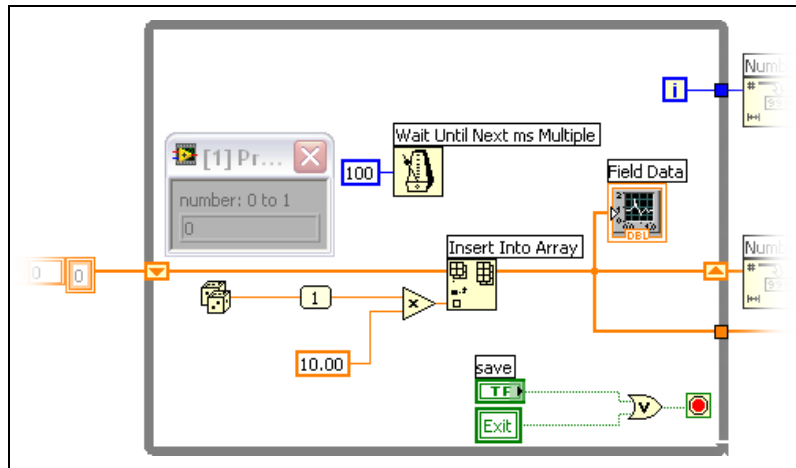

Figure 27. Adding a Probe to the Block Diagram

Deploying and Debugging the Palm OS Application

You must deploy the Palm OS VI, which contains debugging information, to the Palm OS device before the probe in the Palm OS VI on the host computer can update the values passing through the wire.

Complete the following steps to deploy and debug the Palm OS application.

1. Right-click the build specification for the Palm OS VI you want to build and deploy, which is **(Debug) PDA Tutorial - Palm OS** in Figure 26, and select **Debug** from the shortcut menu. Save any VIs if prompted.

    The PDA Module builds the Palm OS VI into a Palm OS application, deploys the Palm OS application to the Palm OS target, and runs the Palm OS application on the Palm OS target.

Tip You also can start a debugging session by clicking the **Step Over** or **Step Into** buttons or by clicking the **Pause** button and then clicking the **Run** button on the block diagram toolbar.

2. Tap the **Collect** button in the Palm OS application running on the Palm OS target. The Palm OS application begins updating the graph on the PDA target, shown in Figure 28, and the value in the **Probe** window on the block diagram updates.
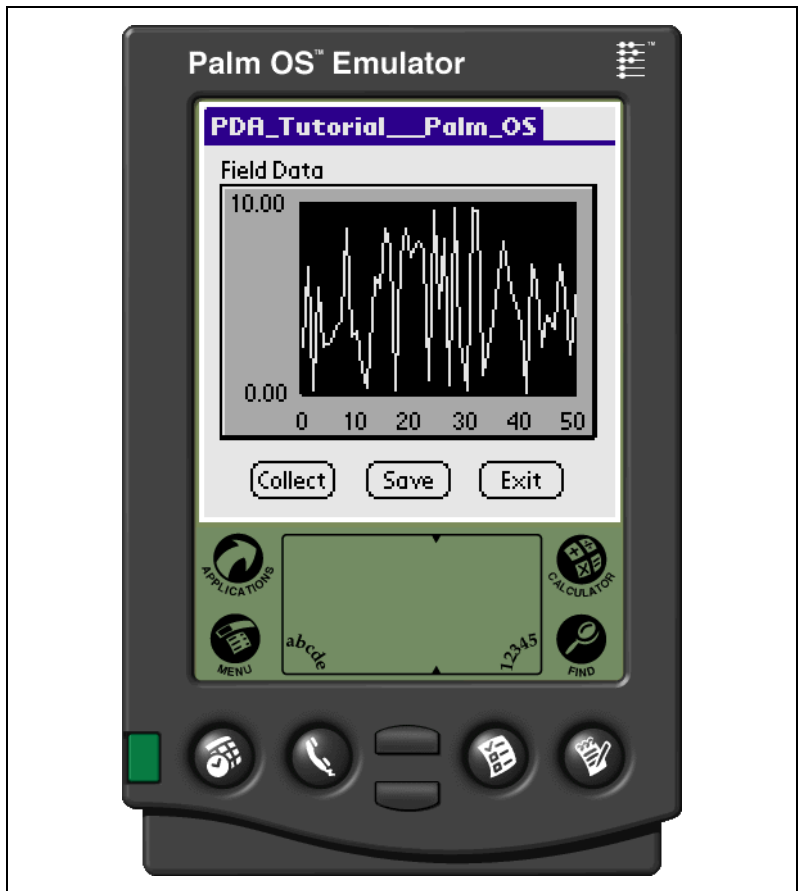
Figure 28. Running the Palm OS Application on the Palm OS Emulator

3. Tap the **Exit** button in the Palm OS application on the Palm OS target to stop the Palm OS application and end the debugging session.

What's New in LabVIEW 8.0 PDA Module

Refer to the **PDA Module** book on the **Contents** tab of the *LabVIEW Help*, available by selecting **Help»Search the LabVIEW Help** in LabVIEW, for more information specific to the PDA Module and PDA applications.

Front Panel Controls and Indicators

You now can use the following front panel controls and indicators functionality in PDA VIs:

• 3D front panel controls and indicators.

• Multiple needles on dials and meters.

- Visible front panel array controls and indicators and cluster controls and indicators.

- Time stamp controls and indicators.

- More numeric and Boolean controls.

- Multiple cursors on a graph.

Newly Supported Data Types

You now can use the following data types in PDA VIs:

- Dynamic

- Time Stamp

- Variant

- Waveform

New VIs

The PDA Module now includes the following new VIs:

- Phone VIs

- Short Message Service VIs

- **(Pocket PC)** PDA Pick Color

- **(Pocket PC)** PDA Read BMP File

- **(Pocket PC)** PDA Write BMP File

- **(Pocket PC)** Set Help File Path

- **(Pocket PC)** PDA Load Image File

Newly Supported VIs and Functions

You now can use the following LabVIEW VIs and functions in PDA VIs:

- Analog Waveform VIs and functions

- Digital Waveform VIs and functions

- Most Express VIs

- Property Node

- SMTP Email Send Message (Small)

- SMTP Email Send Multiple Attachments

- Variant functions

Newly Supported Events

You now can use the following VI events in PDA VIs:

- Key Down
- Key Up
- Menu Selection

Deprecated VIs

Because the PDA Module now supports the time stamp data type, the following VIs have been deprecated in version 8.0 of the PDA Module:

- **PDA Date Time To Seconds**—Use the Date/Time To Seconds function instead.
- **PDA Get Date Time In Seconds**—Use the Get Date/Time In Seconds function instead.

Note Deprecating these two VIs does not break existing PDA VIs that use them.

General Changes

- PDA VIs now support a select collection of properties in Property Nodes.
- The remote path for a Pocket PC application has changed from `\Windows\Start Menu\Programs` to `\My Documents`.
- The PDA Module now includes a Pocket PC Landscape Screen template.
- The **Palm OS Build Specification Properties** dialog box and the **Pocket PC Build Specification Properties** dialog box replace the **PDA Build Settings** dialog box.
- PDA VIs now support 16-bit and **(Pocket PC)** 24-bit bitmaps.
- Palette items are now organized according to categories. Custom palette views are no longer supported.
- The PDA Module now supports the LabVIEW Internet Toolkit.
- Graphs and charts in PDA VIs now support time stamps on the x-scale.
- The PDA Module no longer supports Sony Clié devices.
- **(Pocket PC)** The PDA Module now supports the ability to include an HTML file as help for a Pocket PC PDA application. Use the Set Help File Path VI to set the path to the HTML file you create.

Related Documentation

LabVIEW includes extensive online and print documentation for new and experienced LabVIEW users. The following documents contain information that you might find helpful:

- *LabVIEW Help*—Refer to the *LabVIEW Help*, available by selecting **Help»Search the LabVIEW Help** in LabVIEW, for information about LabVIEW programming concepts, step-by-step instructions for using LabVIEW, and reference information about LabVIEW VIs, functions, palettes, menus, and tools. Refer to the **PDA Module** book on the **Contents** tab of the *LabVIEW Help*, for information specific to the PDA Module and PDA applications.

- PDA Module Readme—Refer to the PDA Readme file, available by selecting **Start»All Programs»National Instruments» LabVIEW 8.0»Readme**.

- LabVIEW PDFs—In addition to this document, the *Getting Started with LabVIEW* manual, *LabVIEW Quick Reference Card*, *LabVIEW Fundamentals* manual, *LabVIEW Release Notes*, and *LabVIEW Upgrade Notes* are available as PDFs by selecting **Start»All Programs»National Instruments»LabVIEW 8.0»LabVIEW Manuals**.

✎ **Note** You must have Adobe Reader with Search and Accessibility 5.0.5 or later installed to view the PDFs. You must have Adobe Reader with Search and Accessibility 6.*x* or later installed to search PDF versions of these manuals. Refer to the Adobe Systems Incorporated Web site at www.adobe.com to download Adobe Reader. Refer to the National Instruments Product Manuals Library at ni.com/manuals for updated documentation resources.

- Documentation for the PDA target you use.

Where to Go for Support

The National Instruments Web site is your complete resource for technical support. At ni.com/support you have access to everything from troubleshooting and application development self-help resources to email and phone assistance from NI Application Engineers.

National Instruments corporate headquarters is located at 11500 North Mopac Expressway, Austin, Texas, 78759-3504. National Instruments also has offices located around the world to help address your support needs. For telephone support in the United States, create your service request at ni.com/support and follow the calling

instructions or dial 512 795 8248. For telephone support outside the United States, contact your local branch office:

Australia 1800 300 800, Austria 43 0 662 45 79 90 0,
Belgium 32 0 2 757 00 20, Brazil 55 11 3262 3599,
Canada 800 433 3488, China 86 21 6555 7838,
Czech Republic 420 224 235 774, Denmark 45 45 76 26 00,
Finland 385 0 9 725 725 11, France 33 0 1 48 14 24 24,
Germany 49 0 89 741 31 30, India 91 80 51190000,
Israel 972 0 3 6393737, Italy 39 02 413091, Japan 81 3 5472 2970,
Korea 82 02 3451 3400, Lebanon 961 0 1 33 28 28,
Malaysia 1800 887710, Mexico 01 800 010 0793,
Netherlands 31 0 348 433 466, New Zealand 0800 553 322,
Norway 47 0 66 90 76 60, Poland 48 22 3390150,
Portugal 351 210 311 210, Russia 7 095 783 68 51,
Singapore 1800 226 5886, Slovenia 386 3 425 4200,
South Africa 27 0 11 805 8197, Spain 34 91 640 0085,
Sweden 46 0 8 587 895 00, Switzerland 41 56 200 51 51,
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