

# Getting Started with the LabVIEW™ Touch Panel Module for Windows CE

Version 8.5

The LabVIEW Touch Panel Module extends the LabVIEW graphical development environment to Touch Panel devices so you can create human-machine interface (HMI) applications for Touch Panel devices running Windows CE. You can create custom touch panel displays to communicate with National Instruments embedded real-time platforms, such as Compact FieldPoint, CompactRIO, and Compact Vision System.

This manual contains new features for version 8.5, system requirements, installation instructions, and a tutorial that shows you how to create a LabVIEW project and build, run, deploy, and debug a Touch Panel application.

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## What's New in the LabVIEW 8.5 Touch Panel Module

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The LabVIEW 8.5 Touch Panel Module features and changes include the NI TPC Service, support for front panel data binding, and expanded support for front panel controls and indicators.

Refer to the *LabVIEW Upgrade Notes*, available by selecting **Start» All Programs»National Instruments»LabVIEW 8.5»Manuals** and opening `LV_Upgrade_Notes.pdf` for more information about new features in LabVIEW 8.5.

Refer to the **Touch Panel 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 Touch Panel Module and Touch Panel applications.

Refer to the Touch Panel Module Readme file, available by selecting **Start» All Programs»National Instruments»LabVIEW 8.5»Readme** and opening `readme_TPC.html` for known issues with version 8.5 of the Touch Panel Module.

### General

The LabVIEW 8.5 Touch Panel Module includes the following enhancements and new features:

- **NI TPC Service**—The Touch Panel Module includes the NI TPC Service, which is an Ethernet-based service that you can use to deploy, run, and debug Touch Panel applications. Use the NI TPC Service

instead of ActiveSync if you are using Ethernet and need to deploy a Touch Panel application to multiple Touch Panel targets.

You must install the NI TPC Service on the Touch Panel target before you can use the NI TPC Service. Refer to the *NI TPC Service Support* section for more information about installing the NI TPC Service on Touch Panel targets. After you install the NI TPC Service on the Touch Panel target, use the NI TPC Service Manager to configure the service to run on the Touch Panel device. Select **Start»All Programs»National Instruments»NI TPC Service»NI TPC Service Manager 1.0** to launch the NI TPC Service Manager. The manager checks the status of the NI TPC Service and displays the status information. Tap the **Start** button to start the NI TPC Service. Tap the **Stop** button to stop the NI TPC Service.

To configure a Touch Panel application to use the NI TPC Service, right-click the Touch Panel target in the **Project Explorer** window and select **Properties** to display the **Touch Panel Target Properties** dialog box. On the **General** page, select **NI TPC Service (TCP/IP)** from the **Connection** pull-down menu. You must enter the IP address of the Touch Panel device in the **Touch Panel Device IP Address** text box. Click the **Test** button to confirm that the NI TPC Service is running on the remote device.

- **Reading and writing front panel data using data binding**—You can use data binding to read or write front panel data for network-published shared variables. You can use data binding with any front panel control or indicator that the Touch Panel Module supports.



**Note** When you use front panel data binding in a Touch Panel subVI, LabVIEW closes data binding connections when the subVI finishes execution.

For more information about data binding, refer to the *Reading and Writing Front Panel Data Using Data Binding* topic in the *LabVIEW Help*. Select **Help»Search the LabVIEW Help** in LabVIEW to display the *LabVIEW Help*. For more information about using shared variables in Touch Panel VIs, refer to the *Using Shared Variables in PDA and Touch Panel VIs* topic in the *LabVIEW Help*. Refer to the *Shared Variable Intro - Touch Panel.lvproj* in the `labview\examples\TouchPanel\shared variable` directory for an example of using front panel data binding.

- **LabVIEW Aliases File Editor**—In previous versions of the Touch Panel Module, you changed the IP address of the shared variable host in the aliases file and manually downloaded the aliases file to the same directory as the corresponding application on the Touch Panel target. You now can use the LabVIEW Aliases File Editor to edit the aliases file on the target.

Tap **LabVIEW Aliases File Editor.exe** in the `NI\Shared Variables Support 8.5` directory to launch the LabVIEW Aliases File Editor on the target. Tap the browse button to browse to and open an aliases file.

- **Large application optimizations**—For large applications with numerous front panel controls and indicators, the time it takes to build applications is significantly less than in previous versions. The Touch Panel Module also generates significantly less C code for large applications.
- **Call by Reference Node supports local references**—You now can use a local reference with the Call by Reference Node. Select the **Source Files** category of the **Touch Panel Build Specification Properties** dialog box to include any VIs that the Call by Reference Node calls locally in the project.
- **Expression folding**—Expression folding optimizes performance by collapsing groups of nodes into single expressions in the generated code that are easily recognized by C compilers. Place a checkmark in the **Expression folding** checkbox on the **Application Information** page of the **Touch Panel Build Specification Properties** dialog box to enable expression folding. You cannot debug a Touch Panel VI while using expression folding because expression folding eliminates some wires on the block diagram.
- **Expression Node supports clusters and arrays**—You now can use arrays or clusters as inputs to an Expression Node.
- **Inline C Node**—You can use the Inline C Node to add inline C code to the block diagram. The Inline C Node is similar to the Formula Node with additional support and functionality for low-level programming and header files without the overhead of a function call. Use the Inline C Node for short blocks of code that you cannot easily implement in VIs.
- **New VISA examples**—The Touch Panel Module includes new VISA examples, which are located in the `labview\examples\TouchPanel\comm\VISA` directory.

## Front Panel Controls and Indicators

- **Blinking Boolean controls and indicators**—The Touch Panel Module supports blinking for all Boolean controls and indicators except system controls. Use a Property Node with the Blinking property to enable blinking.
- **Boolean mechanical action**—The Touch Panel Module now supports the six types of mechanical action for Boolean controls, which include **Switch when pressed**, **Switch when released**, **Switch until released**,

### **Latch when pressed, Latch when released, and Latch until released.**

- **Control labels inside arrays**—Labels on front panel controls and indicators that you place inside arrays are now visible in Touch Panel applications. Right-click the control or indicator and select **Visible Items»Label** from the shortcut menu to display the label.
- **Resizing and changing the color of increment and decrement buttons**—You now can resize and change the color of the increment and decrement buttons for numeric controls, enumerated type controls, and time stamp controls.
- **Scroll bar control**—The Touch Panel Module supports scroll bar controls, which include vertical and horizontal scroll bars that you can add to any front panel control or indicator with scrollable data. Use a Property Node to associate a scroll bar control with a front panel control or indicator.
- **Text justification and underlining text for controls and indicators**—You now can set the justification of text and underline text for buttons; enumerated type controls; and string, time stamp, and numeric controls and indicators.

Select the **Limit to Single Line** option from the shortcut menu for the string control to disable justification.

- **Events and overlapping controls**—When controls overlap each other, the control with the higher tabbing order number no longer receives the event. The topmost control now receives the event.
- **Free labels and decorations inside cluster controls and indicators**—You now can use free labels and decorations inside cluster controls and indicators.
- **Decorations inside tab controls**—Decorations on one page of a tab control no longer appear on all the pages of the tab control.
- **Decimal values in ring controls**—You now can use decimal values for items in a ring control.

## **Newly Supported VIs and Functions**

- **Get Special Folder Path**—You can use the Get Special Folder Path VI to return the path to the application or directories that applications frequently use.
- **PDA Picture to Pixmap**—You can use the PDA Picture to Pixmap VI to convert a picture to a cluster of image data that you can use to perform certain tasks with the image, such as writing customized pictures to file.
- **Run Application**—You can use the Run Application VI to run a specified Touch Panel application.

- **Show Hide Input Panel**—You can use the Show Hide Input Panel VI to display or hide the input panel for Touch Panel devices.
- **Static VI Reference** —You can use the Static VI Reference function to maintain a static reference to a VI. You can configure the Static VI Reference function to output a generic or strictly typed VI reference. After you place the Static VI Reference function on a block diagram, double-click the function to display a file dialog box in which you can select a VI.
- **XML functions**—The Touch Panel Module now includes the Escape XML, Flatten To XML, Read From XML File, Unescape XML, Unflatten From XML, and Write to XML File VIs and functions. You can use these VIs and functions to manipulate LabVIEW data in XML format.

## Newly Supported Properties

- **Cluster properties**—The Touch Panel Module includes the following new cluster properties that you can use with cluster controls: Cluster Size, Cluster Size:Height, Cluster Size:Width, and Controls[]. You can use a Property Node with these properties to set the size of cluster controls and get references to cluster elements.

The Touch Panel Module also includes the following new cluster properties that you can use with radio buttons controls: Cluster Size, Cluster Size:Height, Cluster Size:Width, and Color. You can use a Property Node with these properties to set the size and color of radio buttons controls.

- **Data binding properties**—The Touch Panel Module includes the following new data binding properties: Data Binding:Binding Type, Data Binding:LED Visible, Data Binding:Mode, Data Binding:Path, and Data Binding:Status. You can use a Property Node with these properties to return information about the data connection, configure the mode of the data connection, or show or hide the data binding indicator.
- **Text property**—You can use the Text property to read from or write to a string control or indicator.
- **Waveform graph cursor properties**—You can use the Allow Drag and Cursor Legend Visible properties with waveform graphs. Use a Property Node with the Allow Drag property to allow users to move the cursor in the plot area. Use a Property Node with the Cursor Legend Visible property to display the cursor legend for the waveform graph.

# System Requirements

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The Touch Panel Module has the following requirements:

- A desktop computer with Windows Vista/XP or Windows 2000 with Service Pack 4.0 or later.
- LabVIEW 8.5 Base, Full, or Professional Edition.
- 2.5 GB available disk space.
- A Touch Panel device, such as the NI TPC-2006, running Windows CE 4.2 or 5.0.

Refer to the *LabVIEW Release Notes*, available by selecting **Start» All Programs»National Instruments»LabVIEW 8.5»LabVIEW Manuals** and opening `LV_Release_Notes.pdf`, for standard LabVIEW development system requirements.

## Installing the Touch Panel Module

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Complete the following steps to install the Touch Panel Module.

1. On Windows Vista/XP/2000, log in as an administrator or as a user with administrator privileges.
2. Install LabVIEW 8.5, if not already installed. Refer to the *LabVIEW Release Notes* for standard LabVIEW installation instructions.
3. Install the Touch Panel Module.

The Touch Panel Module includes Microsoft tools, such as Microsoft ActiveSync on Windows XP/2000. Some of these Microsoft tools might interfere with any existing installations of Visual Studio, Windows Embedded, or Windows CE toolkits.



**Note (Windows XP/2000)** The Touch Panel Module installs ActiveSync 4.2 if you do not already have ActiveSync 4.2 or later installed. The Touch Panel Module works with ActiveSync 4.2 or later.

4. Activate the Touch Panel Module.

You must activate the Touch Panel Module before you can build Touch Panel VIs into Touch Panel applications. The Touch Panel Module runs in evaluation mode if you do not activate it. In evaluation mode, you can create Touch Panel VIs, but any Touch Panel applications you build run only for five minutes. You have the option of activating the Touch Panel Module at the end of the installation. You also can 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 National Instruments License Manager, for more information about activating NI products.

5. Restart the computer when the installer completes.
6. **(Windows Vista)** You must install Windows Mobile Device Center to use the Touch Panel Module. Refer to the Microsoft Web site at [www.microsoft.com](http://www.microsoft.com) to download Windows Mobile Device Center.
7. Install the additional tools you need. Refer to the *Installing the Additional Tools* section for more information about the additional tools.

## Uninstalling the Touch Panel Module

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In addition to uninstalling the Touch Panel Module, you also must uninstall the following:

- **(Windows XP/2000)** Microsoft ActiveSync
- Microsoft Device Emulator version 1.0 – ENU
- Microsoft Visual C++ 2005 Redistributable

## Installing the Additional Tools

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You must install additional tools on the target depending on the functionality you need.

### NI TPC Service Support

You must install the NI TPC Service on the Touch Panel target before you can use the NI TPC Service.

Complete the following steps to install support for the NI TPC Service on a Touch Panel target.

1. Depending on which type of target you are using, use FTP or an external storage device to copy `NITPCService.cab` from the `labview\PDA\Utilities\NITPCService\ARM` directory or `labview\PDA\Utilities\NITPCService\x86` directory to any location on the Touch Panel device.
2. Run the `.cab` file on the Touch Panel device to install the NI TPC Service.
3. For NI TPC devices, use the default installation location. Tap the <Enter> key to accept the default installation location.

For third-party devices, install the service in the non-volatile directory on the device.



## Shared Variable Support

For third-party devices, you must install support for shared variables on the Touch Panel target before you can run a Touch Panel application with shared variables. For NI TPC devices, you must install the latest version of shared variable support on the Touch Panel target to use front panel data binding and Shared Variable nodes in your Touch Panel applications.

### ActiveSync

Complete the following steps to install or uninstall support for shared variables on a Touch Panel target using ActiveSync.

1. Connect the Touch Panel device to ActiveSync on the host computer.
2. Navigate to and run `labview\PDA\Utilities\Variables\ARM\Setup.exe` or `labview\PDA\Utilities\Variables\x86\Setup.exe`, depending on which type of target you are using.
3. For NI TPC devices, use the default installation location. For third-party devices, install the service in the non-volatile directory on the device.

### NI TPC Service

Complete the following steps to install or uninstall support for shared variables on a Touch Panel target using NI TPC Service.

1. Right-click the Touch Panel target in the **Project Explorer** window and select **Install»Support for Shared Variables** from the shortcut menu.
2. For NI TPC devices, use the default installation location. For third-party devices, install the service in the non-volatile directory on the device.

## PNG Image Support

You must install support for PNG images on the Touch Panel target if the Touch Panel VI contains PNG images on the front panel.



**Note** If you have an NI TPC-2006 device and you have already downloaded updated PNG support from KnowledgeBase 40EAE6X1: *Improved Display Driver for TPC-2006 Industrial Touch Panel Computer* from the National Instruments Web site, you do not need to complete the following steps.

NI TPC-2012 devices already include support for PNG images.

## ActiveSync

Complete the following steps to install or uninstall support for PNG images on a Touch Panel target using ActiveSync.

1. Connect the Touch Panel device to ActiveSync on the host computer.
2. Navigate to and run `labview\PDA\Utilities\LVPNG\ARM\Setup.exe` or `labview\PDA\Utilities\LVPNG\x86\Setup.exe`, depending on which type of target you are using.
3. For NI TPC devices, use the default installation location. For third-party devices, install the service in the non-volatile directory on the device.

## NI TPC Service

Complete the following steps to install or uninstall support for PNG images on a Touch Panel target using NI TPC Service.

4. Right-click the Touch Panel target in the **Project Explorer** window and select **Install»Support for PNG Images** from the shortcut menu.
5. For NI TPC devices, use the default installation location. For third-party devices, install the service in the non-volatile directory on the device.

## NI-VISA Support

You must install NI-VISA on the Touch Panel target to use VISA in your applications. Select **Start»All Programs»National Instruments»VISA** and select **Windows CE for ARM Driver Installation** or **Windows CE for x86 Driver Installation**, depending on which type of target you are using.



**Tip** You also can right-click the Touch Panel target in the **Project Explorer** window and select **Install»Support for NI-VISA** from the shortcut menu.

## x86 Target Support for Third-Party Devices

If you need support for x86 Touch Panel targets running Windows CE 4.2, install the following Microsoft eMbedded Visual Tools:

- Microsoft eMbedded Visual C++ 4.0
- Microsoft eMbedded Visual C++ SP 4 or later
- SDK for Windows Mobile 2003-based Pocket PCs

Refer to the National Instruments KnowledgeBase at [ni.com/info](http://ni.com/info) and enter the info code `tpcevc` for the most recent information about downloading and installing the Microsoft eMbedded Visual Tools.

# Tutorial

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Use this tutorial to learn how to configure a Touch Panel device to use the NI TPC Service; how to use the Touch Panel Project Wizard to create a project; and how to build, deploy, run, and debug a Touch Panel application.

The VI in this tutorial simulates setting a temperature, displaying the current temperature in a graph and on a thermometer, and indicating if the temperature is not in range.

## Configuring the Device to Use the NI TPC Service

The Touch Panel Module includes the NI TPC Service, which is an Ethernet-based service that you can use to deploy, run, and debug Touch Panel applications. Use the NI TPC Service instead of ActiveSync if you are using Ethernet and need to deploy a Touch Panel application to multiple Touch Panel targets.



**Note** If you want to use ActiveSync instead, ensure the computer is connected to the Touch Panel device via USB or serial cables. If you use a serial cable, connection time is longer.

Complete the following steps to configure the Touch Panel device to use the NI TPC Service.

1. Ensure the host and target are on the same subnet.
2. Enable FTP on the Touch Panel device. Refer to the National Instruments KnowledgeBase at [ni.com/info](http://ni.com/info) and enter the info code `ex6pwq` for the most recent information about configuring NI TPC devices to use FTP. For third-party devices, refer to the device documentation.
3. Install the NI TPC Service on the Touch Panel target. Refer to the [NI TPC Service Support](#) section for more information about installing the NI TPC Service on Touch Panel targets.
4. Use the NI TPC Service Manager to configure the service to run on the Touch Panel device.
  - a. Select **Start»All Programs»National Instruments»NI TPC Service»NI TPC Service Manager 1.0** to launch the NI TPC Service Manager. The manager checks the status of the NI TPC Service and displays the status information.
  - b. Tap the **Start** button to start the NI TPC Service if the NI TPC Service is not running.

# Creating the LabVIEW Project

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

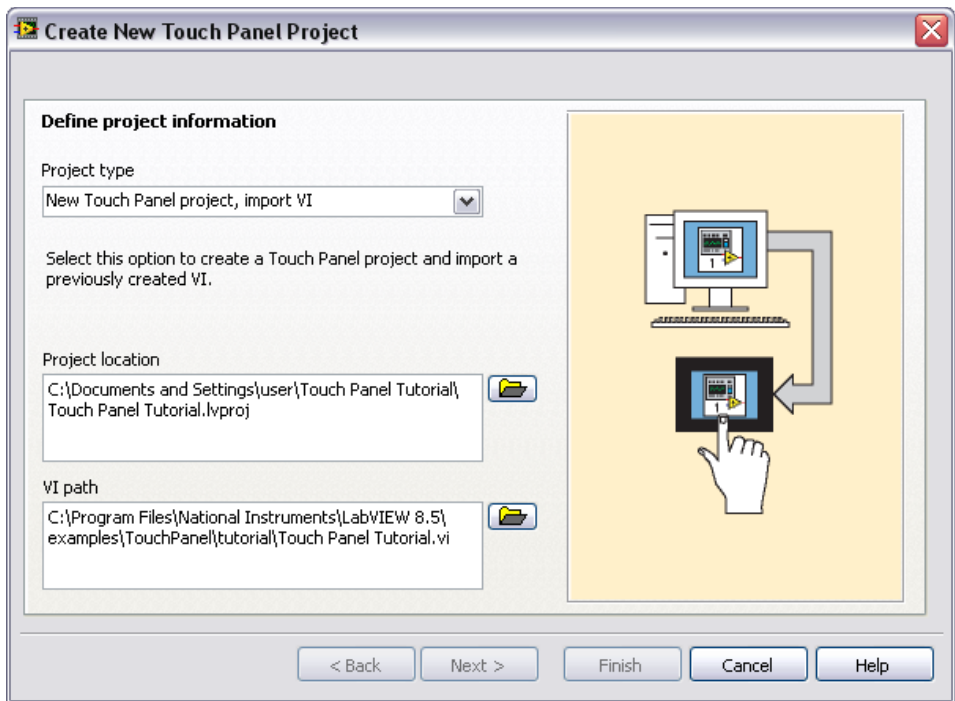
Using the Touch Panel Project Wizard, complete the following steps to create a LabVIEW project, add a Touch Panel target, and add an existing Touch Panel VI to the project.

1. Launch LabVIEW. In the **Getting Started** window, select **Touch Panel Project** under the **Targets** pull-down menu. Click the **Go** button to launch the Touch Panel Project Wizard.
2. Define the project information as shown in Figure 1.
  - a. Select **New Touch Panel project, import VI** from the **Project type** pull-down menu to create the LabVIEW project using an existing VI.



**Tip** The blank VI project type creates a project with a new Touch Panel template VI rather than importing an existing VI.

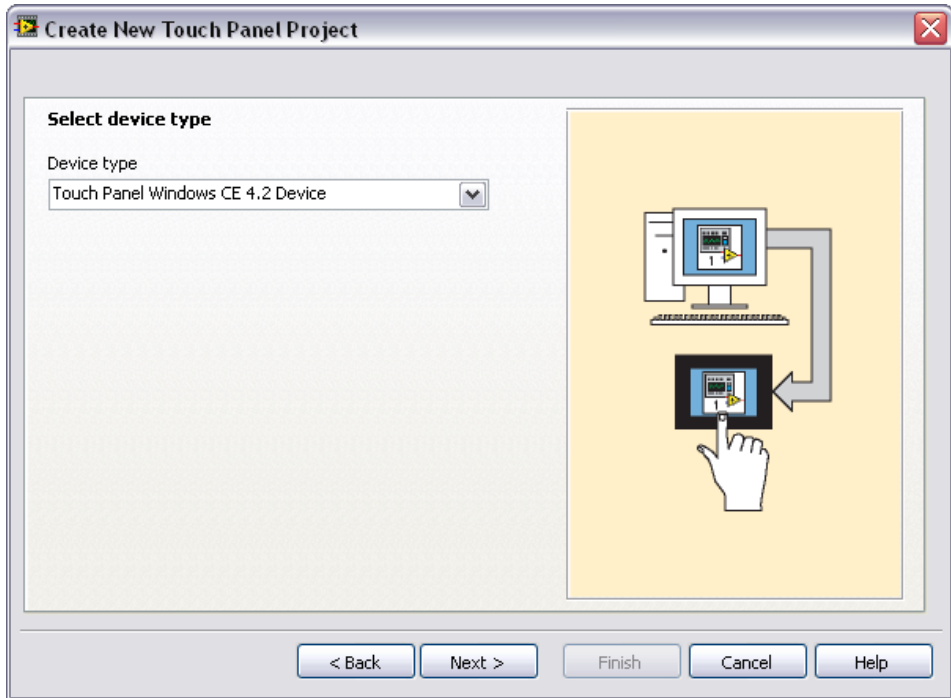
- b. Specify a project name and the location where you want to save the project and the VI in the **Project location** text box. Save the project to a location other than the default location so you do not overwrite the shipping example with your changes. The default project name is `Untitled project.lvproj`. For this tutorial, enter `Touch Panel Tutorial` in the **Project location** text box.
    - c. Click the **Browse** button next to the **VI path** text box and navigate to `labview\examples\TouchPanel\tutorial\Touch Panel Tutorial.vi` to select the VI to import. Click the **OK** button to add the VI to the project you are creating.



**Figure 1.** Defining the Project Information

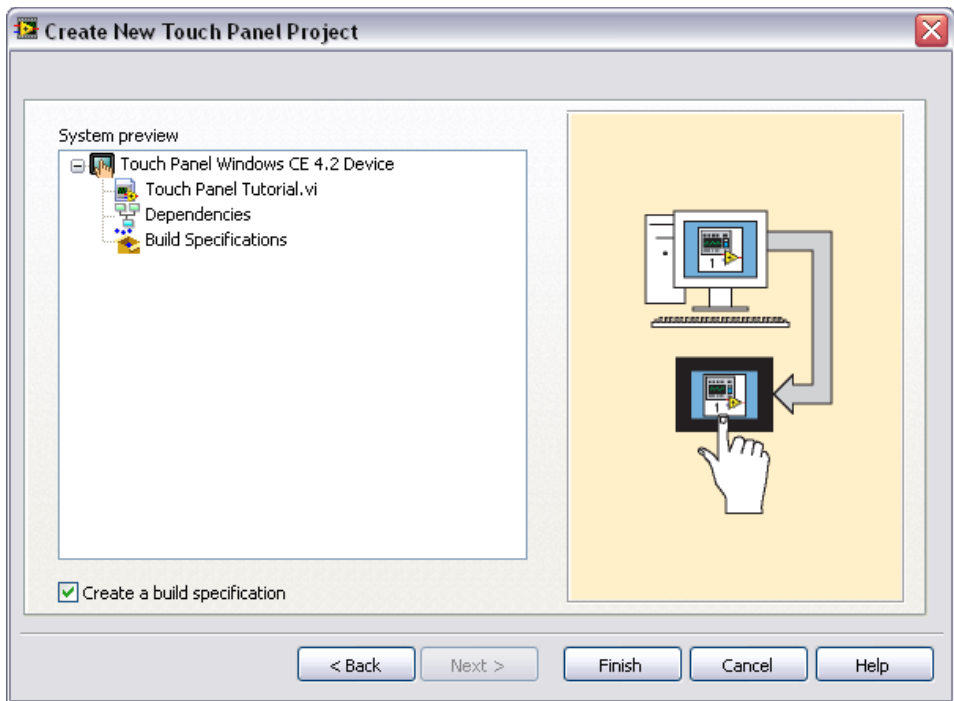
3. Click the **Next** button.

4. Select the Touch Panel device you are using from the **Device type** pull-down menu as shown in Figure 2.



**Figure 2.** Selecting the Touch Panel Device Type

5. Click the **Next** button.
6. The **System preview** page, shown in Figure 3, shows a preview of the project the wizard creates when you click the **Finish** button. Notice the checkmark in the **Create a build specification** checkbox. This checkmark indicates you want to create a build specification immediately after you create the project. Refer to the [Creating the Touch Panel Build Specification](#) section for more information about creating build specifications.



**Figure 3.** Previewing the Project

Because the **Create a build specification** checkbox contains a checkmark as shown in Figure 3, the **Touch Panel Build Specification Properties** dialog box opens when you click the **Finish** button.

## Creating the Touch Panel Build Specification

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

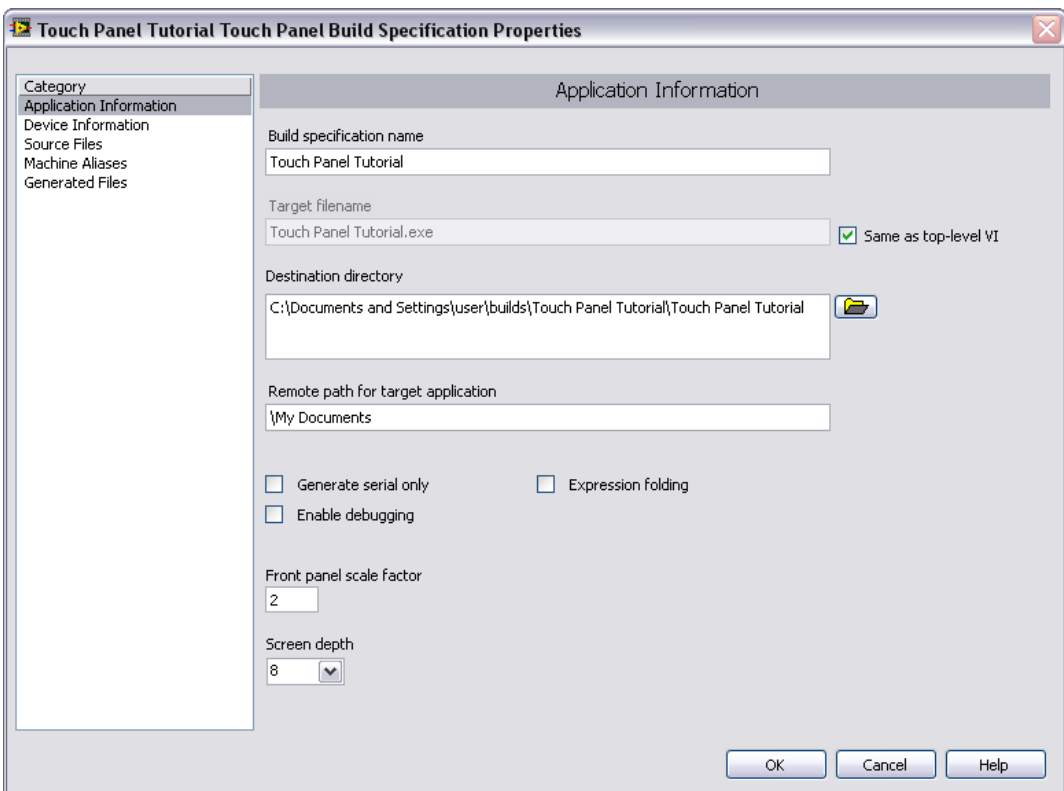
You can have multiple build specifications for the same target. For example, you might want one build specification that generates debugging information and another build specification that does not generate this extra information.



**Note** This tutorial creates the build specification through the Touch Panel Project Wizard. You also can create a build specification at any time by right-clicking **Build Specifications** in the **Project Explorer** window and selecting **New»Application (EXE)** from the shortcut menu.

Complete the following steps to create a Touch Panel build specification.

1. Define the settings for the Touch Panel application as shown in Figure 4.
  - a. Enter a name for the build specification in the **Build specification name** text box. This is the name that appears under **Build Specifications** in the **Project Explorer** window.
  - b. (Optional) By default, the name of the Touch Panel application is the same as the top-level Touch Panel VI. If you do not want to use the top-level Touch Panel VI name for the Touch Panel application name, remove the checkmark from the **Same as top-level VI** checkbox and enter a name in the **Target filename** text box.
  - c. Browse to and select the destination directory for the Touch Panel application on the host computer, which is where LabVIEW saves the .exe, in the **Destination directory** text box.
  - d. Enter the destination directory for the Touch Panel application on the Touch Panel target in the **Remote path for target application** text box.



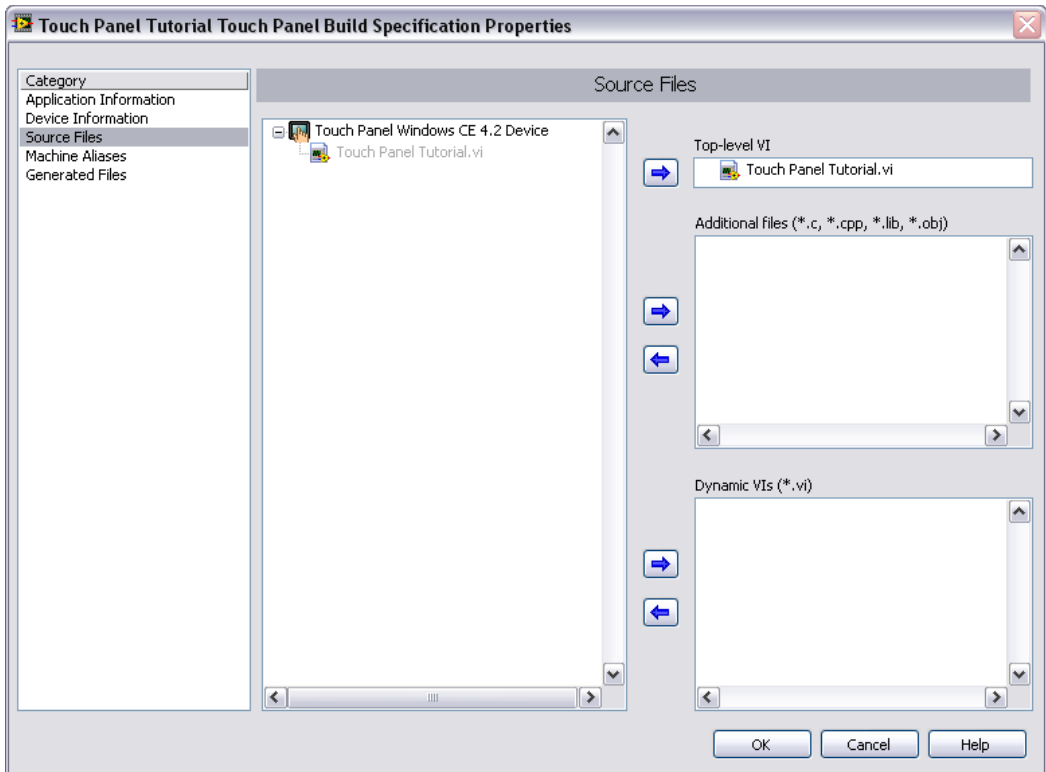
**Figure 4.** Defining the Touch Panel Application Information





**Note** Although it is common to use the same name for the Touch Panel VI, application, and build specification, you are not required to do so.

2. Click the **Help** button to open the *LabVIEW Help* and read a description of each build setting.
3. Select the **Device Information** category to view which target and processor this build specification applies to.
4. Select the **Source Files** category to select the source files to include when you build the Touch Panel VI into a Touch Panel application. When you use the Touch Panel Project Wizard to create a build specification, LabVIEW automatically uses the VI you import as the top-level VI. When you create build specifications outside of the wizard, you must manually select the top-level VI and click the blue arrow button, shown at left, to move the VI to the **Top-level VI** text box as shown in Figure 5. Touch Panel applications can have only one top-level VI.

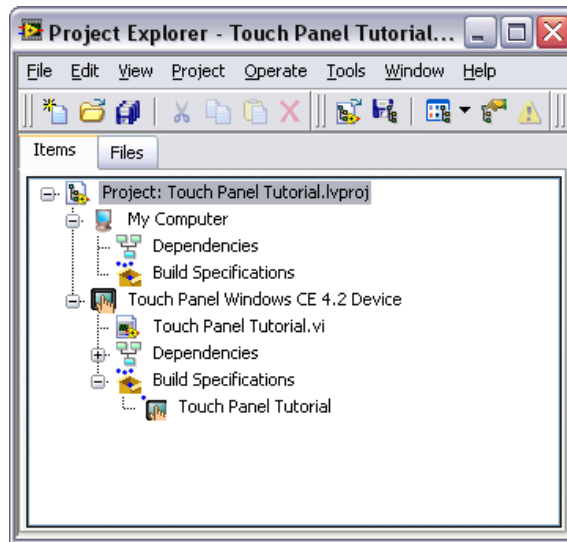


**Figure 5.** Selecting the Source Files



**Note** The **Machine Aliases** category is not used in this tutorial. You use the **Machine Aliases** category to overwrite the default IP address of a target hosting shared variables so you can move the shared variable to a different host without rebuilding the application. Refer to the *Using Shared Variables in PDA and Touch Panel VIs* topic in the *LabVIEW Help* for more information about using shared variables.

5. Select the **Generated Files** category to view the filenames and paths to the files the Touch Panel Module will generate when you build the Touch Panel VI into a Touch Panel application.
6. Click the **OK** button. The build specification you just created appears in the **Project Explorer** window under the Touch Panel target as shown in Figure 6.



**Figure 6.** Project Explorer Window

7. Click **File»Save Project** in the **Project Explorer** window to save the project. LabVIEW saves build specifications with the project.
8. If you configured the Touch Panel device to use the NI TPC Service, configure the application to use the NI TPC Service.
  - a. Right-click the Touch Panel target in the **Project Explorer** window and select **Properties** to display the **Touch Panel Target Properties** dialog box. On the **General** page, select **NI TPC Service (TCP/IP)** from the **Connection** pull-down menu.
  - b. Enter the IP address of the Touch Panel device in the **Touch Panel Device IP Address** text box.
  - c. Click the **Test** button to confirm that the NI TPC Service is running on the remote device.

# Building the Touch Panel VI into a Touch Panel Application and Deploying

After you develop the Touch Panel VI on the host computer, you build the VI into an executable Touch Panel application that you can run on a Touch Panel 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 Touch Panel application.

## Using the Shortcut Menu

Right-click the build specification in the **Project Explorer** window and select one of the following from the shortcut menu:

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

## Using the Run Button

When you run a Touch Panel VI under a Touch Panel target in the **Project Explorer** window, the **Run** button behaves differently from when you run a VI under **My Computer** in the **Project Explorer** window:

- **If you want to build, deploy, and run**—Click the **Run** button in a Touch Panel VI to build the Touch Panel VI into a Touch Panel application, deploy the Touch Panel application to the Touch Panel target, and run the Touch Panel application on the Touch Panel target. LabVIEW prompts you to create a build specification if you do not have an existing build specification for the Touch Panel VI. If you have multiple build specifications, LabVIEW prompts you to select a build specification in the **Select a Build Specification** dialog box. Alternatively, you can specify a default build specification by right-clicking a build specification in the **Project Explorer** window and selecting **Set as Default** from the shortcut menu. The Touch Panel Module indicates with a green square around the Touch Panel 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 Touch Panel VI to build the Touch Panel VI into a Touch Panel application without deploying or running the Touch Panel application. LabVIEW prompts you to

create a build specification if you do not have an existing build specification for the Touch Panel VI. If you have multiple build specifications, LabVIEW prompts you to select a build specification in the **Select a Build Specification** dialog box. Alternatively, you can specify a default build specification by right-clicking a build specification in the **Project Explorer** window and selecting **Set as Default** from the shortcut menu. The Touch Panel Module indicates with a green square around the Touch Panel build specification glyph in the **Project Explorer** window.

## Closing the Touch Panel Application

Tap the **Exit** button in the Touch Panel application on the Touch Panel target to close the Touch Panel application.

## Debugging the Touch Panel Application

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

When LabVIEW on the host computer connects to the Touch Panel target, the Touch Panel application runs on the Touch Panel target. The front panel is fully functional on the Touch Panel target. However, the front panel controls have no effect on the Touch Panel application, and the indicators of the Touch Panel VI on the host computer do not reflect the execution of the Touch Panel application on the Touch Panel target.

The block diagram acts as a conduit between the Touch Panel application running on the Touch Panel target and the Touch Panel VI running on the host computer, where you can probe signals, set breakpoints, and step through code as you do in any other VI.



**Tip** You can modify an existing build specification by double-clicking the build specification in the **Project Explorer** window or right-clicking the build specification and selecting **Properties** from the shortcut menu. This tutorial creates a second build specification for debugging.

## Creating a Debugging Build Specification

Complete the following steps to create a debugging build specification as shown in Figure 7.

1. Right-click **Build Specifications** under the Touch Panel target and select **New»Application (EXE)** from the shortcut menu to launch the **Touch Panel Build Specification Properties** dialog box.
2. Enter (Debug) Touch Panel Tutorial in the **Build specification name** text box.
3. Remove the checkmark from the **Same as top-level VI** checkbox so you can change the Touch Panel application name.
4. Enter (Debug) Touch Panel Tutorial.exe in the **Target filename** text box.
5. Place a checkmark in the **Enable debugging** checkbox to generate debugging information when you build the Touch Panel VI into a Touch Panel target.

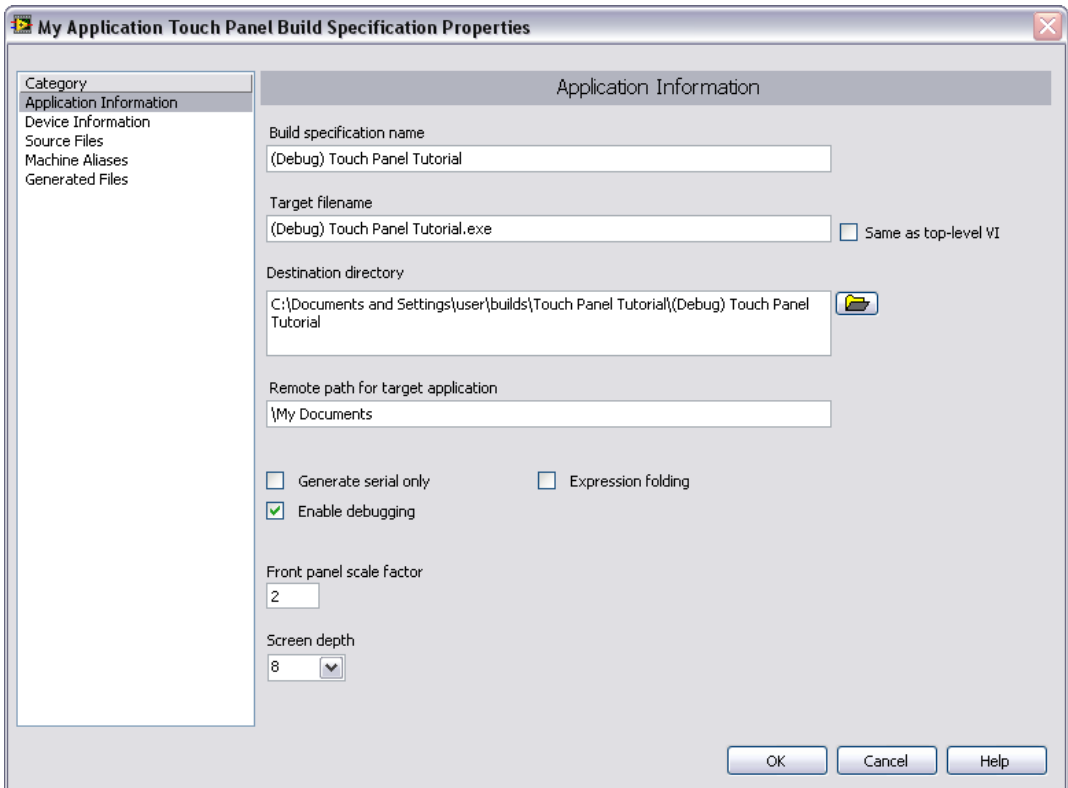
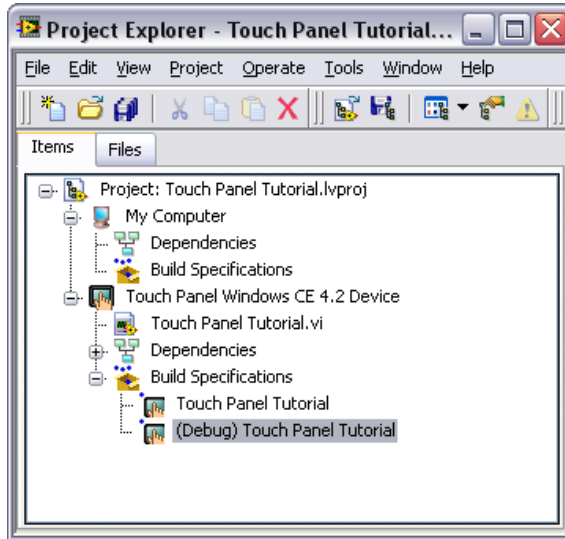


Figure 7. Creating the Debugging Build Specification



6. Select **Source Files** from the **Category** list and select **Touch Panel Tutorial.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 8.



**Figure 8.** Two Touch Panel Build Specifications in the Project Explorer Window

## Adding a Probe to the Touch Panel VI

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

Complete the following steps to add a probe to the Touch Panel Tutorial VI.

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



**Note** Double-click the VI in the **Project Explorer** window to open the VI if the VI is not already open.

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

2. Right-click the wire flowing from the **Set Temperature** control 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 9.

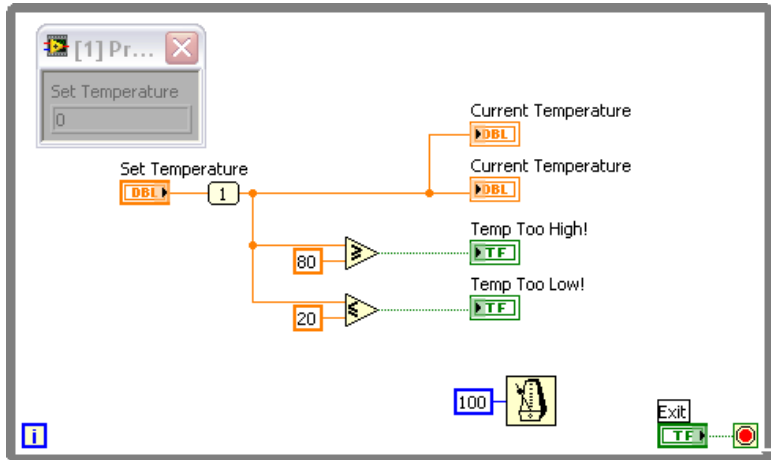


Figure 9. Adding a Probe to the Block Diagram

## Deploying and Debugging a Touch Panel Application

You must use the debugging build specification to deploy the Touch Panel VI, which contains debugging information, to the Touch Panel target before the probe in the Touch Panel VI on the host computer can update the values passing through the wire.

Complete the following steps to deploy and debug the Touch Panel application.

1. Right-click the build specification for the Touch Panel VI you want to build and deploy, which is **(Debug) Touch Panel Tutorial** in Figure 8, and select **Debug** from the shortcut menu. Save any VIs if prompted.

The Touch Panel Module builds the Touch Panel VI into a Touch Panel application, deploys the Touch Panel application to the Touch Panel target, and runs the Touch Panel application on the Touch Panel.



**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. Change the value of the **Set Temperature** knob in the Touch Panel application running on the Touch Panel target. The value in the **Probe** window on the block diagram on the host computer updates as you change the value of the knob in the Touch Panel application.



**Note** Any changes you make on the front panel of the Touch Panel VI on the host computer have no effect on the Touch Panel application running on the Touch Panel target.

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

## Related Documentation

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LabVIEW includes extensive online and print documentation for new and experienced LabVIEW users. The following documents contain information that you might find helpful as you use the Touch Panel Module:

- *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 **Touch Panel Module** book on the **Contents** tab of the *LabVIEW Help* for information specific to the Touch Panel Module and Touch Panel applications. *LabVIEW Help* uses **(TPC)** in the index to indicate Touch Panel-specific topics.
- Touch Panel Module Readme—Refer to the Touch Panel Module Readme file, available by selecting **Start»All Programs»National Instruments»LabVIEW 8.5»Readme** and opening `readme_TPC.html`, for known issues with version 8.5.
- Documentation for the Touch Panel target you use.
- 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 8.5»LabVIEW Manuals**.



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# Where to Go for Support

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The National Instruments Web site is your complete resource for technical support. At [ni.com/support](http://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](http://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:

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Finland 385 (0) 9 725 72511, France 01 57 66 24 24,  
Germany 49 89 7413130, India 91 80 4190000, Israel 972 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,  
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