

APPLICATION		REVISIONS			
NEXT ASSY	USED ON	REV	DESCRIPTION	DATE	APPROVED
	2461e	A	RELEASED PER DRN NO.	18/06/14	JB
			REVISED PER EO NO.		
			REVISED PER EO NO.		
			REVISED PER EO NO.		
			REVISED PER EO NO.		

VDD, API Driver & Control Panel, PXIe 2461

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	DRAWN:	Robert Applebee	5/24/18				
	CHECKED:	Susan Moran	5/24/18				
	ENGR:	Robert Applebee	5/24/18				
		MANUF ENGR:	----	---	TITLE VDD, API Driver & Control Panel, PXIe 2461		
MATERIAL:	TEST:	----	---				
FINISH:	QUALITY ASSUR:	Dan Fitzgibbon	6/14/18	SIZE A	CAGE CODE 2 1 7 9 3	DWG NO. 922746-900	REV. A
FORM EW 6.6.1 REV. 1.5							

1 Identification

Product Model Number:	2461e
Product Part Number:	981038
Software Part Number:	922746

2 Required Tools

The creation of the software requires the following tools:

Computer:

PC (at this point, any PC satisfies the original VXIplug&play requirements)

Other Hardware:

National Instruments PXI interface (or equivalent)

PXI Chassis

Model 2461e FTIC

Operating Systems:

Microsoft Windows NT/2000/XP/Vista/Win 7 32 or 64 bit

Software Development Tools:

National Instruments LabWindows/CVI, version 2009 or later

National Instruments VISA, version 4.6 or later

3 Source Files Location

The source files should be retrieved from the Engineering Document Control Network firmware folder. As of revision A of this document, this would be on:

DocumentMasters\software_firmware\application_software\922746

The subdirectories contain an image of each release of the driver. The eng subdirectory contains an image of all the source, project, build files and so on. The "prod" subdirectory contains the image of the install disk for the specific version. So, after this release, you can find the source and install files in:

\922746\aleng

\922746\alprod

4 Software Generation Procedure

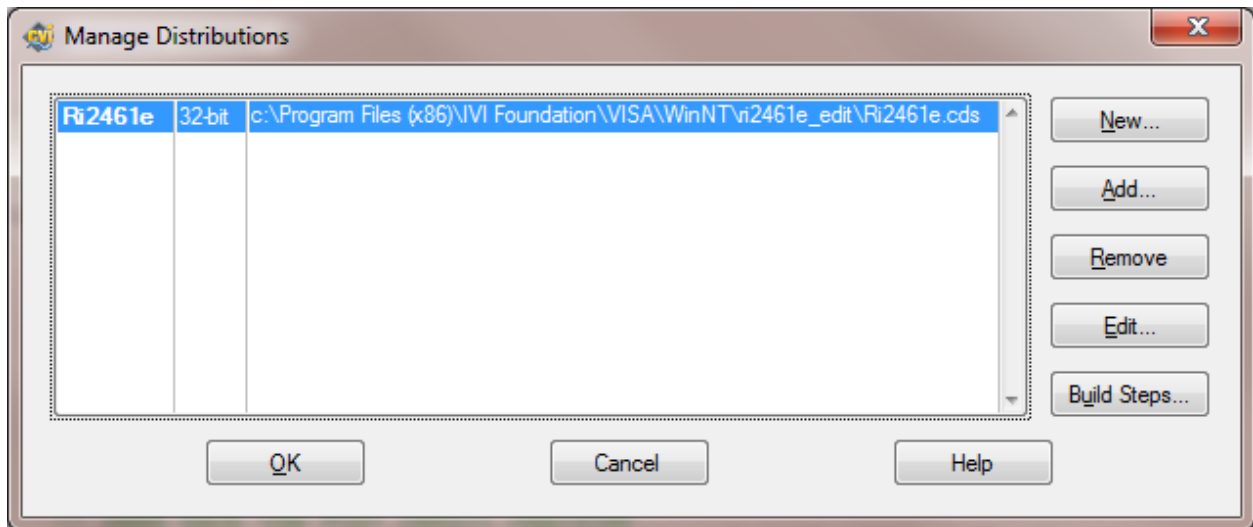
4.1 Building the Driver Installation Disks from Files on the Engineering Network

Perform the following steps:

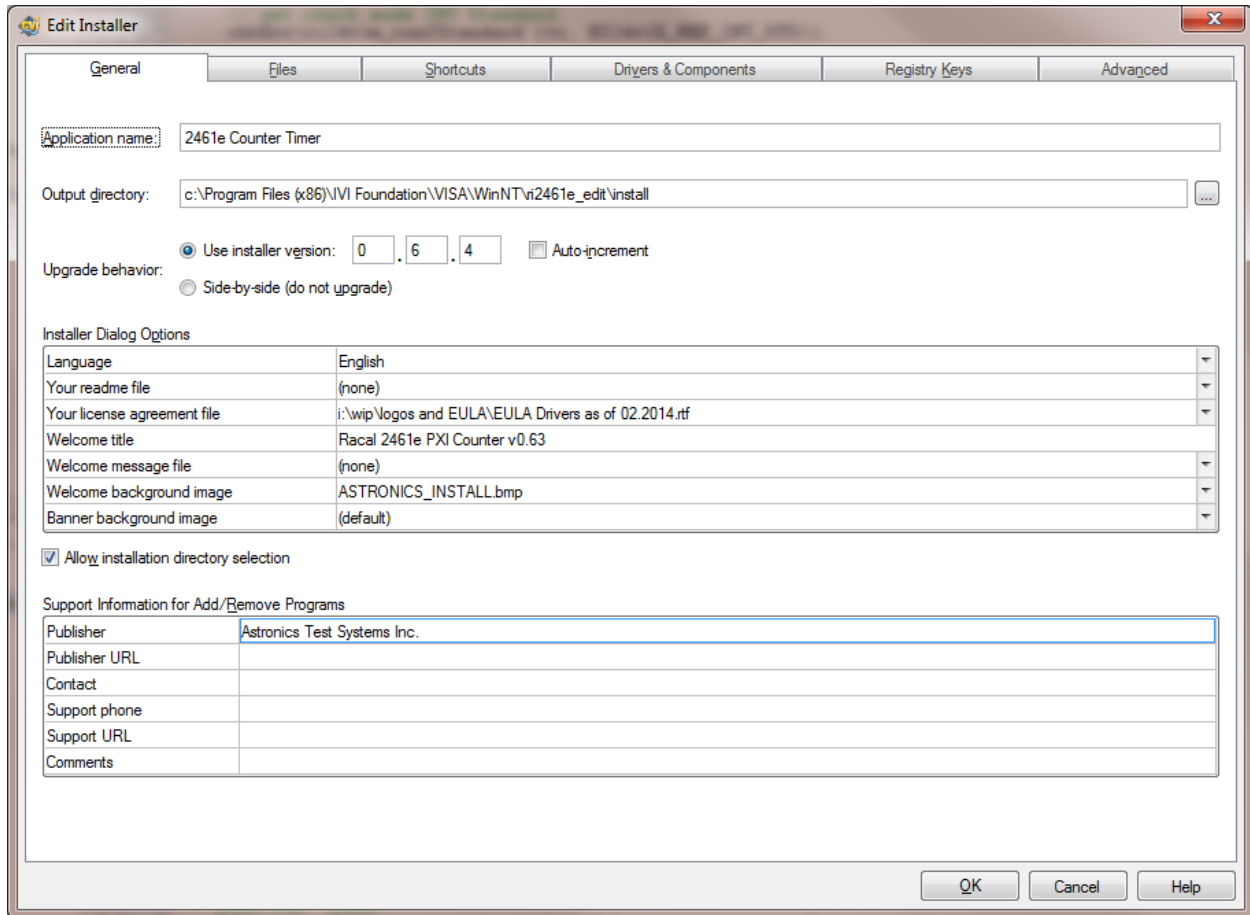
1. Create a directory on the build machine named "ri2461e_edit" in the WinNT folder of the VISA installation directory:

C:\Program Files (x86)\IVI Foundation\VISA

2. Copy all of the files, **and all subdirectories**, from the current revisions “eng” folder on the document control network (as identified in paragraph 3.0) to the directory you created in step #1 above.
3. Launch LabWindows/CVI on the PC.
4. Load the project file “ri2461e.cws” from the directory created in step 1:
 - a. Select “File->Open->Workspace (*.cws)” and then select “ri2461e.cws”
5. Verify the Distribution Settings
 - a. Select “Build->Manage Distributions”Verify the Distribution Settings

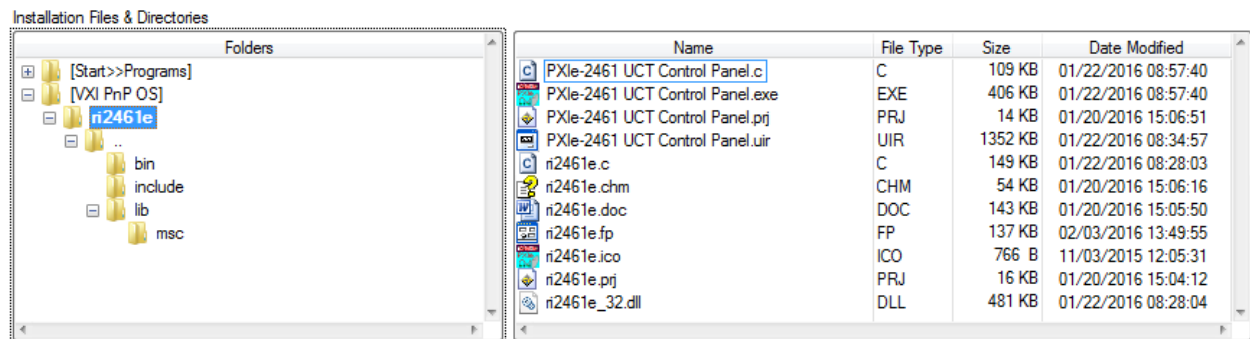


- b. Select “Edit...”
 - i. Verify the installer version and the welcome title both have the correct numeric version of the driver release

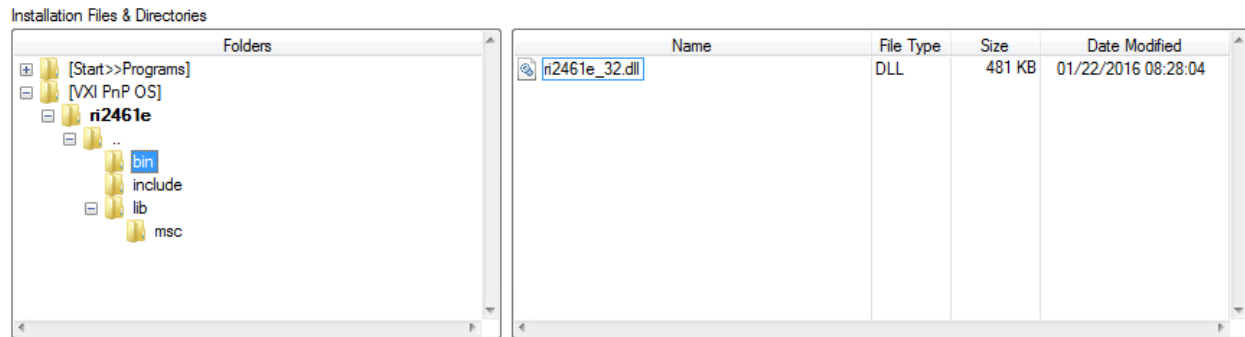


c. Verify the distribution files as follows:

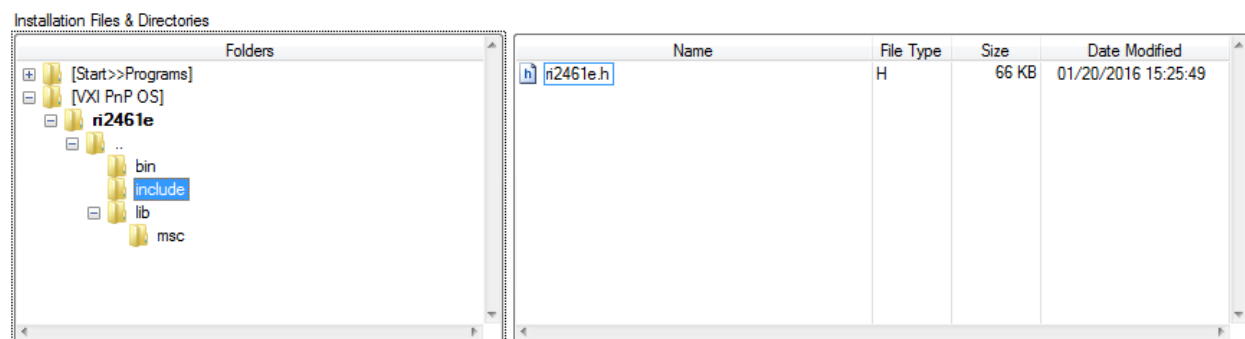
- i. Select "Files" tab.
- ii. In the "Installation Files & Directories, select "ri2461e" and verify the files,



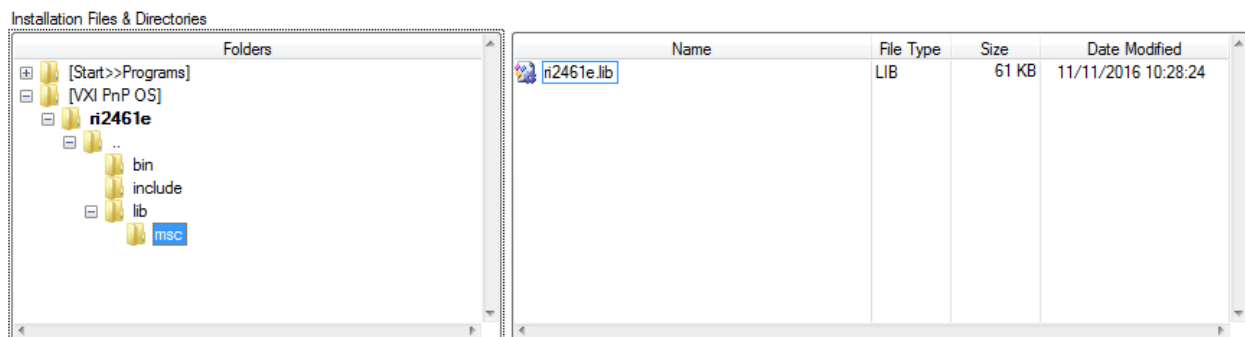
- iii. Select "bin" and verify the following file.



iv. Select “include” and verify the following file.

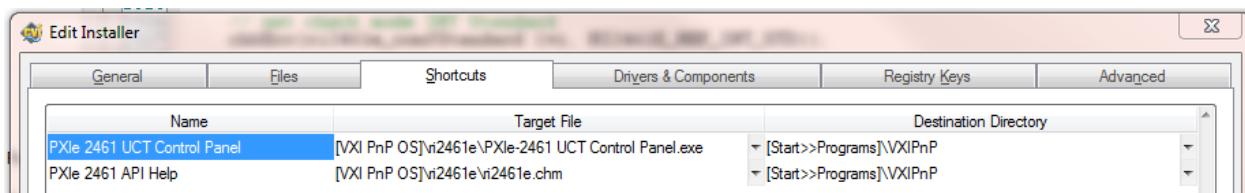


v. Select “msc” and verify the following file

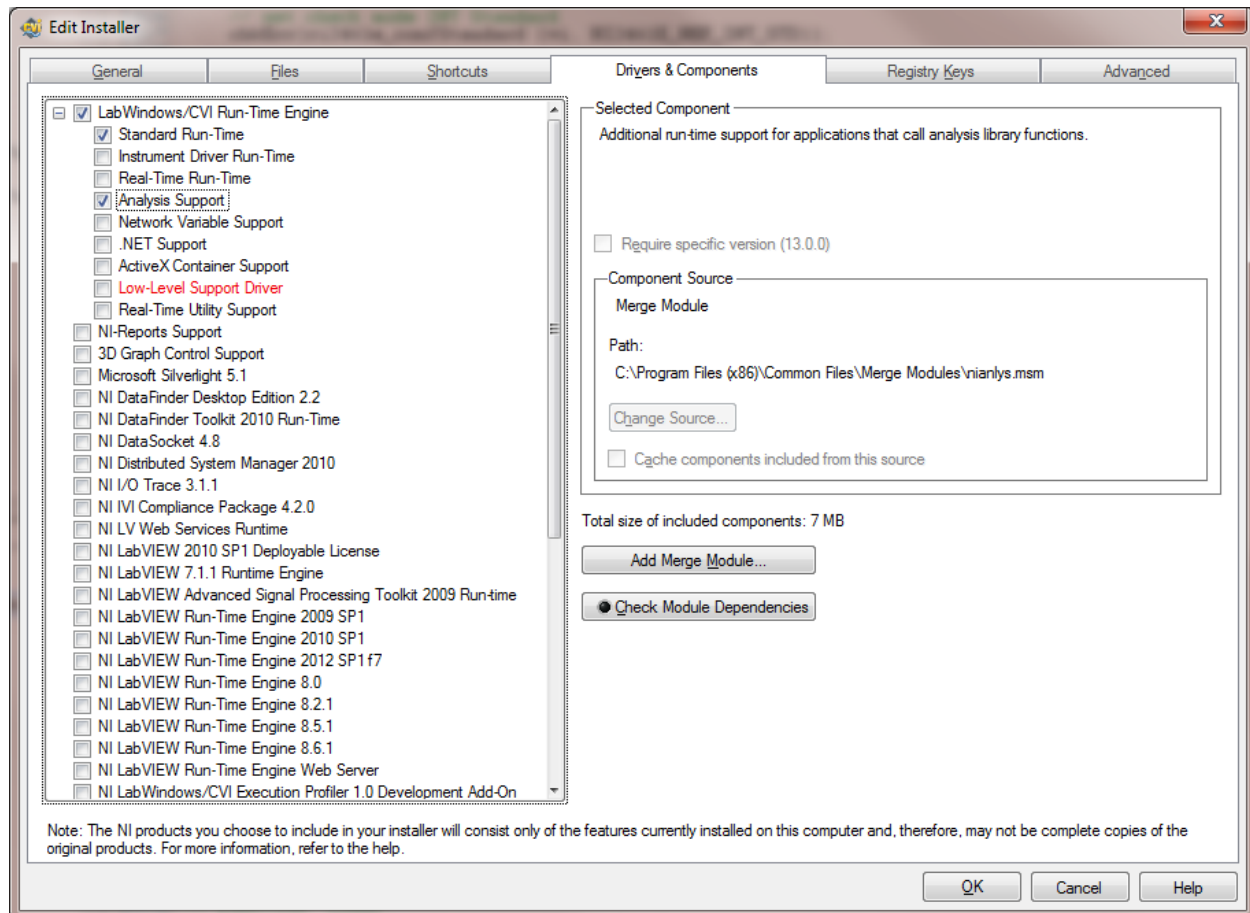


d. Verify the distribution shortcuts as follows:

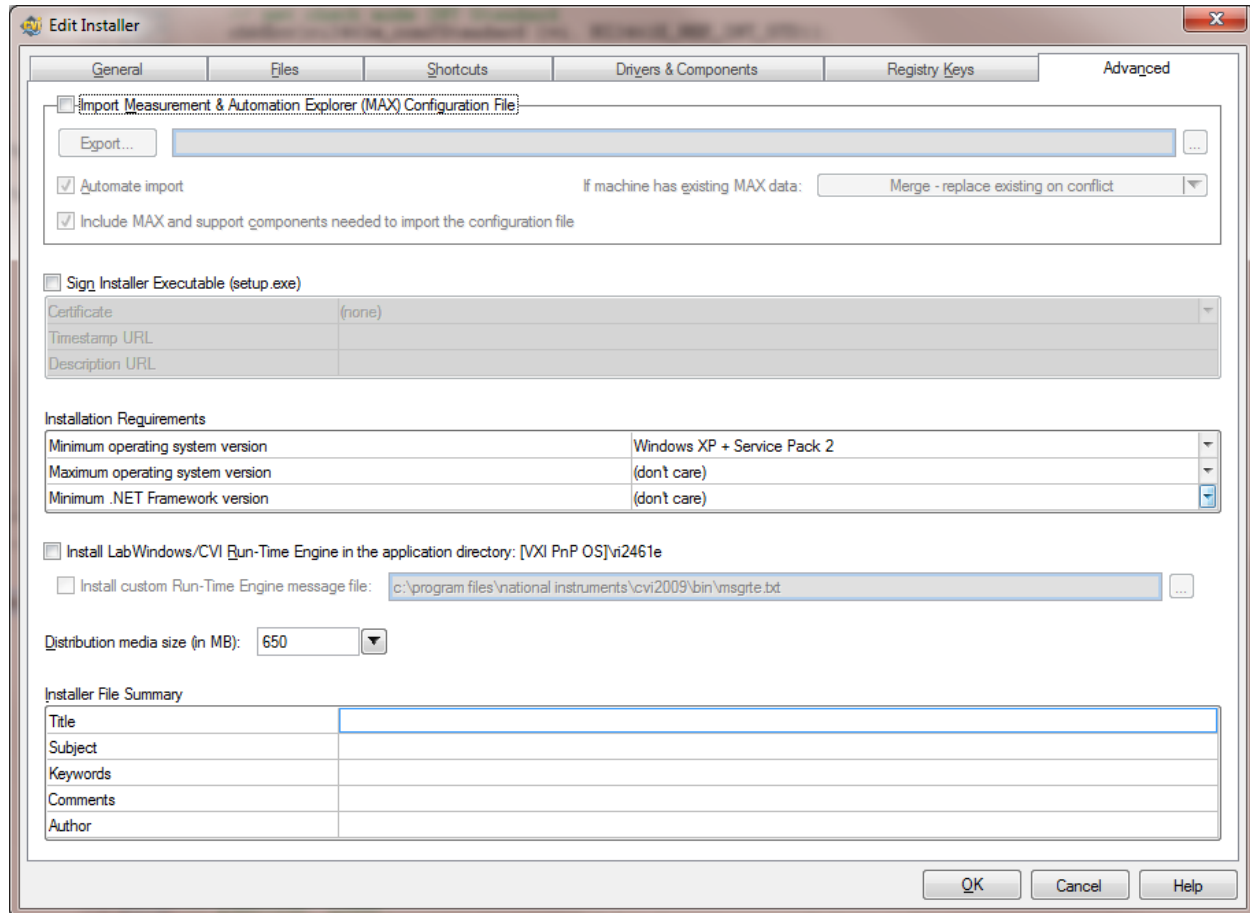
i. Select “Shortcuts” tab and verify the following shortcuts,



e. Verify the distribution drivers and components as follows:



- f. Verify the registry keys as follows:
 - i. Select "Registry Keys" tab and verify that no registry keys are defined.
- g. Verify the advanced settings as follows:
 - i. Select "Advanced" tab and verify the following settings,



6. Build the Distribution Disks:
 - a. Exit the "Edit Installer" panel if open.
 - b. Exit the "Manage Distributions" panel if open.
 - c. Select "Build->Distributions->Build RI2461e"
7. Copy all of the files from the directory "C:\Program Files (x86)\IVI Foundation\VISA\WinNT\ri2461e_edit\install\Volume" and its subdirectories to a CD or memory stick or similar media.
8. Test the installation script on a different (non-build) machine. Ensure that it installs the files as expected into the VXIplug&play directories and sub-directories on this target system.
9. Launch the Soft Front Panel and make sure it executes on the target system.
10. Test the "Uninstall" process (Control panel "Add or Remove Programs"). Ensure the Uninstall works without errors and that the files installed by the installation SETUP.EXE program are removed from the system.
11. Obtain CD ROM labels from the Engineering Department Administrator.

5 Software Revision Procedure

5.1 Overview

The software consists of two major components: the LabWindows/CVI driver and the Executable Soft Front Panel. These two components are the most likely to require modification or enhancement. In addition, the distribution files (part of the tat964dll.prj) may require modification.

This section describes the process of modifying each of the components. After any of the components are modified, the distribution files must be modified and a new revision must be produced. The *“Completing the Modification Process”* section of this document describes the common operations which must be performed to complete the revision of the software.

NOTE: The following procedures MUST be performed on a 32-bit operating system. Windows 3.1 CANNOT be used for these procedures.

NOTE: Whenever the installation disk is modified to create a new revision, it is recommended that the soft front panel, and the register-based driver be updated to report the same revision as the new installation media. This will eliminate confusion among the users of the software when reporting issues for investigation.

5.2 Software Revision Source File Location

Source files used to produce the software on the installation consist of both ASCII text files and binary files.

Refer to section 3.0 of this document for source code location. The files used to create the installation disk “A” should be kept in the “rev_a” subdirectory. Subsequent releases should have the component files located in their own subdirectories:

Install Disk Release “A”	Sub Directory a
Install Disk Release “B”	Sub Directory b
Install Disk Release “C”	Sub Directory c
Install Disk Release “D”	Sub Directory d

Using this scheme, any of the previous releases of the install disk may be recreated at a later date if it becomes necessary to do so.

5.3 Common Procedure for Beginning the Modification

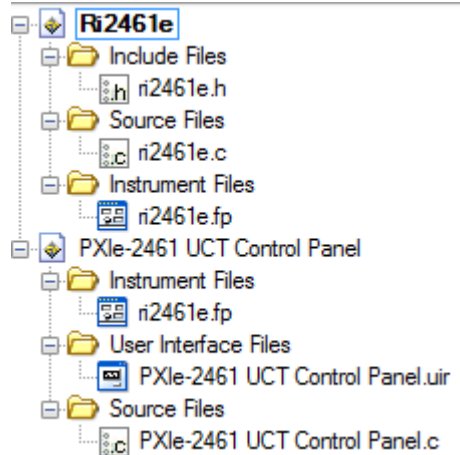
As stated in section 5.1, all files must be updated whenever a new release of the installation disk is necessary. Thus, each file must be saved in a new revision directory.

Whenever a new release of the installation disk becomes necessary, copy the source code files as outlined in section 4.1 to the PC that will be used to modify the source code.

5.4 Modifying the LabWindows/CVI Driver

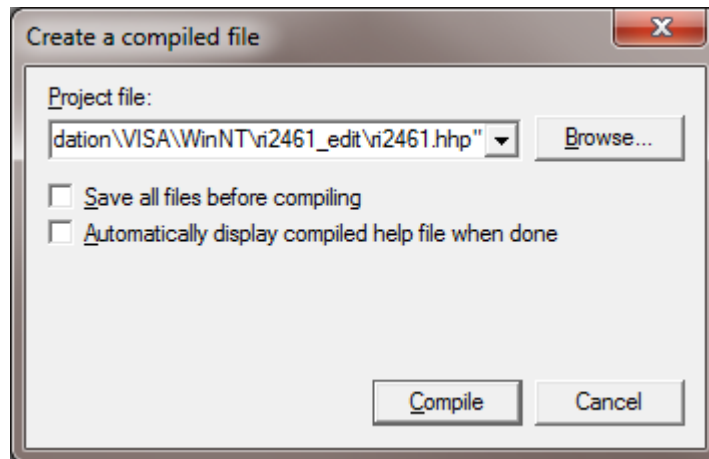
1. Start LabWindows/CVI
2. Modify the driver and build the DLL

- a. Using the “File...” menu item, select “Open...”, and then select “Workspace(*.cws)”. From the dialog box, select the project file “ri2461e.cws” in the “ri2461e_edit” directory and set “Ri2461e” as the active project. From the project tree the active project (Bold typeface). If not right click on the “Ri2461e” name and select “Set Active Project”

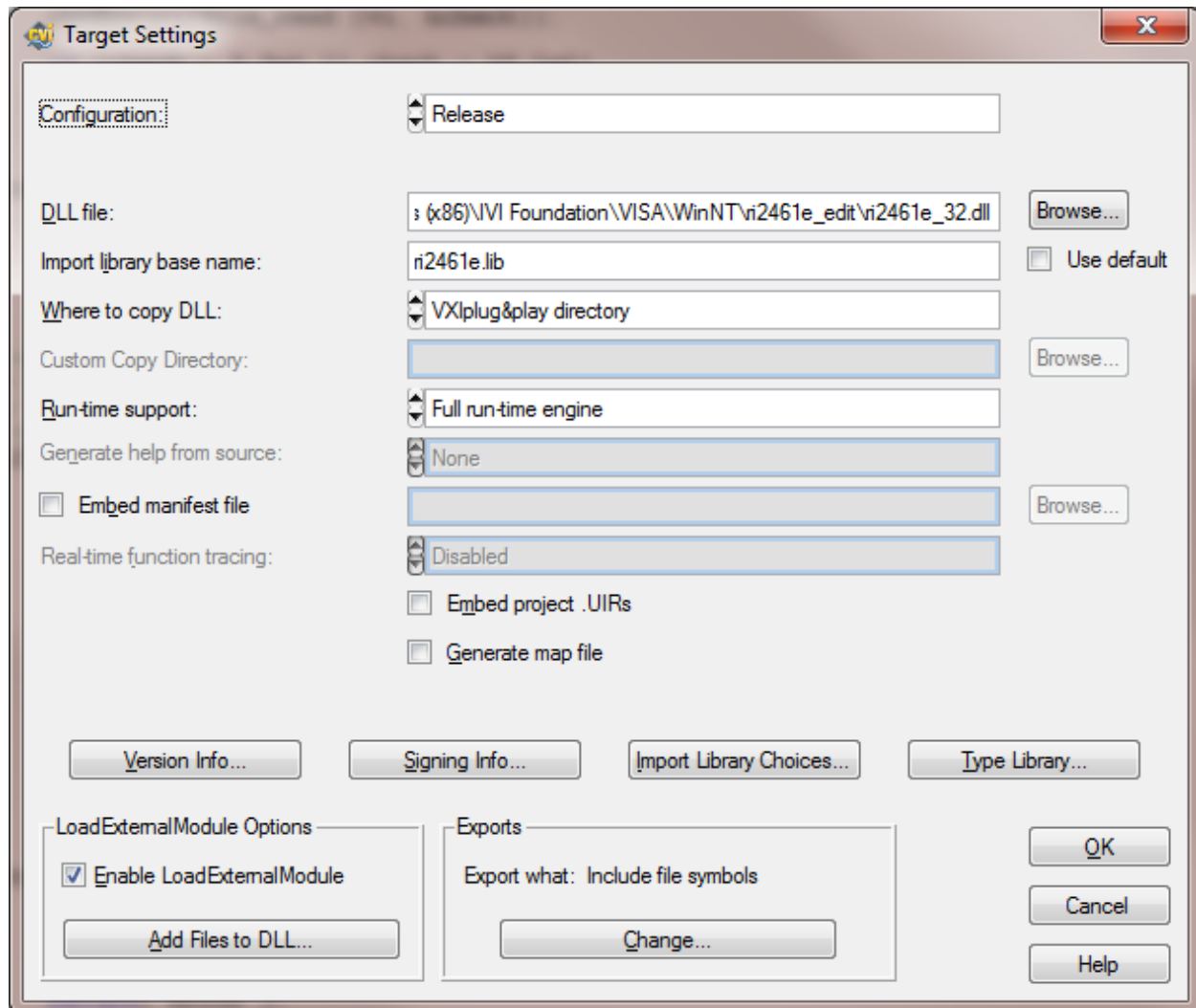


- b. Edit the driver source as necessary. For each new function panel added, remember to add the code to the source file (ri2461e.c) and the declaration prototype to the include file (ri2461e.h) and the panel definition to the fp file (ri2461e.fp).
 - c. Update the numeric revision reported by the “ri2461e_revision_query() function”. The driver revision is stored in the defined constant “RI2461E_REVISION” located in the include file. This should return the string indicating which revision the driver WILL be released next. For example, ensure the function returns a string such as:
“X.XX”
indicating that release “X.XX” will be the NEXT release.
3. Validate the driver. Ensure that:
 - a. Each function which was NOT modified is executed at least once to ensure no change has occurred
 - b. Each function that was modified or added is completely validated. Every parameter should be checked using:
 - i. the minimal value allowed
 - ii. the maximum value allowed
 - iii. a typical value in range
 4. Generate the Documentation File (tat964.doc):
 - a. Select “Instrument->Edit” and press the “Edit Function Tree” button
 - b. From the Function Tree window, Select “Options->Help Style->New”

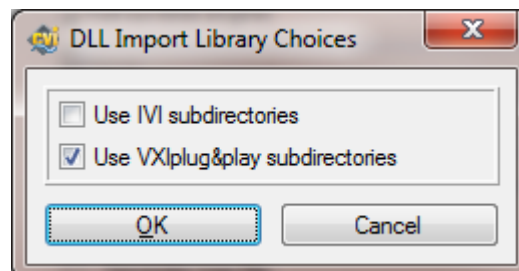
- c. Select "Options->Generate Documentation->Plain Text..."
 - i. Ensure the "Include Instrument Driver Information" box is checked
 - ii. Select the language "C"
 - iii. Press OK
 - d. Save the document as "tat964.doc"
5. Generate the HTML Help Files and compile to chm.
- a. Select "Instrument->Edit" and press the "Edit Function Tree" button
 - b. From the Function Tree window, Select "Options->Help Style->New"
 - c. Select "Options->Generate Documentation->HTML..."
 - i. Ensure the "Include Instrument Driver Information" box is checked
 - ii. Select the language "C"
 - iii. Press OK (LabWindows/CVI will generate the HTML files and the help project)
 - d. Start "HTML Help Workshop" and select "File->Compile..."



- e. Select the "vi2461e.hhp" project from the "vi2461e_edit" folder and press "Compile"
6. Create the Dynamic Link Library
- a. From the LabWindows/CVI Project Window, select "**Build->Target Type**".
 - i. Ensure "Dynamic Link Library" is checked
 - b. Select "**Build->Target Settings**" and ensure the target settings are as shown below:

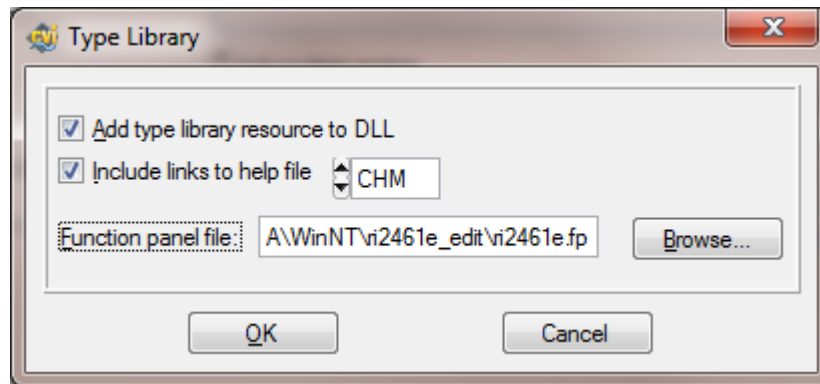


- c. From the dialog box, press the button “**Import Library Choices**”
- i. Ensure that the options are selected as shown below:



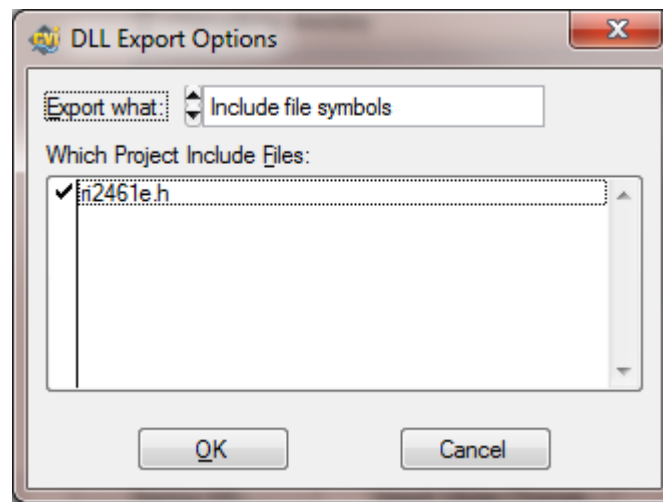
- d. From the dialog box, press the button “**Type Library**”

- i. Ensure that the options are selected as shown below:

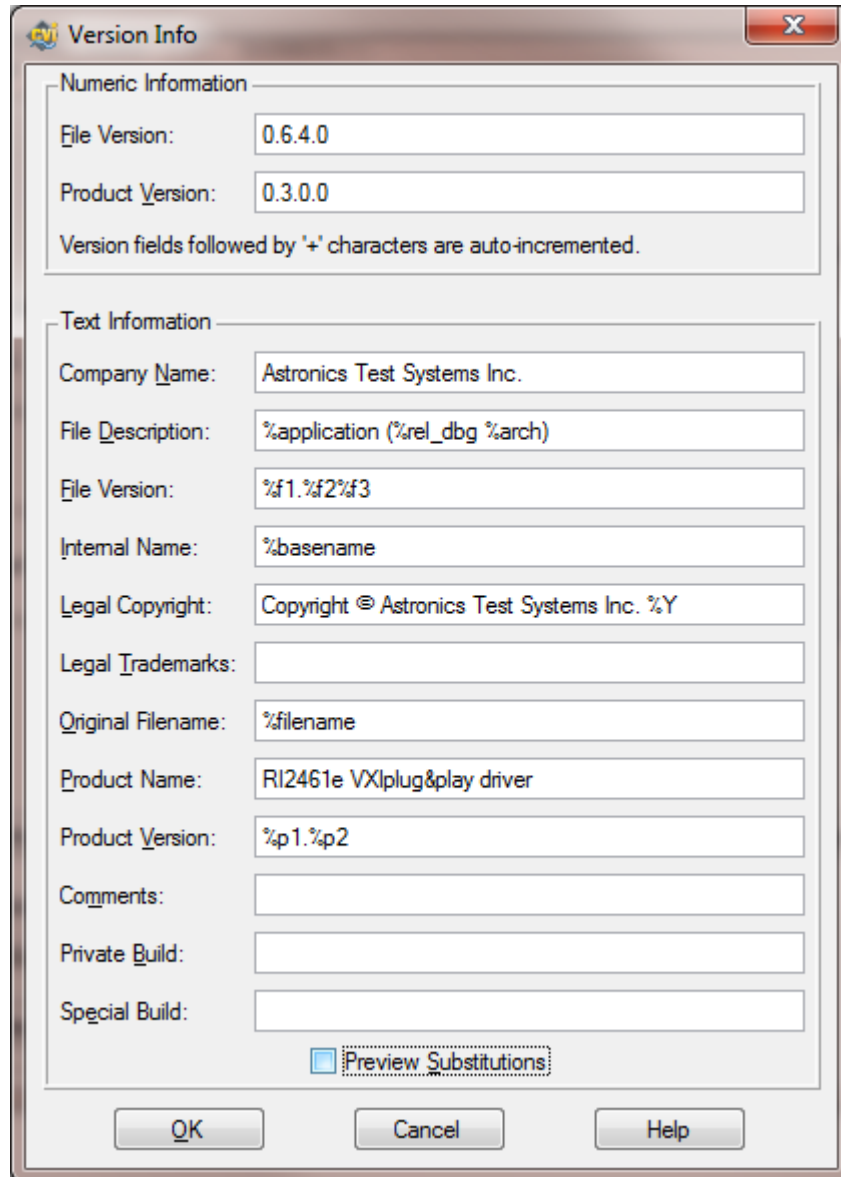


- e. Press the “Change” button under the “Exports” section of the dialog box

- i. Ensure that the options are selected as shown below:



- f. Press the “Version Info” button.
 - i. Ensure the “File Version” is updated to reflect the new driver version (e.g .“X.YZ” should be File Version: 0.X.Y.Z). Make sure both the numeric and text information is updated.
 - ii. Ensure the “Product Version” is updated to reflect the T964 sequencer version that this driver supports (e.g .“0.9” should be File Version: 1.0.0.9). Make sure both the numeric and text information is updated.
 - iii. Press the “OK” button on the “Version Info” box when this has been updated.



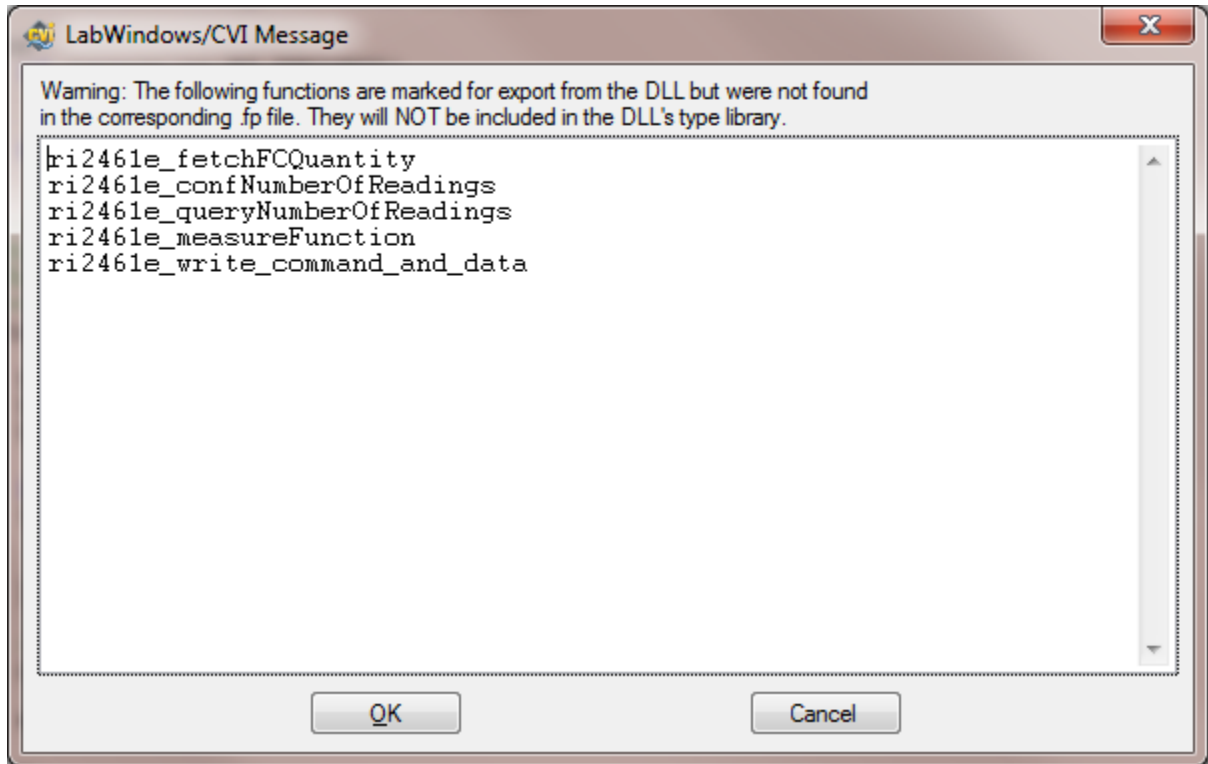
The image shows a 'Version Info' dialog box with a title bar containing a small icon and a close button. The dialog is divided into two main sections: 'Numeric Information' and 'Text Information'. The 'Numeric Information' section contains two text boxes: 'File Version' with the value '0.6.4.0' and 'Product Version' with the value '0.3.0.0'. Below these is a note: 'Version fields followed by '+' characters are auto-incremented.' The 'Text Information' section contains several text boxes: 'Company Name' (Astronics Test Systems Inc.), 'File Description' (%application (%rel_dbg %arch)), 'File Version' (%f1.%f2%f3), 'Internal Name' (%basename), 'Legal Copyright' (Copyright © Astronics Test Systems Inc. %Y), 'Legal Trademarks' (empty), 'Original Filename' (%filename), 'Product Name' (RI2461e VXIplug&play driver), 'Product Version' (%p1.%p2), 'Comments' (empty), 'Private Build' (empty), and 'Special Build' (empty). At the bottom of the 'Text Information' section is a checkbox labeled 'Preview Substitutions' which is currently unchecked. At the very bottom of the dialog are three buttons: 'OK', 'Cancel', and 'Help'.

Numeric Information	
File Version:	0.6.4.0
Product Version:	0.3.0.0
Version fields followed by '+' characters are auto-incremented.	

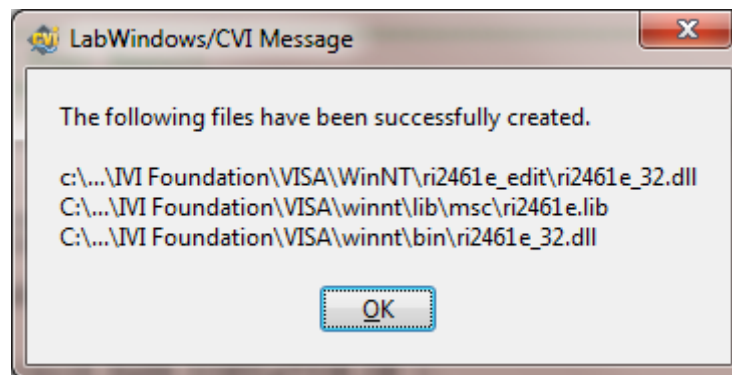
Text Information	
Company Name:	Astronics Test Systems Inc.
File Description:	%application (%rel_dbg %arch)
File Version:	%f1.%f2%f3
Internal Name:	%basename
Legal Copyright:	Copyright © Astronics Test Systems Inc. %Y
Legal Trademarks:	
Original Filename:	%filename
Product Name:	RI2461e VXIplug&play driver
Product Version:	%p1.%p2
Comments:	
Private Build:	
Special Build:	
☐ Preview Substitutions	

OK Cancel Help

- g. Press the "OK" button on the "Target Settings" dialog box.
7. Select the "Build->Create Release Dynamic Link Library" menu item. The following dialog panel will display. Depress "OK"



8. LabWindows/CVI creates the following files

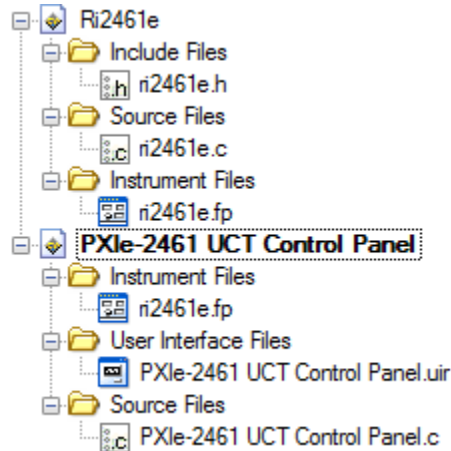


5.5 Modifying the Executable Soft Front Panel

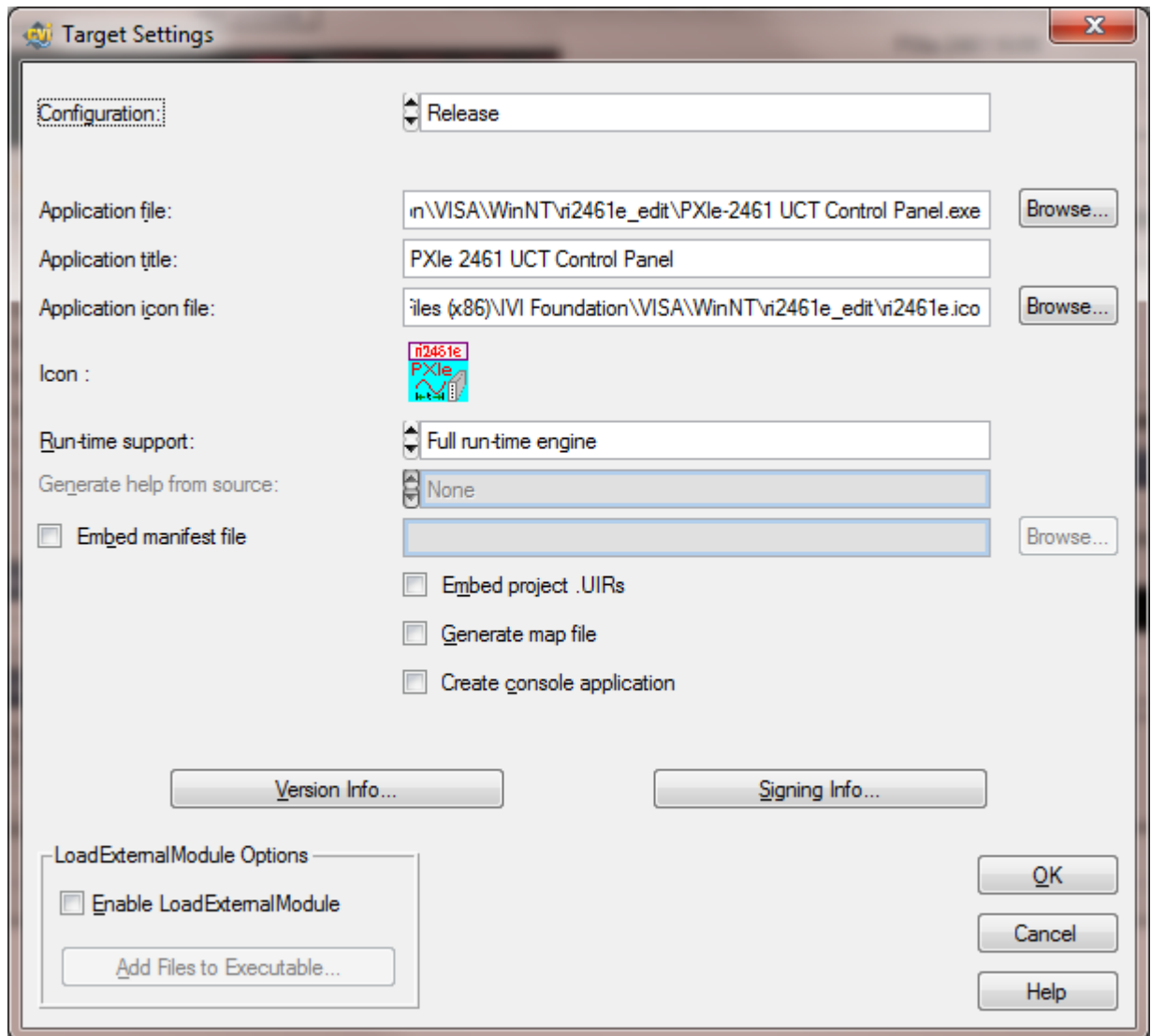
To modify the Executable Soft Front Panel, perform the following steps.

1. Obtain the latest source code from the Engineering Document Control Network as described in paragraph 3.0 of this document.
2. Start LabWindows/CVI on the PC.
3. Modify the Soft Front Panel and build the Executable Program

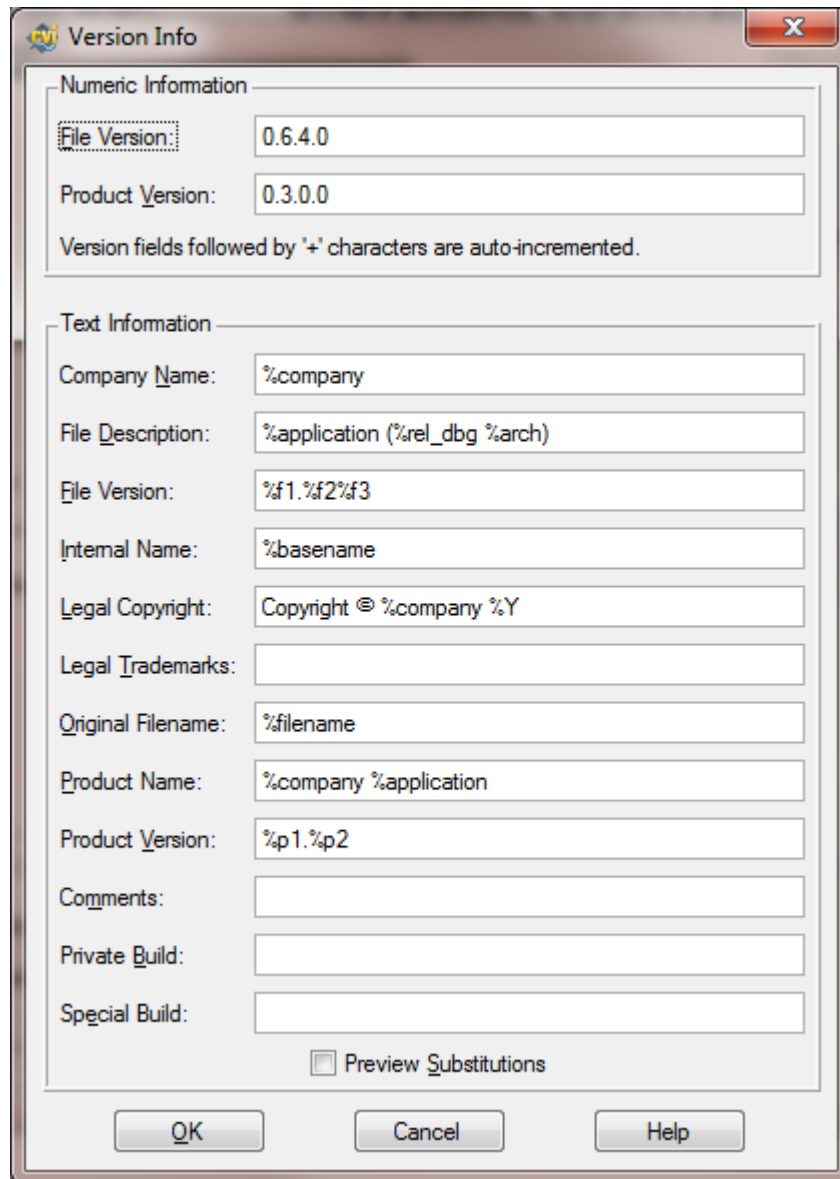
- a. Using the “File...” menu item, select “Open...”, and then select “Workspace(*.cws)”. From the dialog box, select the project file “ri2461e.cws” in the “ri2461e_edit” directory and set “PXIe-2461 UCT Control Panel” as the active project. From the project tree the active project (Bold typeface). If not right click on the “Ri2461e” name and select “Set Active Project”



- b. Edit the source and uir files as necessary. Ensure that the revision in the UIR “About” panel is updated to the next revision.
- c. Select the “Build->Target Settings” menu item. The Target Settings should match the selections shown below:



- d. Click on the “Version Info...” button. Ensure that the Version info is updated so that the file version matches the version assigned to the driver in step 6(f) of section 5.4 of this document.



- e. Once the version is updated to the correct value, press the OK button
 - f. From the project panel, select **“Build->Configuration”** and make sure “Release” is selected.
 - g. Select “Build->Create Release Executable”. LabWindows/CVI will produce the executable file “PXIe-2461 UCT Control Panel.exe”
4. Validate the Soft Front Panel to ensure that all operations of the panel still work properly.
 5. Copy the modified files related to the driver back into the new release’s directory

5.6 Completing the Modification Process

1. Update section 6 of this document to reflect the new file revisions and the reasons for revising the software.
2. Follow the procedure in section 4.1 of this document for generating a new set of installation files.
3. Copy the modified files related to the driver ready for release directory on the ECDN network.
 - a. The ECDN (Engineering Controlled Document Network) directory, which at the time of initial release of this document was located in the "/home/Nevada" engineering network computer:
 - b. The ready for release directory is located
projects/wip/ready_for_release/<part number>/<revision>

Where

<part number> is the part number of the installation disk as identified in paragraph 1 of this document (e.g. "922746")

<revision> is the release revision for this

 - i. Create an "eng" subfolder and copy all the files related to the driver including this document.
 - ii. Create a "prod" subfolder and place a copy of the new set of installation files.
4. Place the validation data in the product folder, and attach a validation data cover sheet (work instruction EW 7.3)
5. Generate the Engineering Change Requests to update this Software Document (P/N 922746-900) and the installation disk (P/N 922746). Generate the change requests per ISO procedure *EP4, Engineering Document Control, Change Control, and Repro Services*.

6 Software Revision History

Revision A:

Original release of the 32-bit (WIN95 and WINNT) frameworks
Numeric driver revision is 0.64

7 References

EW 7.2 - Software Document Format and Contents
EW 7.5 - Software Validation Cover Sheet
EP4 - Engineering Document Control, Change Control, and Repro Services
EP7 – Software Development