

# QUICK REFERENCE

# LabWindows/CVI™

National Instruments LabWindows/CVI is a proven test and measurement ANSI C development environment that increases the productivity of engineers and scientists. LabWindows/CVI streamlines application development with hardware configuration assistants, comprehensive debugging tools, and interactive execution utilities you can use to run functions at design time. Use the built-in measurement libraries to rapidly develop complex applications such as multithreaded programs and ActiveX server/client programs. The flexibility of LabWindows/CVI optimizes data acquisition, analysis, and presentation in test and measurement applications.

## System Requirements

- Personal computer using a Pentium 1GHz or higher microprocessor
- Microsoft Windows Vista/XP or Windows 2000 Service Pack 3 or later
- 1024 x 768 resolution (or higher) video adapter
- Minimum of 128 MB of RAM, 256 MB recommended
- 200 MB free hard disk space
- Microsoft-compatible mouse

## Product Resources

National Instruments provides extensive product resources for new and experienced LabWindows/CVI users.

### Online Resources

For complete technical information, developer exchange opportunities, and the latest news about LabWindows/CVI, visit [ni.com/cvi](http://ni.com/cvi):

- Technical support
- Online community
- Example programs
- Application notes and white papers
- Add-on products
- Training information
- Product tutorials

### Example Programs

Use the National Instruments Example Finder to browse and search installed examples and examples on NI Developer Zone. To launch the NI Example Finder from LabWindows/CVI, select **Help»Find Examples**.

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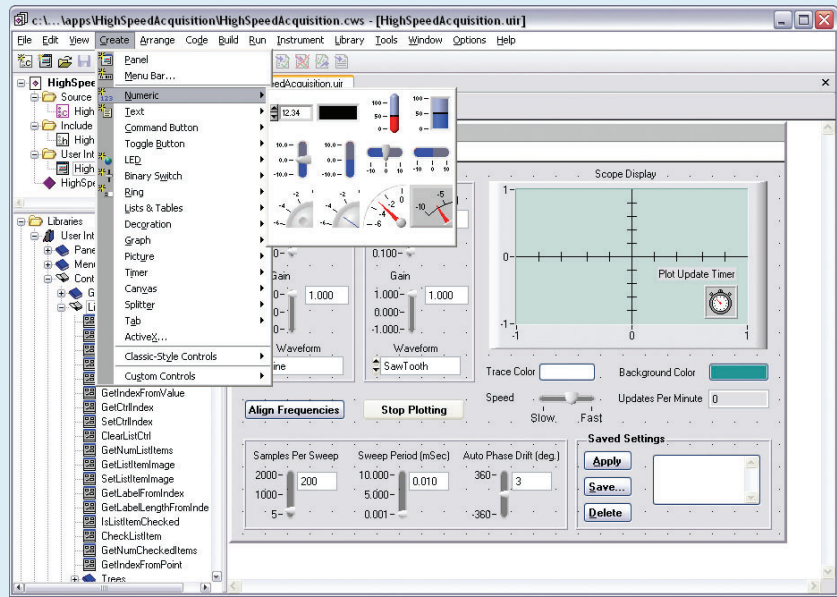
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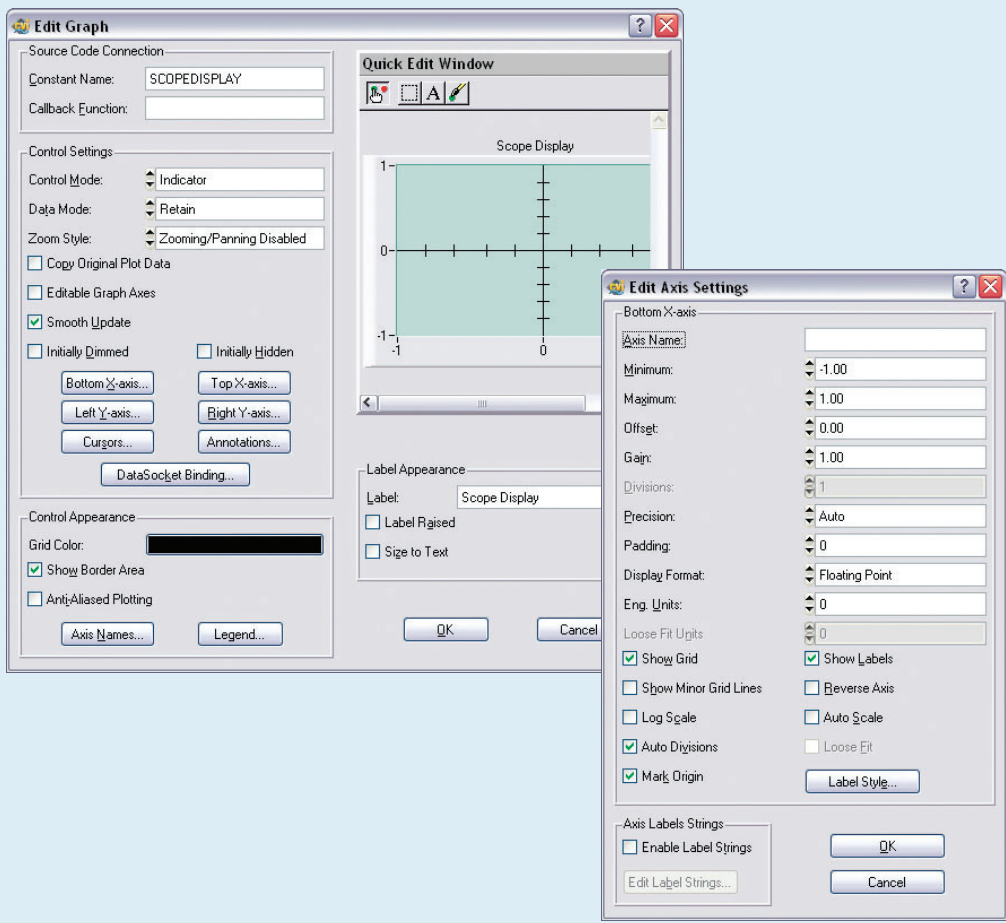
# LabWindows/CVI

LabWindows/CVI meets the changing needs of test engineers with an interactive development environment designed for virtual instrumentation. With easy-to-use development tools, you can quickly create, configure, and display measurements during program design, verification, and testing. LabWindows/CVI automates much of the manual coding and compiling.

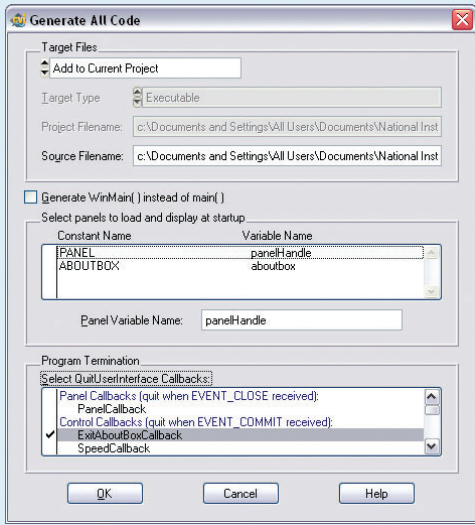
- 1 Designing User Interfaces**  
Design graphical user interfaces (GUIs) in the intuitive User Interface Editor. Select from controls designed specifically for instrumentation.



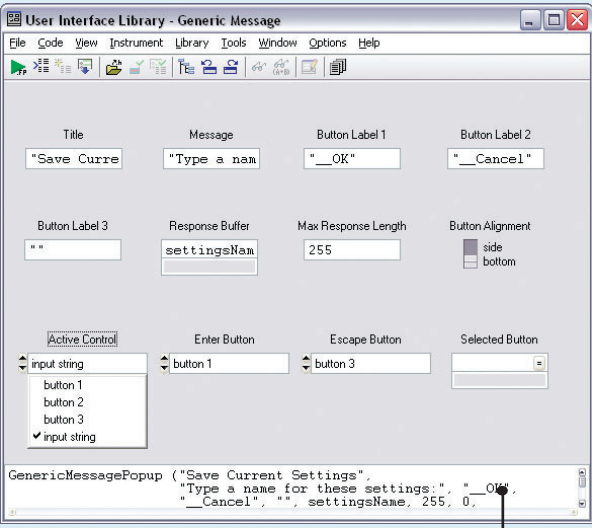
- 2 Customizing Controls**  
Customize each GUI control with easy-to-use dialog boxes.



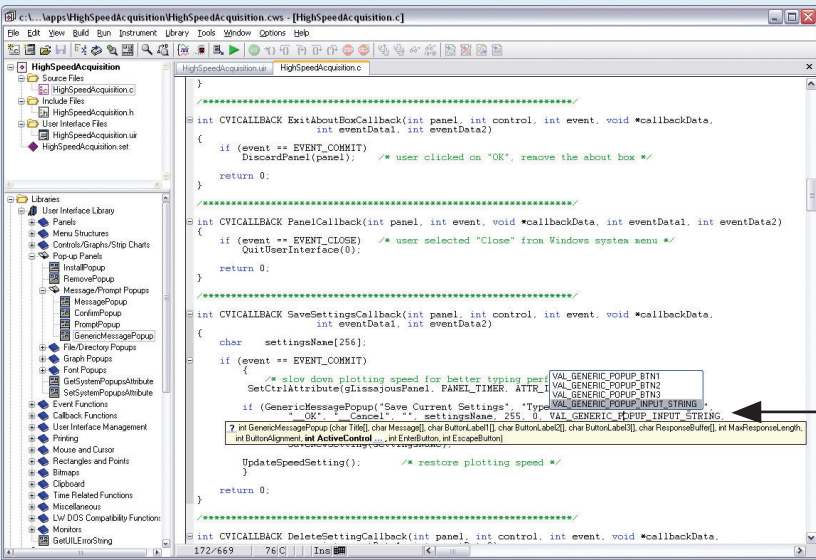
- 3 Generating Code**  
Automatically generate an ANSI C program based on the GUI with LabWindows/CVI CodeBuilder. CodeBuilder creates code that responds automatically to user events such as mouse clicks, key presses, and menu selections.



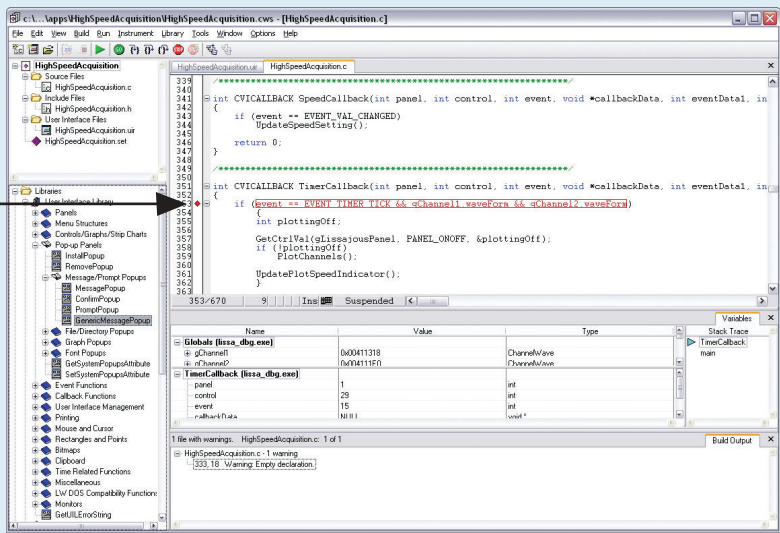
- 4 Using Function Panels**  
Use interactive function panels to generate library calls, test the calls, and insert them into the program. A function panel is a graphical representation of a LabWindows/CVI function and its parameters.



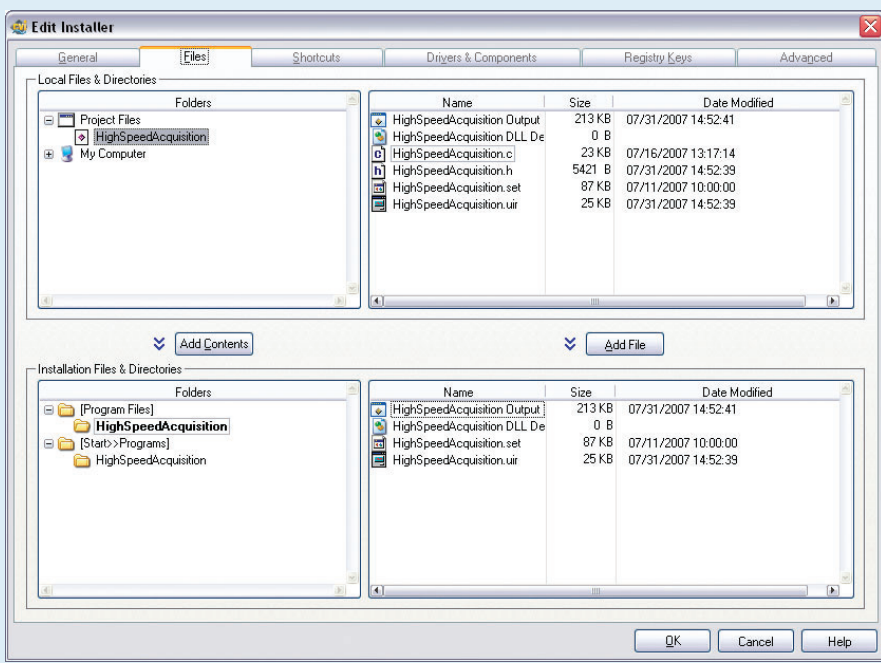
- 5 Editing Source Code**  
Complete your program using the built-in source editor. Use the source code completion options to view functions, variables, prototypes, and function help within the Source window. You also can access input selection dialog boxes for parameters and declare parameter variables from within the Source window.



- 6 Debugging**  
Use LabWindows/CVI debugging tools to catch common programming mistakes. The patented User Protection feature automatically checks for invalid program behavior. Set breakpoints and use tooltips to pause program execution and view or modify variable values.



- 7 Distributing Applications**  
Create a distribution to package your LabWindows/CVI application and all of its dependencies so that you can distribute your application to another computer.



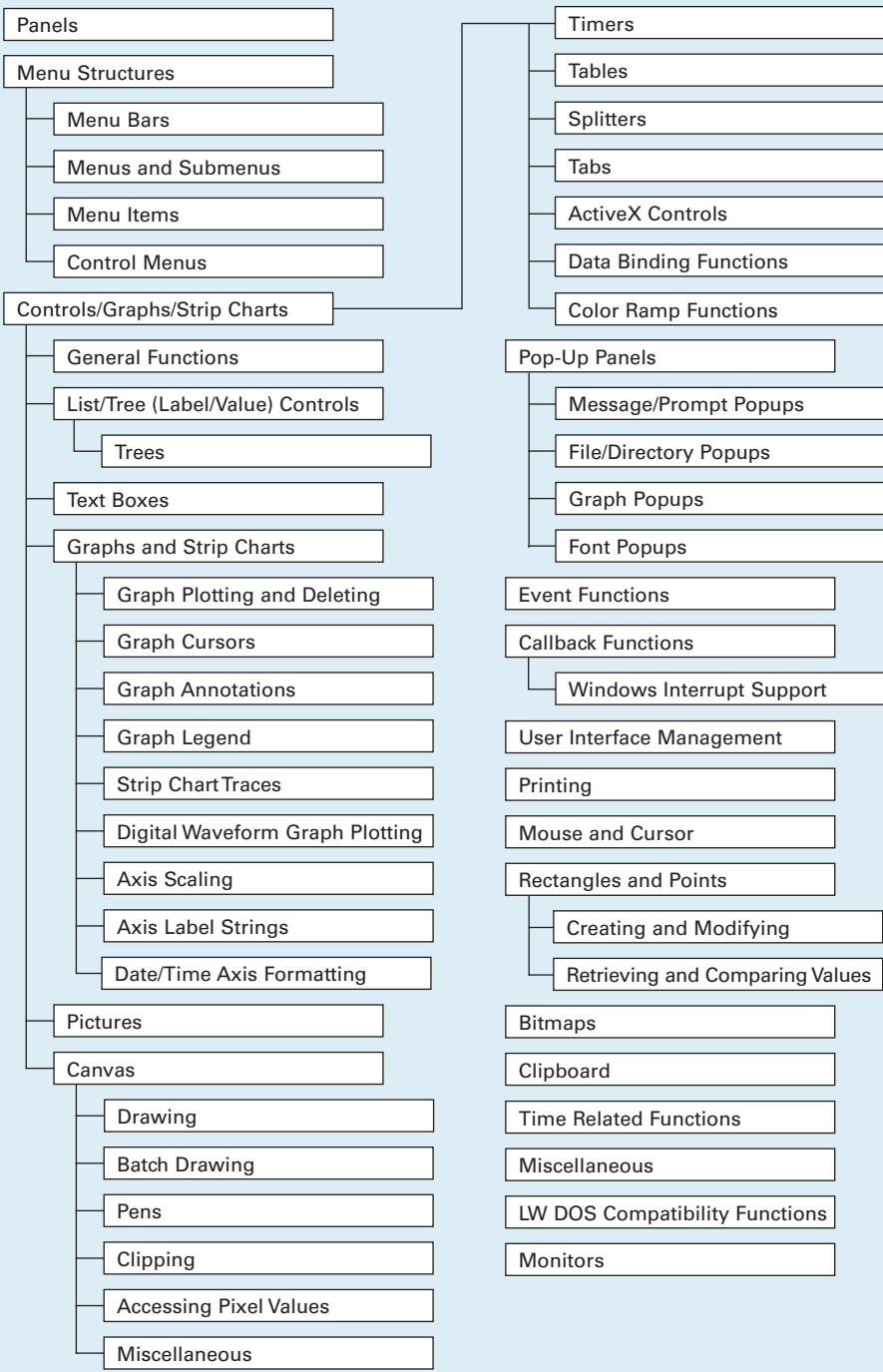


# LabWindows/CVI

Use built-in instrumentation libraries to interface test applications to the outside world. LabWindows/CVI includes a large set of run-time libraries for instrument control, data acquisition, analysis, and user interface creation. This chart illustrates the classes in each library. To find specific functions, press <Ctrl-Shift-P> in the Source window. You also can use the Library Tree to browse to and search for functions.

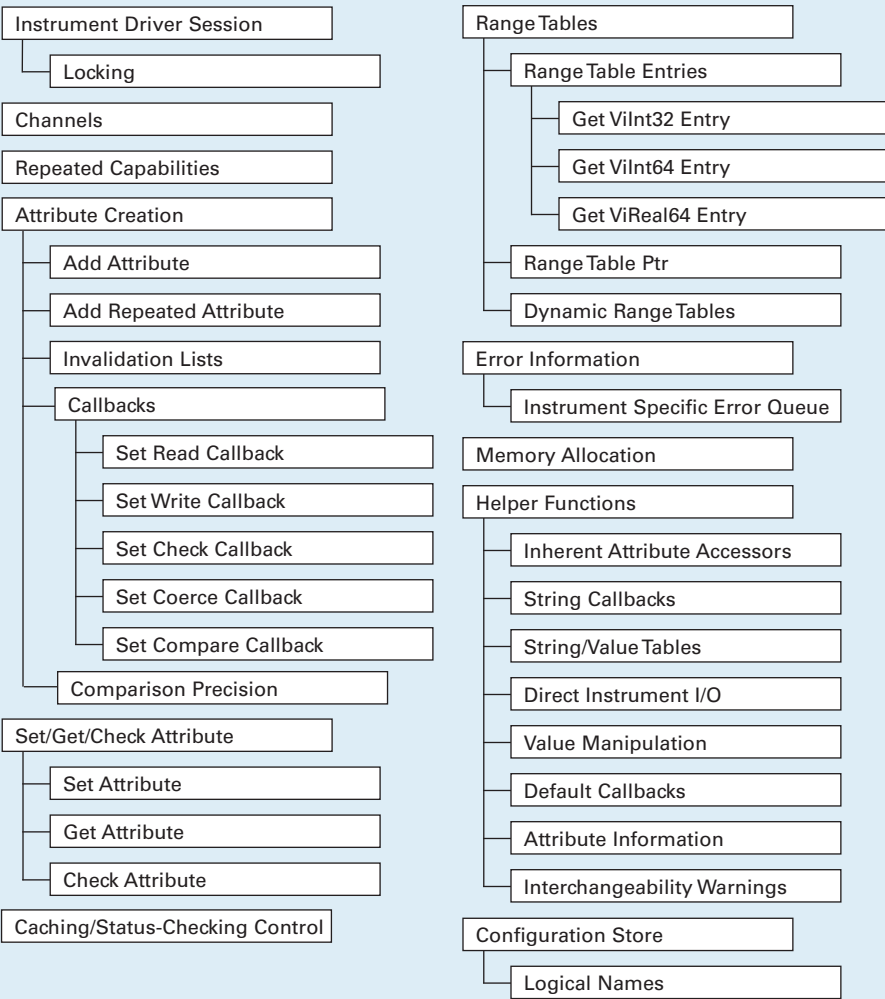
### User Interface Library

The User Interface Library contains functions that programmatically control the user interface.



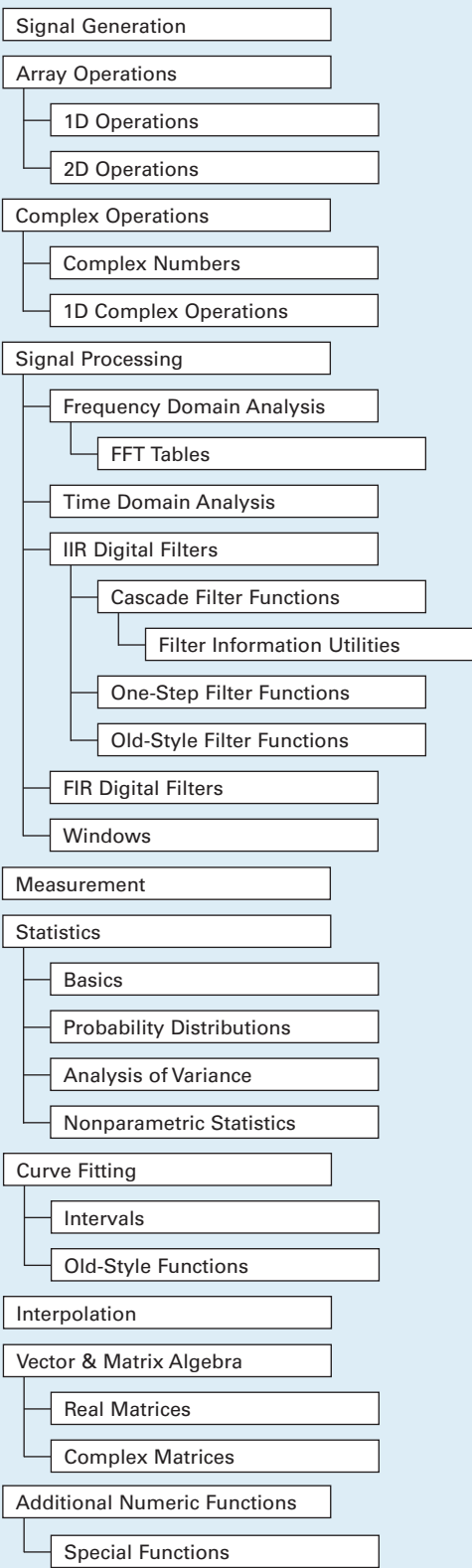
### IVI Library


The IVI Library contains functions that program and control IVI drivers. IVI-compliant drivers have a standard interface, so you can interchange similar instruments without changing your code.



### Advanced Analysis Library

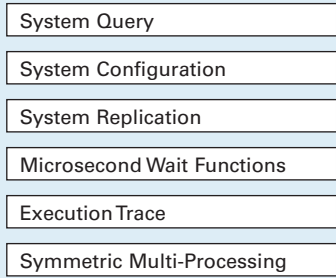
The Advanced Analysis Library contains functions that simulate and analyze large sets of numerical data quickly and efficiently.



 **Note** If you have the LabWindows/CVI Base Package, refer to the Library Tree for a list of the standard Analysis Library classes.

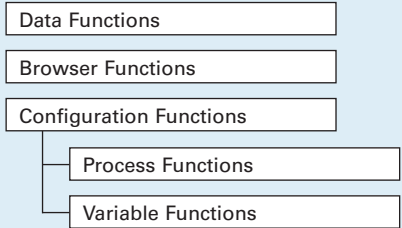
### Real-Time Utility Library

The LabWindows/CVI Real-Time Module includes the Real-Time Utility Library, which contains functions for replicating a real-time (RT) system, configuring timing, creating and configuring trace sessions, and configuring RT targets.



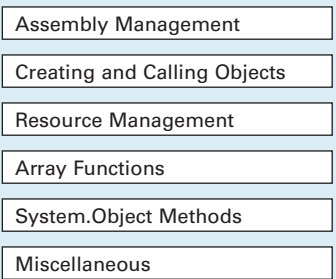
### Network Variable Library

The Network Variable Library contains functions for reading from and writing to network variables.



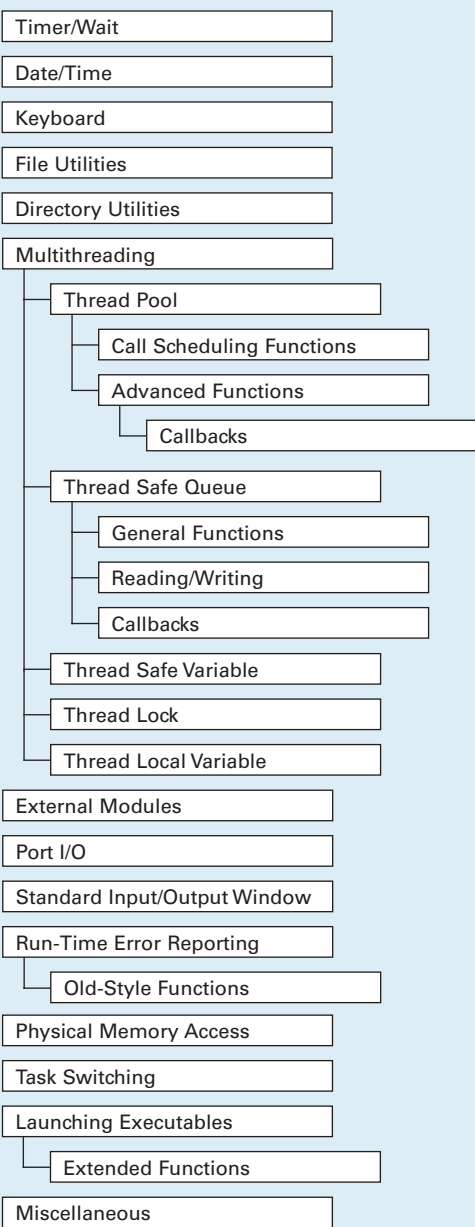
### .NET Library

The .NET Library contains functions that facilitate calling into .NET assemblies.



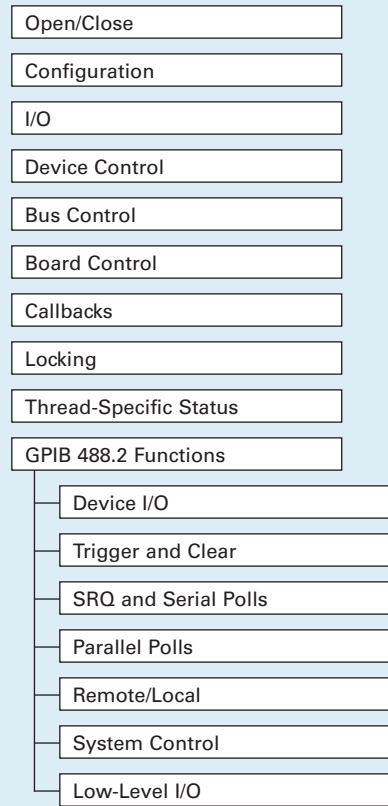
### Utility Library

The Utility Library contains functions that perform various operations, including using the system timer, managing disk files, launching another executable, and using multiple threads.



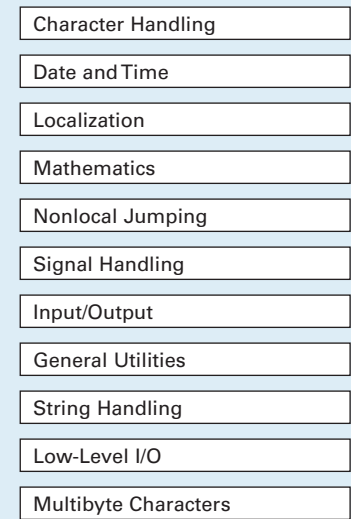
### GPIO/GPIO 488.2 Library

The GPIO/GPIO 488.2 Library contains functions that communicate with GPIO instruments, control GPIO boards, and acquire GPIO status information.



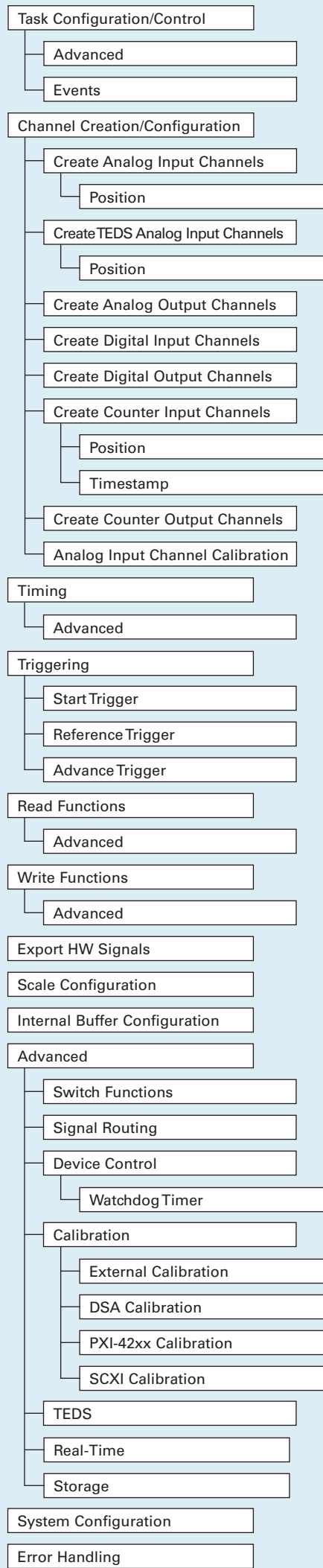
### ANSI C Library


The ANSI C Library contains standard ANSI C functions, which you can use in LabWindows/CVI.



### NI-DAQmx Library

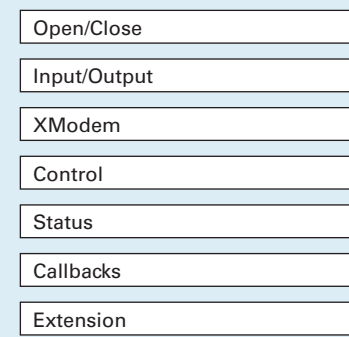
The NI-DAQmx Library contains functions that communicate with and control data acquisition devices.



 **Note** Refer to the Library Tree for a list of the Traditional NI-DAQ Library classes.

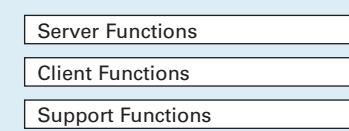
### RS-232 Library

The RS-232 Library contains functions that control multiple RS-232 ports using interrupt-driven I/O.



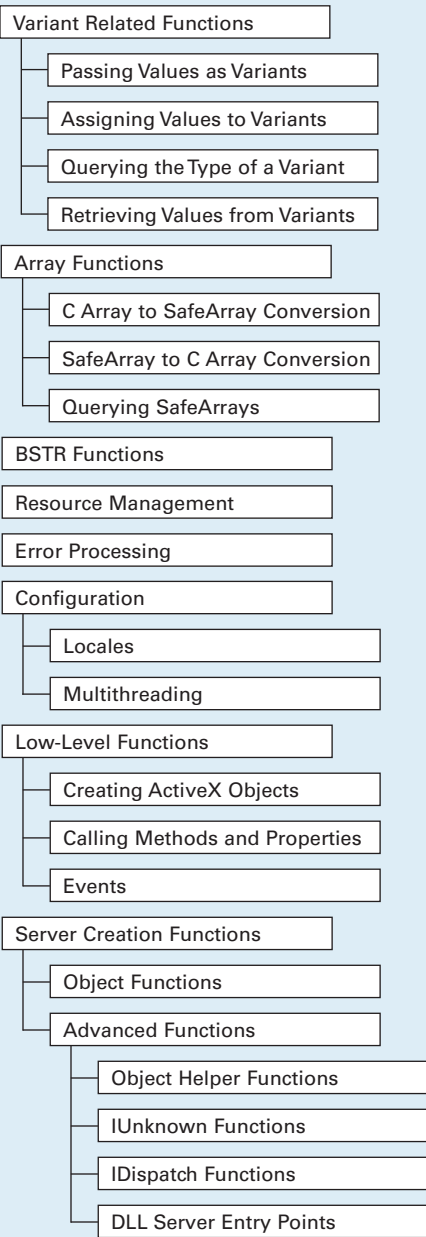
### TCP Support Library

The TCP Support Library contains functions that provide support for a platform-independent interface to the reliable, byte-stream oriented, network connection capabilities of TCP/IP.



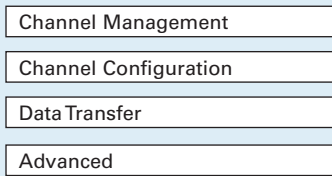
### ActiveX Library

The ActiveX Library contains functions that create and control ActiveX servers. Use these functions in conjunction with ActiveX Controller instrument drivers, which you can generate using the ActiveX Controller Wizard. Also use the ActiveX Library functions with ActiveX server code, which you can generate using the Create ActiveX Server Wizard.



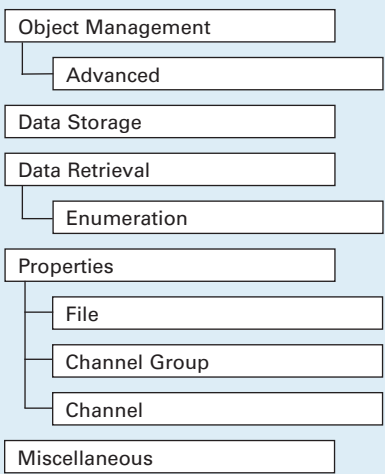
### UDP Support Library

The UDP Support Library contains functions that provide support to a platform-independent interface to the unicast, broadcast, and multicast capabilities of UDP.



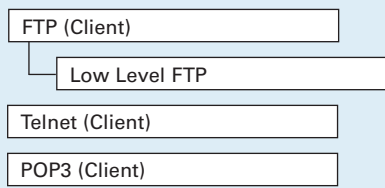
### TDM Streaming Library


The TDM Streaming Library contains functions that store and retrieve test and measurement data using the .tdms file format. This file format is optimized for high performance data streaming.



### Internet Library

The Internet Library contains functions that communicate with and receive files and commands from remote servers.



 **Note** The LabWindows/CVI Base Package does not include the Internet Library.