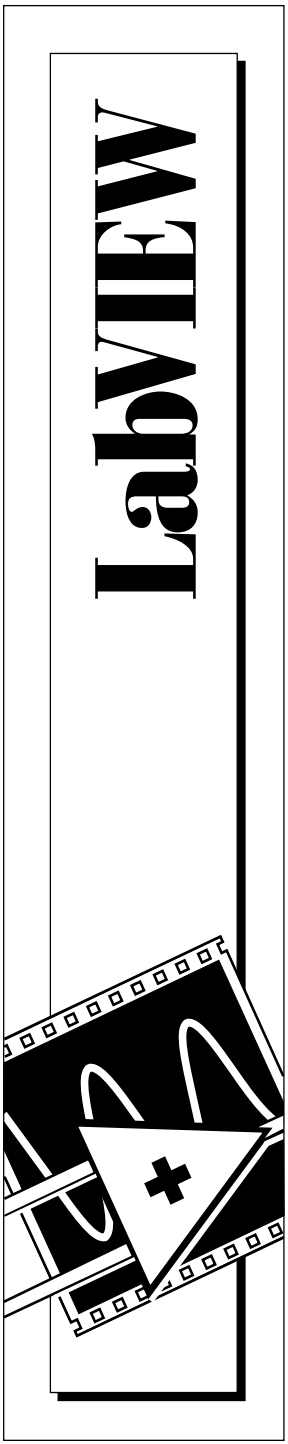


Automation Symbols Toolkit User Guide

January 1997
Part Number 321394A-01

Internet Support

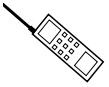
support@natinst.com
E-mail: info@natinst.com
FTP Site: ftp.natinst.com
Web Address: http://www.natinst.com

Bulletin Board Support

BBS United States: (512) 794-5422
BBS United Kingdom: 01635 551422
BBS France: 01 48 65 15 59

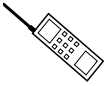
Fax-on-Demand Support

(512) 418-1111



Telephone Support (U.S.)

Tel: (512) 795-8248
Fax: (512) 794-5678



International Offices

Australia 02 9874 4100, Austria 0662 45 79 90 0, Belgium 02 757 00 20,
Canada (Ontario) 905 785 0085, Canada (Québec) 514 694 8521, Denmark 45 76 26 00,
Finland 09 527 2321, France 01 48 14 24 24, Germany 089 741 31 30, Hong Kong 2645 3186,
Israel 03 5734815, Italy 02 413091, Japan 03 5472 2970, Korea 02 596 7456,
Mexico 5 520 2635, Netherlands 0348 433466, Norway 32 84 84 00, Singapore 2265886,
Spain 91 640 0085, Sweden 08 730 49 70, Switzerland 056 200 51 51, Taiwan 02 377 1200,
U.K. 01635 523545

National Instruments Corporate Headquarters

6504 Bridge Point Parkway Austin, TX 78730-5039 Tel: (512) 794-0100

Important Information

Warranty

The media on which you receive National Instruments software are warranted not to fail to execute programming instructions, due to defects in materials and workmanship, for a period of 90 days from date of shipment, as evidenced by receipts or other documentation. National Instruments will, at its option, repair or replace software media that do not execute programming instructions if National Instruments receives notice of such defects during the warranty period. National Instruments does not warrant that the operation of the software shall be uninterrupted or error free.

A Return Material Authorization (RMA) number must be obtained from the factory and clearly marked on the outside of the package before any equipment will be accepted for warranty work. National Instruments will pay the shipping costs of returning to the owner parts which are covered by warranty.

National Instruments believes that the information in this manual is accurate. The document has been carefully reviewed for technical accuracy. In the event that technical or typographical errors exist, National Instruments reserves the right to make changes to subsequent editions of this document without prior notice to holders of this edition. The reader should consult National Instruments if errors are suspected. In no event shall National Instruments be liable for any damages arising out of or related to this document or the information contained in it.

EXCEPT AS SPECIFIED HEREIN, NATIONAL INSTRUMENTS MAKES NO WARRANTIES, EXPRESS OR IMPLIED, AND SPECIFICALLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. CUSTOMER'S RIGHT TO RECOVER DAMAGES CAUSED BY FAULT OR NEGLIGENCE ON THE PART OF NATIONAL INSTRUMENTS SHALL BE LIMITED TO THE AMOUNT THERETOFORE PAID BY THE CUSTOMER. NATIONAL INSTRUMENTS WILL NOT BE LIABLE FOR DAMAGES RESULTING FROM LOSS OF DATA, PROFITS, USE OF PRODUCTS, OR INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF ADVISED OF THE POSSIBILITY THEREOF. This limitation of the liability of National Instruments will apply regardless of the form of action, whether in contract or tort, including negligence. Any action against National Instruments must be brought within one year after the cause of action accrues. National Instruments shall not be liable for any delay in performance due to causes beyond its reasonable control. The warranty provided herein does not cover damages, defects, malfunctions, or service failures caused by owner's failure to follow the National Instruments installation, operation, or maintenance instructions; owner's modification of the product; owner's abuse, misuse, or negligent acts; and power failure or surges, fire, flood, accident, actions of third parties, or other events outside reasonable control.

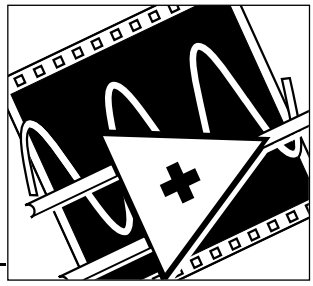
Copyright

Trademarks

WARNING REGARDING MEDICAL AND CLINICAL USE OF NATIONAL INSTRUMENTS PRODUCTS

National Instruments products are not designed with components and testing intended to ensure a level of reliability suitable for use in treatment and diagnosis of humans. Applications of National Instruments products involving medical or clinical treatment can create a potential for accidental injury caused by product failure, or by errors on the part of the user or application designer. Any use or application of National Instruments products for or involving medical or clinical treatment must be performed by properly trained and qualified medical personnel, and all traditional medical safeguards, equipment, and procedures that are appropriate in the particular situation to prevent serious injury or death should always continue to be used when National Instruments products are being used. National Instruments products are NOT intended to be a substitute for any form of established process, procedure, or equipment used to monitor or safeguard human health and safety in medical or clinical treatment.

Automation Symbols Toolkit User Guide



The Automation Symbols Toolkit is a set of controls and images in the shape of International Society for Measurement and Control (ISA) standard symbols[1] that you can use in any LabVIEW VI.

Contents

Introduction

This manual includes instructions for installing the Automation Symbols Toolkit and describes the features associated with each control. This manual also explains how to access the automation symbols from either of the following two sources:

- The Automation Symbol Catalog Utility—A tool that contains a set of images you can use in any LabVIEW VI.
- The User Controls Palette in LabVIEW—A set of front panel decorations and controls.

1. International Society for Measurement and Control (ISA) 1985. *Graphic Symbols for Process Display*. ANSI/ISA-S5.5 – 1985. North Carolina: International Society for Measurement and Control.

The images from these sources have different characteristics, so you must use and manipulate them in different ways.

Installation

The following section describes how to install the Automation Symbols Toolkit for Windows, Macintosh, Sun, HP-UX, and Concurrent PowerMAX. To install this toolkit, follow the directions below for your particular platform.

Complete the instructions in the installer to choose any options available. You must have full write access to the LabVIEW directory where you plan to install these libraries.

Windows 95/NT/3.1

Launch `SETUP.EXE` from Disk 1.

68K/Power Mac

Launch `AST Install` from Disk 1.

SUN and HP-UX

1. Insert the first floppy disk into the floppy disk drive.
2. Type one of the following commands, depending on your platform.
   - For HP-UX, type the following UNIX command:
     ```
     tar xvf /dev/rfloppy/c20Ad1s0 INSTALL
     ```

☞ **Note:** ***The device name*** `c20Ad1s0` ***might be different on your machine.***

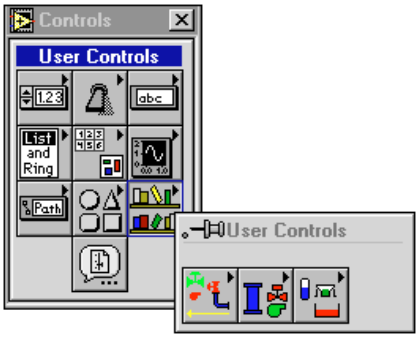
   - For Solaris 1, type the following UNIX command:
     ```
     tar xvf /dev/rfd0c INSTALL
     ```
   - For Solaris 2, type the following UNIX command:
     ```
     volcheck
     tar xvf /vol/dev/aliases/floppy0 INSTALL
     ```
3. Run the installation program by typing the following command:
   ```
   ./INSTALL
   ```
4. Follow the instructions on your screen. A message prompts you to insert the subsequent floppy disks.

Concurrent PowerMAX

Please refer to the *Release Notes for the PID Control and Automation Symbols Toolkit for LabVIEW*, part number 321516-01.

User Controls Palette

This toolkit installs three new menus to the User Controls palette in LabVIEW. The User Controls palette is shown below.



From the User Controls palette, you can access the following subpalettes:

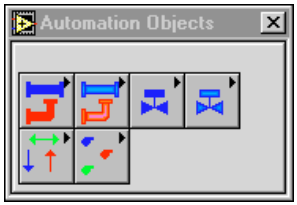
- Automation Objects palette
- Pipes, Pumps, Valves palette
- Vessels palette

These palettes include LabVIEW decorations and custom controls. You can resize and color decorations and custom controls proportionally, as with any other LabVIEW object, but the custom controls also can replace standard LabVIEW controls directly. To customize a decoration, use the control editor to import the decoration to a LabVIEW control.

Automation Objects Palette

The Automation Objects palette contains several decorations in the shapes of two-dimensional pipes, three-dimensional pipes, two-dimensional valves, three-dimensional valves, lines and arrows,

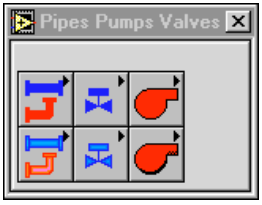
and pumps and motors. The Automation Objects palette is shown below.



All the items on this palette are LabVIEW decorations, and you can use them as static images in a VI, or you can import them into a LabVIEW control.

Pipes, Pumps, Valves Palette

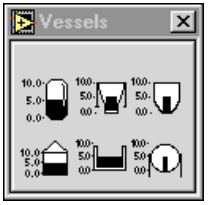
The Pipes, Pumps, Valves palette is a collection of custom Boolean controls in the shape of two-dimensional and three-dimensional pipes, pumps, and valves. The Pipes, Pumps, Valves palette is shown below.



You can use these objects as Boolean controls and indicators in a VI.

Vessels Palette

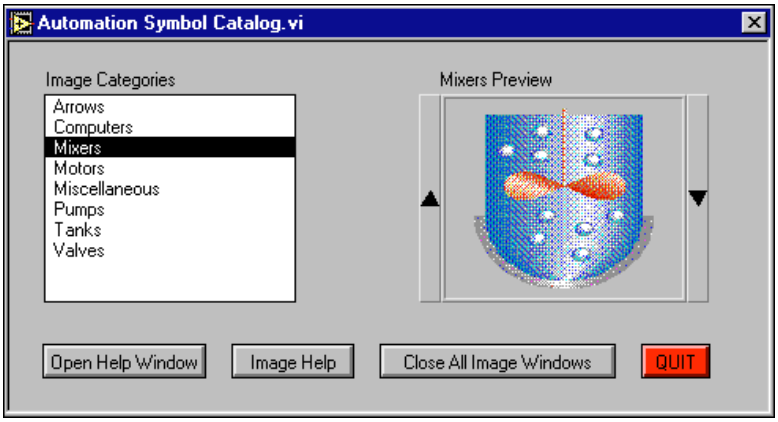
The Vessels palette contains six custom numeric controls in the shape of various vessels. The Vessels palette is shown below.



These objects function similarly to other standard LabVIEW controls. You can use these objects as numeric controls and indicators in a VI.

Automation Symbol Catalog Utility

The Automation Symbol Catalog displays and accesses additional process control symbol images that you can use in any LabVIEW VI. You find this utility in the **Project** menu. When you select **Project»Automation Symbol Catalog**, the following dialog box appears.



Selecting an Image Category from the listbox displays images in the Preview window (as in the example above). To preview the images available in a category, complete one of the following steps:

- Click on the arrows on either side of the Preview window.
- Click and hold the mouse button to display a summary palette of all images in that category. To display a larger version of the image in the Preview window, select an image in the summary palette.

You cannot copy images from the Preview window.

To access any of the images, double-click on a category to open a VI with images in that category. You can copy any image to any other LabVIEW VI. These images are similar to LabVIEW decorations in that you can use them as static pictures in a LabVIEW VI or import them into a control for customization.

☞ **Note:** ***Unlike LabVIEW decorations, some of these images cannot be resized to scale, and you cannot change image color with the LabVIEW color tool.***

You can toggle the LabVIEW help window open and closed with the **Open/Close Help Window** button. To display help on that item, place the mouse cursor over any of the items in the Automation Symbol Catalog while the help window is open.

The **Image Help** button launches the online help.

☞ **Note:** ***The Image Help feature is not available on Concurrent PowerMAX.***

The **Close All Image Windows** button automatically closes all open image topic VI windows. You can use this button to discard any open windows you no longer need.

Copying Images from the Images Catalog

You can copy any of the images in the Automation Symbol Catalog to any LabVIEW VI. To use an image, double-click on the category in the Automation Symbol Catalog that contains the desired image. A VI opens with all the images in that category.

To use any image in another VI, complete one of the following steps:

- Drag the image from the image category VI to the target VI.
- Use the clipboard functions **Copy** and **Paste** under the **Edit** menu to copy the image from the category VI and paste it to the target VI.

Once the image is in the target VI, you can resize and position it as necessary.

Importing Images and Decorations to a Custom Control

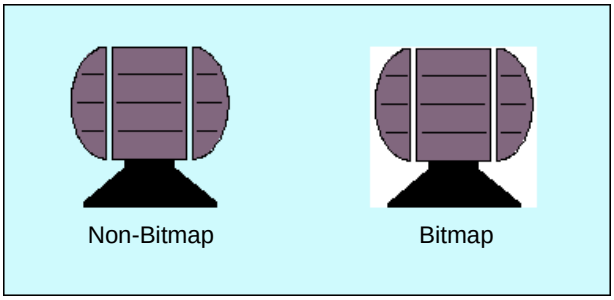
You can import any of the process control symbol decorations or images into a LabVIEW control to customize its look. For detailed information about how to customize controls, refer to Chapter 23, *Custom Controls and Type Definitions*, in the *LabVIEW User Manual*.

Differences in LabVIEW Image Types

The images in the Automation Symbol Catalog are a collection of two types of images with properties that make them very different. It is important to understand these differences so you can know how to use an image in a VI.

You can resize most images to scale without losing any detail. The edges of these images are the same as the edges of the image itself, therefore the image does not exist in a standard rectangular region of the

screen. You can see the difference in image boundaries in the figure below. A few of the images in the catalog contain the same types of properties as a standard bitmap image. When you resize these images, they typically look grainy and lose detail. You can distinguish these images because their image bounds are always rectangular.



You only can resize these images. You cannot change their form or color in LabVIEW. If any image is resized, you can set it back to its original size by popping-up on the image and selecting **Original Size**.

321394A-01 Jan97