

# IMAQ VISION FOR MEASUREMENT STUDIO

## Version 6.0

IMAQ Vision for Measurement Studio adds multipurpose image processing and machine vision capabilities to LabWindows/CVI, C programming environments, and Visual Basic. This document lists system requirements, provides installation instructions, and contains updated information about IMAQ Vision 6.0 for Measurement Studio.

## System Requirements

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To run IMAQ Vision 6.0 on your machine, you must have the following minimum system requirements:

- Microsoft Windows 2000, Windows NT 4.0 Service Pack 5 or higher, or Windows Me/9x
- 150 MB or more of free hard disk space
- 32MB RAM or more
- NI-IMAQ 2.2.1 or higher if you use NI-IMAQ driver software

## Application Development Environments

This release of IMAQ Vision for Measurement Studio supports the following Application Development Environments (ADEs) for Windows 2000/NT/Me/9x:

- LabWindows/CVI 5.0.1 and higher
- Borland C++ Builder 3.0 and higher
- Microsoft Visual C/C++ 6.0 and higher
- Microsoft Visual Basic 5.0 and higher (You need version 6.0 or higher to get the full benefit of the Machine Vision source code.)



**Note** See the LabWindows/CVI release notes for the required system configuration for LabWindows/CVI.

# Installation Instructions

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Follow these instructions to install IMAQ Vision 6.0 for Measurement Studio on your computer:

- Insert the IMAQ Vision for Measurement Studio CD
- If you do not have autorun enabled, double-click `autorun.exe`. If you have autorun enabled, `autorun.exe` runs automatically.
- Follow the instructions on your screen.

## Distributing Applications that Use IMAQ Vision

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If you want to distribute an application developed with IMAQ Vision, use the IMAQ Vision Deployment Engine. Before distributing an application developed with IMAQ Vision, you must have the IMAQ Vision Deployment Engine and an IMAQ Vision Deployment license for each target machine. Contact your National Instruments sales representative or visit [ni.com](http://ni.com) to purchase deployment licenses.

## New Functionality

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IMAQ Vision 6.0 for Measurement Studio upgrades IMAQ Vision 5.0 for LabWindows/CVI and ComponentWorks IMAQ Vision 1.0. This section summarizes the new functionality of IMAQ Vision for Measurement Studio.

### Color Pattern Matching

Color pattern matching quickly locates known reference patterns, or fiducials, in a color image. Color pattern matching can simplify a monochrome problem by improving contrast or separation of the object from the background. Color pattern matching expands the powerful IMAQ Vision grayscale pattern matching feature by locating patterns that can be distinguished only by color. In some cases, the extra color information allows the algorithm to find patterns more quickly than with grayscale pattern matching. Color pattern matching also provides extremely quick color location solutions.

### Calibration

Spatial calibration functions calibrate your image so you can make accurate, real-world measurements from images, regardless of camera perspective or lens distortion. You can set simple calibration data by hand or let IMAQ Vision automatically learn the calibration data for an image. You can then convert from pixels to real-world coordinates for simple

measurements or correct the image so you can perform complex measurements, such as blob analysis.

## Machine Vision Functions

IMAQ Vision 6.0 includes a new library of high-level, open source, machine vision functions to simplify common machine vision tasks, such as selecting regions of interest in the shapes of points, lines, rectangles, and annuli. Other machine vision functions give you the ability to define coordinate systems based on features in an image, which allows you to make reliable measurements even as objects in your image move and change orientation. Functions that count and measure objects, measure intensities, measure distances between edges, and locate edges all make machine vision tasks easier than before.

## Analytic Geometry Functions

The new analytic geometry functions provide common analytic geometry algorithms, such as line fitting with outlier rejection, circle and ellipse fitting, calculating line intersections, bisecting lines, and finding the angle between lines. You can also use analytic geometry functions to calculate polygon areas, get points along a line or region of interest, and create a coordinate reference system based on an arbitrary plane.

## Regions of Interest

Two new regions of interest—the rotated rectangle and the annulus—give you more flexibility in selecting particular regions in an image for processing and analysis. These new regions work with all new machine vision functions and previously existing functions.

## Image Display Options

IMAQ Vision 6.0 allows you to specify display options for 16-bit grayscale images. The display options are as follows:

- Bitwise-shift the pixel values to use the most significant bits
- Automatically use the dynamic range of pixel values in an image to scale the image to an 8-bit range
- Specify a user-defined range of pixel values to dynamically scale into an 8-bit range.

## Additional Features Since ComponentWorks IMAQ Vision 1.0

IMAQ Vision 6.0 adds functionality in the form of pattern matching, caliper functions, barcode functions, LCD functions, meter functions, enhanced color support, enhanced ROI support, and new file formats.

# About Your IMAQ Vision Documentation Set

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In addition to these release notes, the IMAQ Vision documentation set consists of the following:

- *IMAQ Vision Concepts Manual*—This manual contains conceptual information about machine vision and image processing.
- *IMAQ Vision for Measurement Studio User Manual: LabWindows/CVI*—This manual contains information about how to build your vision applications using IMAQ Vision for LabWindows/CVI.
- IMAQ Vision for LabWindows/CVI function reference—This help file contains information about the functions for IMAQ Vision for LabWindow/CVI.
- *IMAQ Vision for Measurement Studio User Manual: Visual Basic*—This manual contains information on how to build your vision applications using IMAQ Vision for Visual Basic.
- IMAQ Vision for Visual Basic reference—This help file contains information about the properties, methods, and events for IMAQ Vision for Visual Basic.
- `MS_Readme.wri`—This file contains last-minute information concerning this release of IMAQ Vision for Measurement Studio.

For your convenience, the printed IMAQ Vision documentation is also available in Portable Document Format (PDF), which you can access from the **Start»Programs»National Instruments»Vision»Documentation** menu. You need Adobe Acrobat Reader to open these files.



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