

VISION GUIDE  
INTEGRATED ROBOT  
GUIDANCE



# Vision Guide: Powerfully simple

## Designed for vision guidance applications,

Epson Vision Guide makes precision robotic guidance easy to use. Fully integrated within the Epson RC+® development environment for easy configuration and calibration, this intuitive solution features a point-and-click interface that makes it simple for users of all levels. It also features wizards and auto calibration methods, plus a combination robot/vision simulator for rapid offline testing. With a single point of support for both robots and vision guidance, Epson Vision Guide allows for fast development and simplified maintenance. An efficient and versatile solution, it also includes tools to address inspection, gauging and barcodes.







# Integrated vision guidance with easy configuration and calibration

**Integrated vision guidance solution** — designed with tools specifically made for vision guidance applications

**Seamless integration** — works with all current Epson robots

**Wizard-based setup** — for fixed and mobile camera/robot calibration; with auto calibration and no-touch calibration solutions

**Fast development with point-and-click interface** — fully integrated into the Epson RC+ development environment

**Combination robot/vision simulator** — for rapid offline testing and development

**Low-cost scalable system** — accommodates multi-camera applications

**High-precision parts placement** — features built-in kinematic equations and advanced algorithms

**Powerful vision tools** — full suite of options for a wide variety of applications and industries

**Intuitive operation** — easy to learn and use for entry-level to advanced users

**Powerful throughput** — CPU and vision processing runs parallel with Epson robot controllers

**Expansive camera support** — supports up to 12 cameras (GigE and USB); up to 20 MP monochrome and color cameras

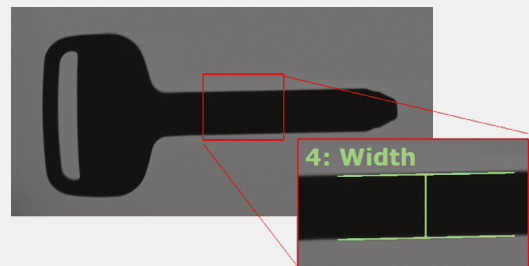
# Applications

**Vision Guide supports the common vision applications required** in factories today. These include vision guidance, inspection, gauging and identification.

## VISION GUIDANCE



## GAUGING



## IDENTIFICATION



QR Code

Image  
1234567890

Optical Character Recognition

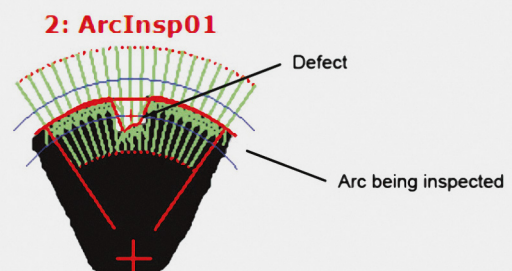


UPC Barcode



Data Matrix

## INSPECTION



# Vision guidance and inspection made easy

**With advanced tools and parallel processing,** Vision Guide optimizes performance, making it faster, more precise and easier to use.



## Precision

With high resolution cameras, powerful tools and integrated calibrations, Vision Guide helps to optimize guidance and precision.

## High Speed

Fast frame rates and high-speed processors allow Vision Guide to maximize throughput.

## Parallel Processing

Vision Guide offers powerful independent processors for both vision and robot motion calculations, enabling vision processing to be done in parallel with robot motion.

This allows simultaneous processing for maximum performance.

# Intuitive by design

With a point-and-click interface, **just three core commands (VRUN, VGET and VSET)**, powerful object tools and built-in calibration data, all integrated within Epson RC+ Development Software, Vision Guide is easy for anyone to learn and use.

The screenshot shows the Vision Guide software interface. On the left is a 'Toolbox' with a list of tools: Geometric, Correlation, Blob, Edge, Polar, Arc Finder, Line Finder, Box Finder, Corner Finder, Frame, Line, Point, and Contour. A callout points to this list with the label 'Vision Objects'. In the center is the 'Image Window' showing a grayscale image of several circular objects with green bounding boxes and labels like '3: Point01-1' through '3: Point01-10'. A callout points to this window with the label 'Vision Objects'. On the right is the 'Flowchart' panel showing a sequence of steps: 'Step 1: Geometric Geom01', 'Step 2: Point01', and 'Step 3: Point01'. A callout points to this panel with the label 'Flowchart'. Below the flowchart is the 'Object Properties and Results' panel, which contains two tables. The first table is titled 'Step 3: Point01' and lists properties like 'AboutGeomDef', 'AngleGeom', 'CenterGeom', 'CurrentResult', 'Failed', 'FillColor', 'Frame', 'FrameResult', 'Graphics', and 'LabelGeomColor'. The second table is titled 'Result 1 of 10' and lists properties like 'Angle', 'CenterGeom', 'CurrentResult', 'Failed', 'FillColor', 'Frame', 'FrameResult', 'Graphics', and 'LabelGeomColor'. A callout points to this panel with the label 'Object Properties and Results'. At the top right, a callout points to the 'Vision Button' with the text 'Launch Vision Guide directly from Epson RC+'. At the bottom left, a callout points to the 'Vision Objects' list with the text 'Drag and drop vision objects directly onto the image display window'. At the bottom right, a callout points to the 'Object Properties and Results' panel with the text 'Users can input and adjust data. The software automatically generates associated results based on input parameters'.

**Vision Button**  
Launch Vision Guide  
directly from Epson RC+

**Flowchart**  
Easily identify how the  
sequences are composed

**Vision Objects**  
Drag and drop vision objects  
directly onto the image  
display window

**Object Properties and Results**  
Users can input and adjust data. The software automatically  
generates associated results based on input parameters



# Versatile tool set

**Vision Guide features a series of objects** that can be used to easily find, measure and inspect parts and features. With everything from Geometric search to Blob and Edge finding tools, these objects make it easy to optimize virtually any vision application.



## Geometric

Finds a model based on geometric features. Used for determining position and orientation.



## Blob

Computes geometric, topological and other image features. Used for determining presence/absence, size, positioning and orientation.



## Correlation

Measures quality compared to previously trained features for alignment, inspection, position and orientation.



## Edge

Locates edges by identifying changes in grey value from dark to light or light to dark.



## ImageOp

Performs morphology, convolution, flip, binarize, rotate and more for a region of interest.



## Polar

Uses correlation of a rotational area to determine object orientation.



## OCR

Optical Character Recognition is used to recognize character strings in an image.



## CodeReader

Reads bar or two-dimensional codes, including data matrix and others.



## ColorMatch

Detects user-defined colors.



## LineFinder

Determines the location of a line in an image.



## LineInspector

Identifies deviations on a linear path between two points.



## ArcFinder

Determines the radius and center point of an arc or major/minor axes and the angle of an ellipse.



## ArcInspector

Determines abnormalities in the arc of a circle/ellipse.



## DefectFinder

Compares a template image to an input image to identify defects.



## Frame

Provides dynamic position reference for other vision objects.



## Line

Defines a line between two objects.



## Point

Defines reference positions for other objects.



## BoxFinder

Determines the center of an object.



## CornerFinder

Identifies the intersection position of two lines that form a corner.

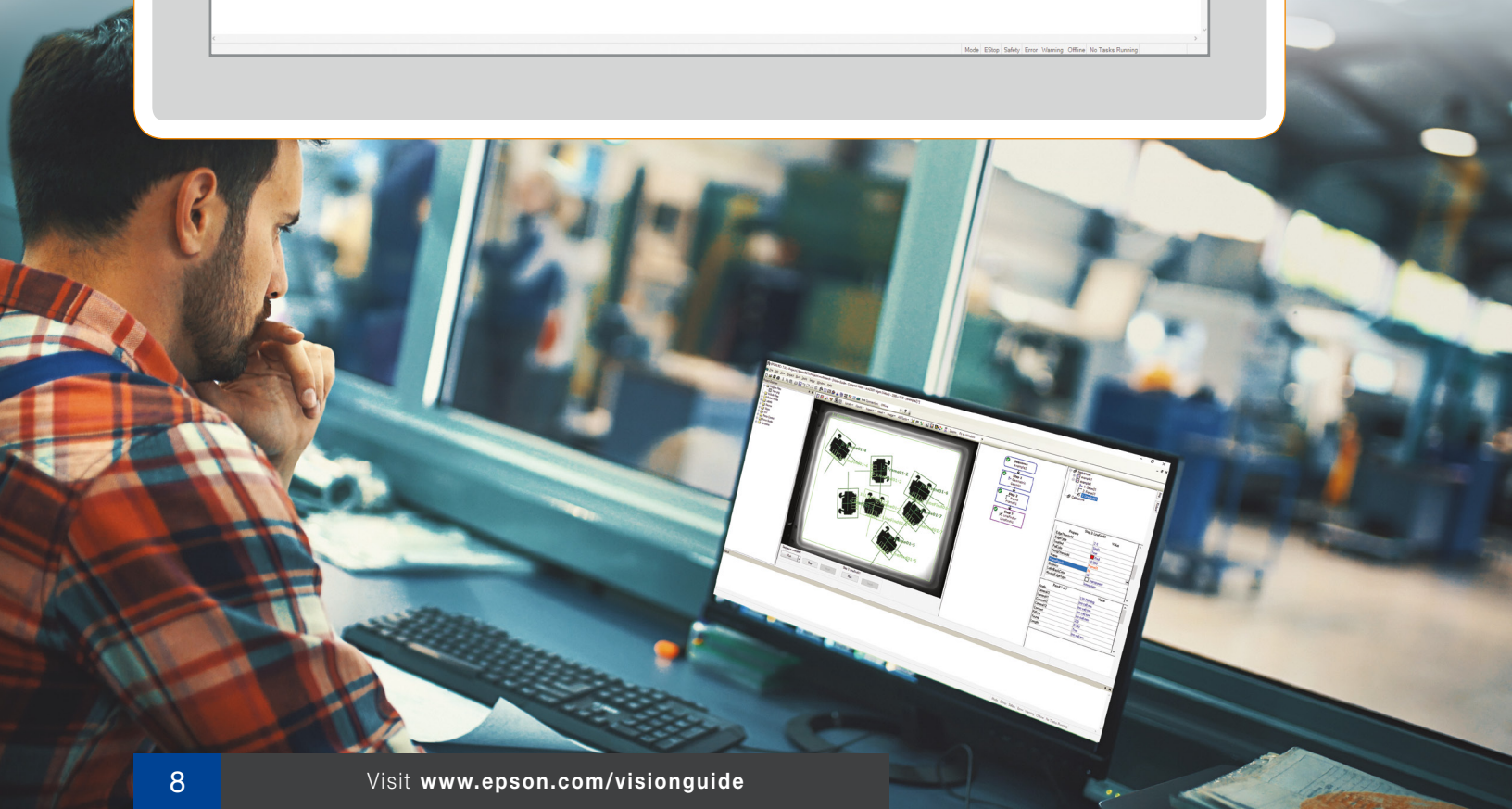
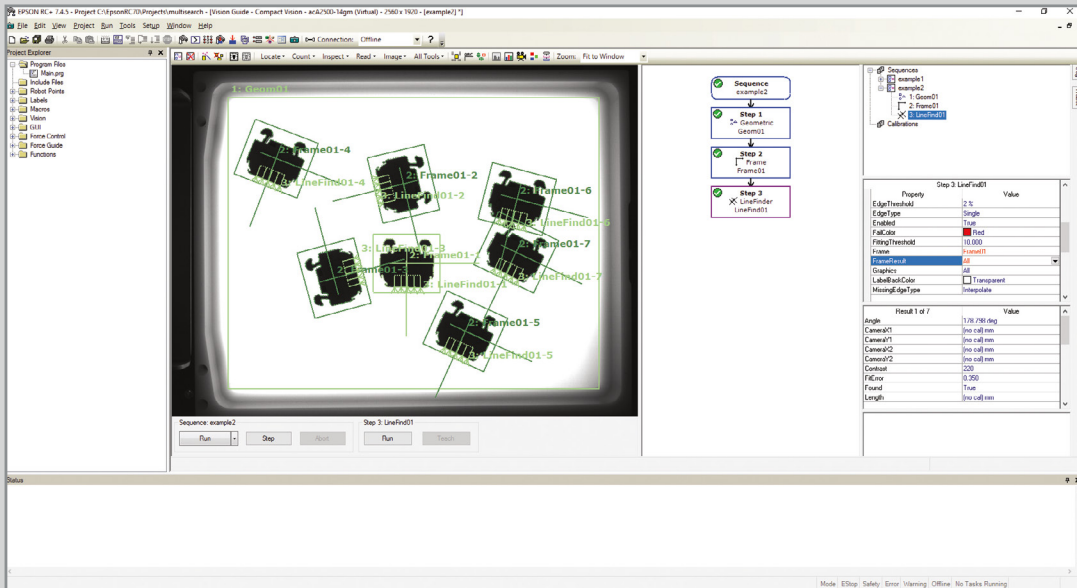


## Contour

Generates a contour based on the external shape of an object.

# The power of Multisearch

**Save programming time with Multisearch.** This flexible feature makes it easy to configure multiple vision tools, then automatically run the same set of tools on all parts that are found. Users can apply settings to various tools with one click, rather than setting up each tool individually. This enables the user to configure multiple objects and use them simultaneously at runtime when searching for a feature.

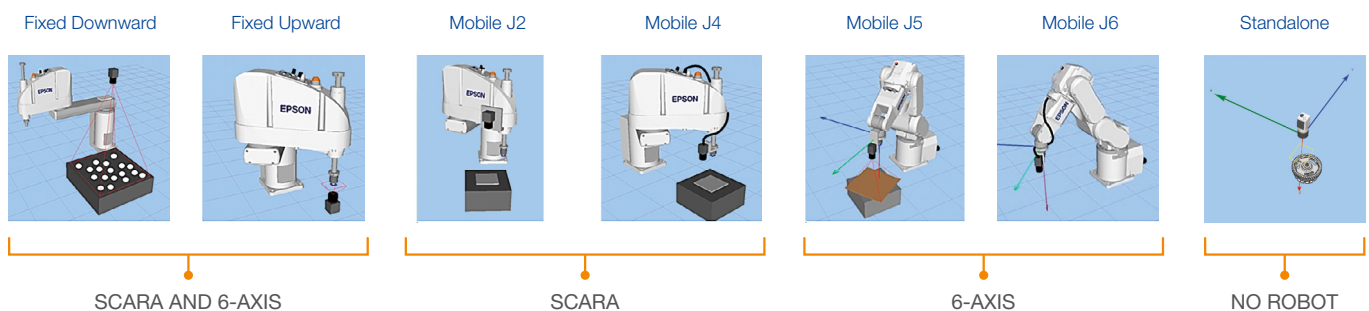




# Calibration made easy

For optimum precision, **Vision Guide supports true geometry-based calibration.** Unlike competitive products, which typically use basic mapping techniques, Vision Guide goes one step further to maximize performance and ensure consistency of calibration.

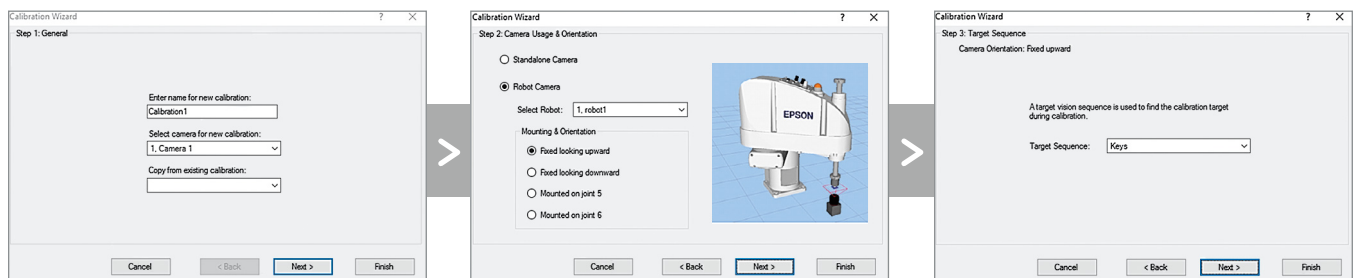
## SUPPORTED VISION CALIBRATIONS



**Vision Guide supports a wide variety of calibrations,** including both fixed and mobile mounted cameras, to optimize precision and meet most any need.

## CALIBRATION WIZARD

**This innovative tool** takes users through the calibration process, step by step.



# Powerful performance

Vision Guide supports many different resolutions and is compatible with both monochrome and color cameras.

## CAMERAS SUPPORTED

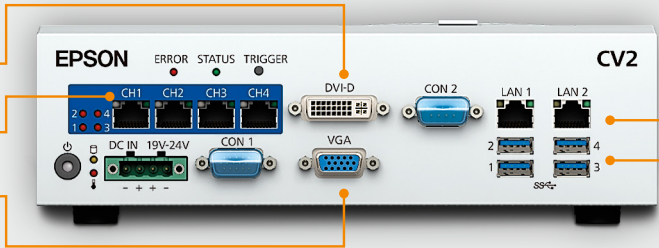
	MONO						COLOR				
	0.3 MP	1.3 MP	2 MP	5 MP	10 MP	20 MP	1.3 MP	2 MP	5 MP	10 MP	20 MP
GigE	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
USB	✓	✓		✓			✓		✓		

## CV2 System supports USB and GigE cameras

1x DVI-D port  
(for optional monitor)

4x RJ45 PoE ports  
(for GigE camera)

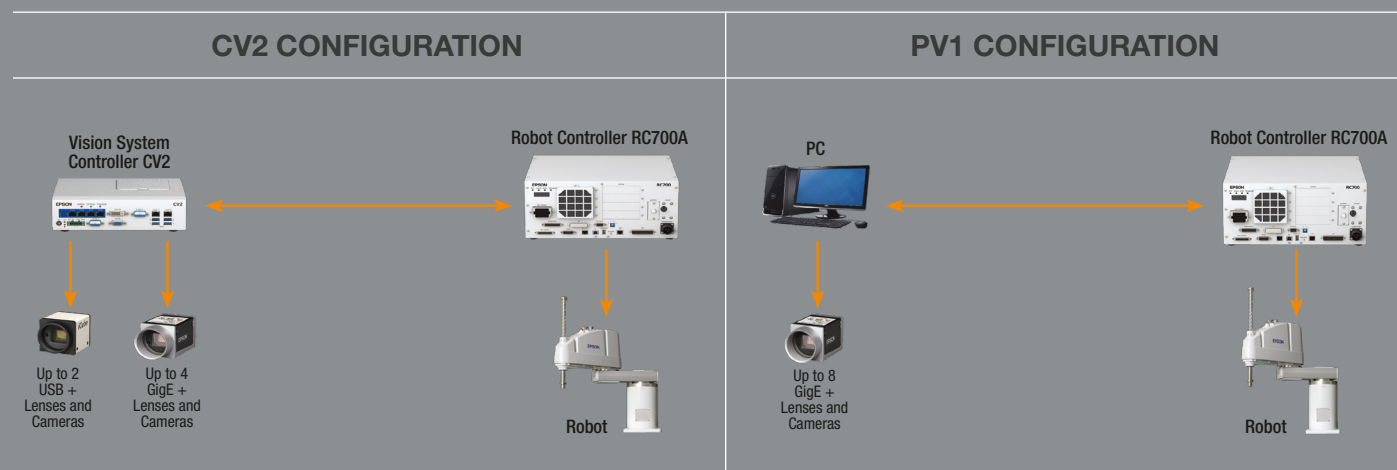
1x VGA port  
(for optional monitor)



2x RJ45 ports  
(for communication  
with robot controller)

4x USB 2.0 ports  
(2 ports for cameras,  
1 for keyboard and  
1 for mouse)

# Vision Guide configurations and specifications



System		CV2SA	CV2HA	PV1
Robot Controller		RC700A, RC90, RC90B, T-Series, VT-Series		
Cameras Supported (Epson cameras only)		GigE: Mono (0.3 MP, 1.3 MP, 2 MP, 5 MP, 10 MP and 20 MP) and Color (2 MP, 5 MP, 10 MP and 20 MP) USB: Mono (0.3 MP, 1.3 MP and 5 MP) and Color (1.3 MP, 5 MP)		
Vision Tools		Locate: Geometric, Correlation, Blob, Edge, Polar, ArcFinder, LineFinder, BoxFinder, CornerFinder, Frame, Line, Point and Contour Count: Blob, Correlation, Geometric Inspect: Blob, DefectFinder, Line, LineInspector, ArcInspector and Color Match Read: CodeReader and OCR Image: ImageOp and Text		
Quantity of Connectable Cameras		Up to 6 cameras (2 USB and 4 GigE cameras)		Up to 8 GigE cameras
Image Processing Speed		Standard	High-speed	N/A
Safety Standard		CE, UL, KC		N/A
Dimensions W x D x H (excluding rubber feet)		232 mm x 175 mm x 70 mm		N/A
Operating Temperature and Humidity		5~40 deg C, 20~80% (non-condensing)		N/A
Direction of Installation		Horizontal or Vertical		N/A
Power Source Voltage		DC 19 ~ 24 V		N/A
Rated Electric Current		11.57 A (at 19 V DC) ~ 9.16 A (at 24 V DC)		N/A
Weight		2.1 kg		N/A
Interface (connection)	Ethernet (for communication with Robot Controller)	RJ45: 2 ports (10M/100Mbps). Pre-bridge setting for the 2 ports. Can be connected to HUB or Switch.		N/A
	Ethernet (for GigE camera)	RJ45: 4 ports (1000Mbps). Power Over Ethernet (PoE) supported. Cannot connect to HUB or Switch.		
	USB 2.0	USB 2.0: 4 ports (for USB Camera, USB Memory, Mouse, Keyboard)		
	Monitor Connection	VGA: 1 port, DVI-D: 1 port (SXGA fixed) The 2 ports display the same output (mirror display)		
	CON1, CON2	Not available		
CV2 Standard Accessories		Mounting Plates (1 set), Power Supply Connector (1 pc)		N/A





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## Epson Business Solutions

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- Improved productivity
- World-class customer service and support
- Cost-effective, high-quality solutions
- A commitment to the environment

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