

EPSON RC+ 7.5.2 Release Notes Information

June 6, 2022

Thank you for using EPSON RC+ 7.5.2. This document contains the latest information for this release. Please read before using this software.

DOCUMENTATION	2
GETTING STARTED	2
WHAT'S NEW IN VERSION 7.5.2	2
GENERAL	2
PART FEEDING	6
FIELD BUS	7
VISION GUIDE	8
GUI BUILDER	9
API	10
LABVIEW	10
WHAT'S FIXED IN VERSION 7.5.2	11
GENERAL	11
FORCE GUIDE.....	12
VISION GUIDE	12
FORCE GUIDE.....	13
SIMULATOR.....	13
GUI BUILDER	13
VISION GUIDE	14
CAMERA & LENS SELECTION TOOL	14
PARAMETER TUNING TOOL.....	14

Documentation

All RC+ manuals are in PDF format and are installed on the PC hard disk. These manuals are accessible from the EPSON RC+ 7.0 environment Help menu.

Note: Adobe Reader is no longer included on the installation disc this version. Please use the standard Windows PDF viewer or download Adobe Reader by yourself.

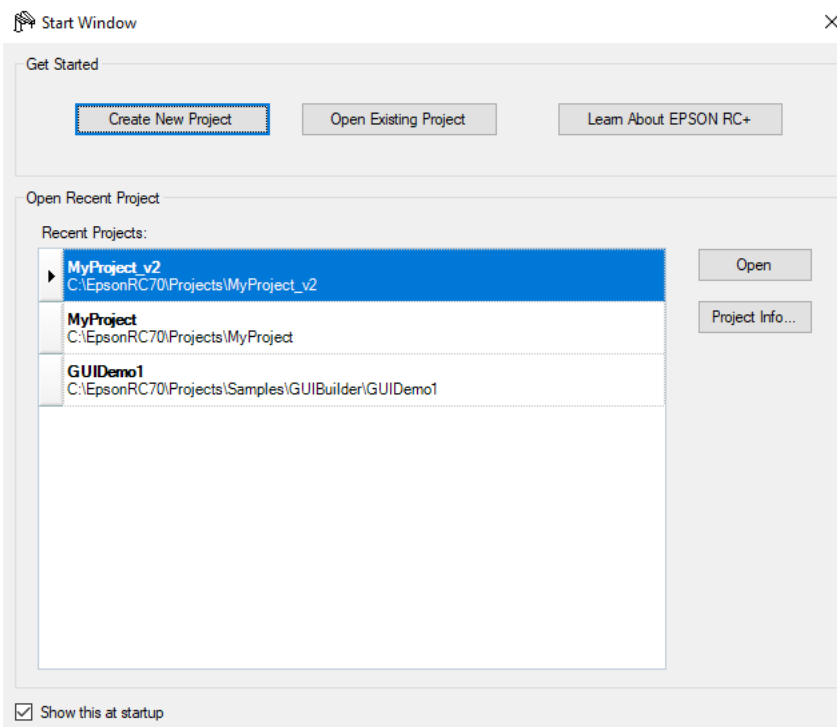
Getting Started

Read the Getting Started chapter in the EPSON RC+ 7.0 User's Guide. This chapter will refer you to a robot controller installation manual. This contains information for initial connections and start up.

What's New in version 7.5.2

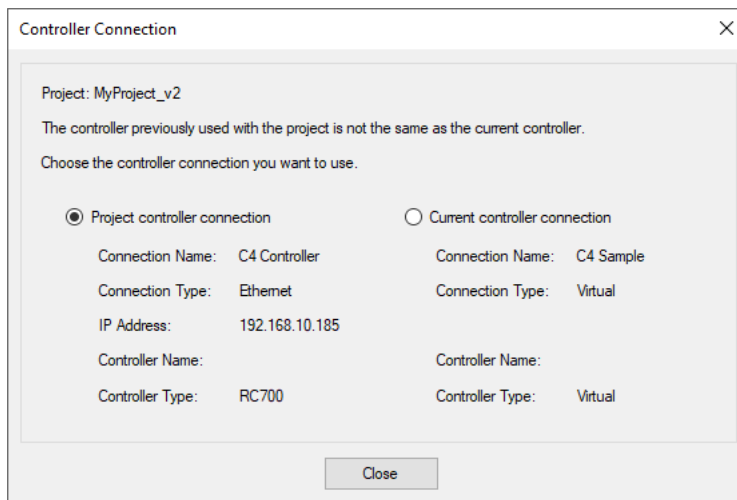
General

1. Added support for GX series robots. Please see the GX Series Robot Manual for more information.
2. Added Start Window. This appears when Epson RC+ is started. It allows the user to create a new project, open an existing project, or learn more about Epson RC+. To see more information about the Start Window, please see section 5.9.4 in the Epson RC+ Users Guide.



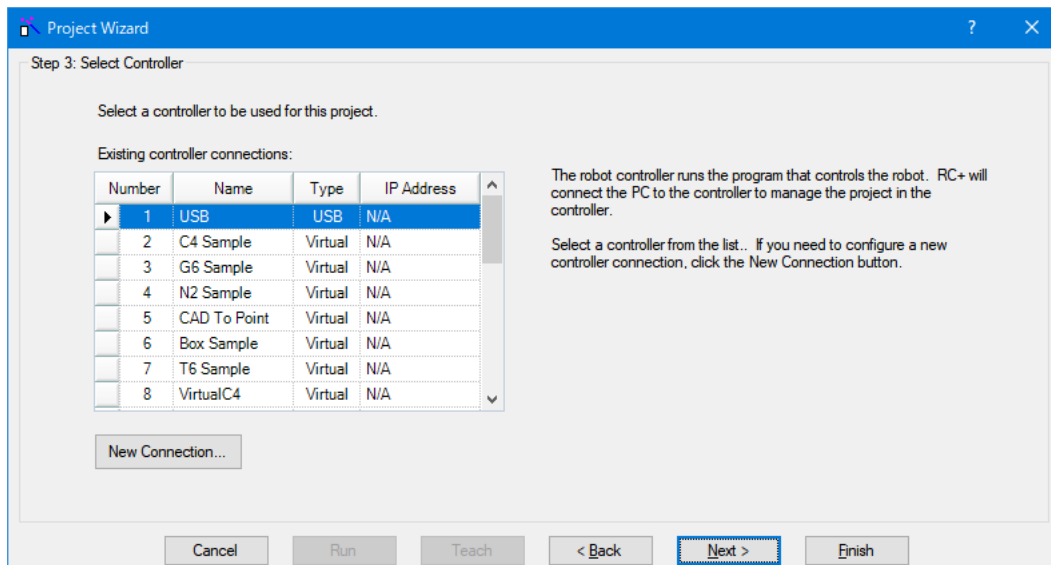
3. Added project controller tracking.

EPSON RC+ keeps track of which controller connection was used with a project. This is useful for when multiple projects and controllers are used from the same PC. When RC+ connects to a controller which is not the same as was previously used for the current project, a dialog is displayed showing information about the controller that was previously used with the current project and the currently connected controller. You can select which controller connection you want to use with the current project.

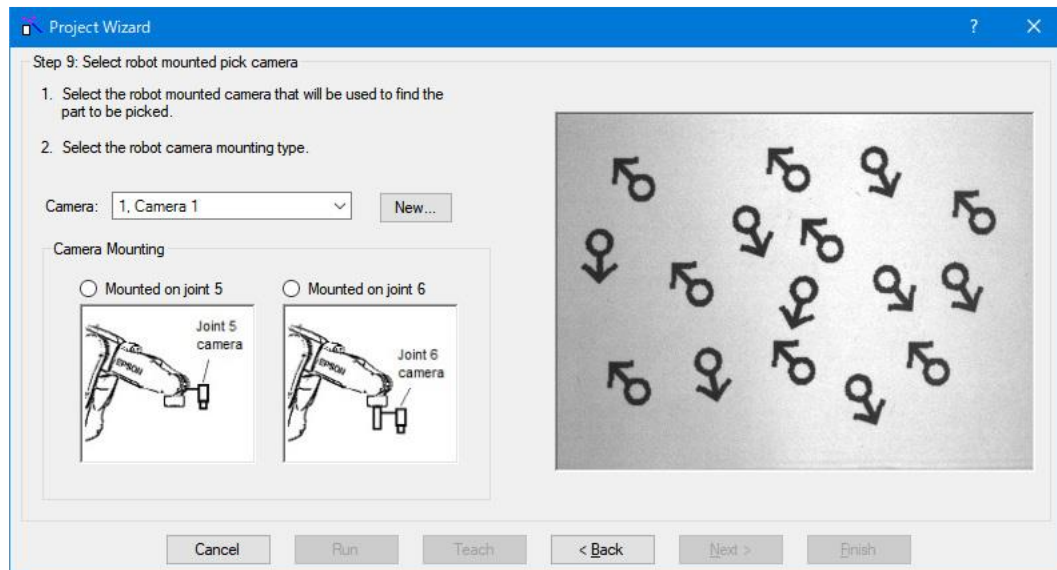


4. Added Connection Wizard and Camera Wizard to the Project Wizard.

Example of Connection Wizard:



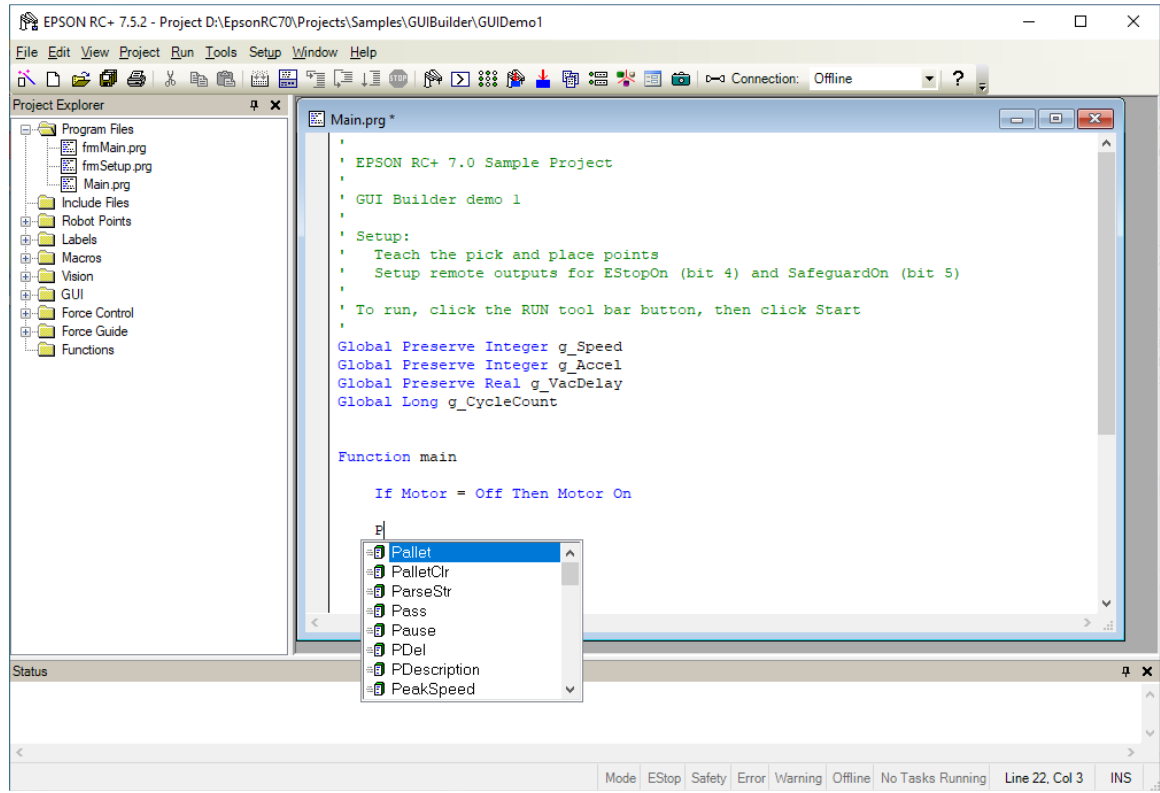
Example of Camera Wizard:



For more information about these Wizards, please see the section 5.10.1 in the Epson RC+ 7.0 Users Guide.

5. Added keyword dropdown list to assist when entering program statements.

When you are entering a keyword for a statement, a dropdown list appears showing the available SPEL+ statement keywords and user functions that start with the text you have typed. When you are entering a value, a dropdown list appears showing available SPEL+ function keywords, constants, and user functions that start with the text you have typed. As you type, the dropdown list is updated. To use a keyword in the dropdown list, select the keyword and type Tab, or double-click the keyword.



6. Added a new controller preference to allow strict checking for XYLim.

Applying XYLim to motion trajectory and pulse motion

When this checkbox is checked, XYLim is applied to not only the motion commands of target coordinate, but also motion trajectory from starting point of motion to target coordinate.

Moreover, XYim is applied to pulse motion.

Note: When this checkbox is not checked, robot may pass outside of XYlim area. Be careful.

For more information, please see section 5.13.2 of the Epson RC+ 7.0 Users Guide.

7. Added new commands for defining a 3D tool. VDefToolXYZ and VDefToolXYZUVW.

VDefToolXYZ uses vision detection to calculate tool XYZ offset values and define a tool.

VDefToolXYZUVW calculates tool UVW offset values using three tool definitions.

For more information, please see VDefToolXYZ Statement and VDefToolXYZUVW Statement in the Epson RC+ Vision Guide 7.0 Properties and Results Reference manual.

Part Feeding

Note: In order to use v7.5.2 Part Feeding, the robot controller firmware version must be 7.5.2.0 or greater.

8. Support rotated search window for part blob. Refer to “9.8.2 Program Example 8.2” in the Part Feeding 7.0 Introduction & Software manual for an example of how to use this new feature.
9. Support Purge Gate. See section 2.3.8 of the Parts Feeding 7.0 Introduction and Software manual for details.
10. Support simultaneous hopper control. Refer to the new PF_Output command in the Part Feeding 7.0 Introduction & Software manual for details.
11. Now 32 parts are supported per project. When a part is added, there can now be up to 32 parts and the PF_ commands that use PartID now allow values up to 32.
12. Vibration is now stopped when Stop occurs.
13. Tools | Controller | View Status now includes part feeder configuration and lifetime data.
14. Limit feeder IP address to only use local addresses.
15. German template code.
16. Every Part Feeding Manual was updated (6 manuals in total).
17. Support for multiple fixed downward cameras - one camera for the entire tray and one small field of view camera over the pick region. By reducing the FOV and increasing the camera resolution, the robot’s pick accuracy can be improved. Refer to “9.7.1 Program Example 7.1” in the Part Feeding 7.0 Introduction & Software manual.
18. Don’t care pixels were added to the Search Window (see the Vision Guide section below). This is useful for Part Feeding. Refer to “9.8.3 Program Example 8.3” in the Part Feeding 7.0 Introduction & Software manual.
19. Image subtraction using an image file was added (see the Vision Guide section below). This is useful for Part Feeding. Refer to “9.8.1 Program Example 8.” in the Part Feeding 7.0 Introduction & Software manual.

20. 3D models of the feeders and options are now installed with RC+ and can be added to the Simulator environment.

Fieldbus

21. Added new commands for AOI and CODESYS.

AOI's Added:

SPEL_MotorGet - output parameter Status
SPEL_Oport - input parameter BitNum and output parameter Status
SPEL_Pallet3Get - input parameters PalletNum, Point1, Point2, Point3.. output parameters Rows, Columns
SPEL_Pallet3Set - input parameters PalletNum, Point1, Point2, Point3, Rows, Columns
SPEL_Pallet4Get - input parameters PalletNum, Point1, Point2, Point3, Point4.. output parameters Rows, Columns
SPEL_Pallet4Set - input parameters PalletNum, Point1, Point2, Point3, Point4, Rows, Columns
SPEL_PointCoordGet - input parameters Point, AxisNum.. output parameters Value
SPEL_PointCoordSet - input parameters Point, AxisNum, Value
SPEL_PowerGet - output parameter Status
SPEL_PointSet - input parameters Point, X, Y, Z, U, V, X
SPEL_TLSet - input parameters ToolNum, Point

Please note that all new AOI's also have the same CommonParameters described in the FunctionBlocks manual.

22. Added new parameters for several motion commands.

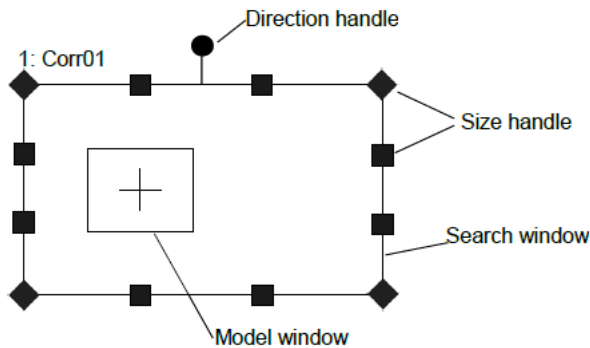
SPEL_Arc - Added input parameter MaxTime
SPEL_Arc3 - Added input parameter MaxTime
SPEL_ExecCmd - Added functionality to catch simultaneous execution of two or more AOI's and also added checking for invalid MaxTime parameter (for the AOI's that have that parameter)
SPEL_Go - Added input parameters MaxTime, TargetType, PalletNum, PalletPosOrCol, PalletRow
SPEL_Jump - Added input parameters MaxTime, TargetType, ArchNum, PalletNum, PalletPosOrCol, PalletRow
SPEL_Jump3 - Added input parameters MaxTime, ArchNum
SPEL_Jump3CP - Added input parameters MaxTime, ArchNum
SPEL_MemOff - changed input parameter "bitNum" to "BitNum"
SPEL_MemOn - changed input parameter "bitNum" to "BitNum"
SPEL_Reset - fixed bug where it was not resetting controller error

Vision Guide

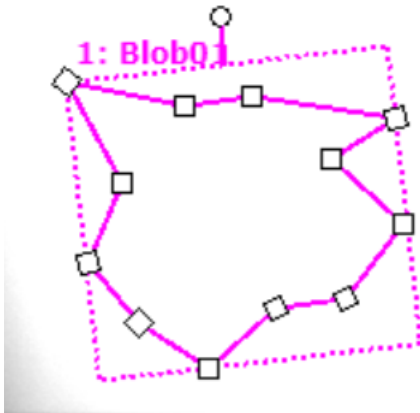
Note: For Compact Vision, CV2-A firmware version 3.1.5.0 or greater must be installed.

23. Support don't care pixels for Blob, Correlation, and Geometric search windows.
You can right-click on an object and select Edit Window, or go to the properties and go to SearchWin -> Edit to open this dialog.
24. Support polygon search window type for Blob, Correlation, and Geometric objects.

Setting SearchWinType "Polygon" allows to set search area of dodecagon. Compared to other 4 types, it has more properties, but it is possible to express more flexible shapes.



Here is an example of a Blob using a Polygon Search window:



For more information, see section 6.1.1 The Search Window in the Vision Guide 7.0 Software manual.

25. Added Exists property for detecting if a sequence, calibration, or object exists at runtime.

For more information, please see the Exists property in the Vision Guide 7.0 Properties and Results Reference.

26. Added properties for pixel coordinates translation at runtime: PixelToCamera and PixelToRobot.

For more information, please see the PixelToCamera and PixelToRobot properties in the Vision Guide 7.0 Properties and Results Reference.

27. The ImageOp tool now supports image subtraction using one or two buffers loaded with images from files.

See the ImageBuffer1, ImageBuffer1File, ImageBuffer2 and ImageBuffer2File properties in section 6.2.1 of the Vision Guide 7.0 software manual.

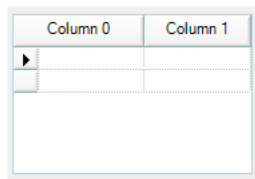
28. Added 3D tool calibration to the Robot Manager Tool Wizard using a fixed camera which can determine tool offsets and orientation.

29. Added support for GigE 12MP camera models acA4024-8gm and acA4024-8gc.

GUI Builder

30. Added new Grid control.

The Grid control is used to display and allow editing of data in a spreadsheet format.



The Grid control has cells that contain data in rows and columns. The operator can select rows and cells. The operator can optionally edit the cells in the specified columns.

At design time you can configure the Grid control:

1. Click the GridEditor property to open the designer of the grid control.
2. Design the grid by setting properties to the desired values.
3. Close the designer.

At runtime:

- You can read and write cell text using the CellText property.
- You can add or remove rows using AddRow and RemoveRow properties.
- You can change a cell forecolor and backcolor using the CellForeColor and CellBackColor properties.

For more information about the Grid control, please see Section 5.17 in the GUI Builder 7.0 manual.

API

31. Added new ProjectOverwriteWarningEnabled property. This property allows you to turn off the project overwrite confirmation when switching projects in the controller.

By default, when the current project is not the same as the project in the controller, then a project overwrite warning message is displayed when the project is built and sent to the controller. Set ProjectOverwriteWarningEnabled to False when you don't want the overwrite warning message to be displayed. This is useful for when your application needs to switch projects used in the controller.

32. Added optional ConnectionPassword parameters for the Connect method.

Example:

Sub Connect (ConnectionName As String, *ConnectionPassword* As String)

ConnectionPassword - String expression for the connection password. If the controller has a password for its connection and the password was not configured in the RC+ Setup | PC to Controller Communications dialog, then you must specify a password in order to connect with the controller.

33. Added new methods for defining a 3D tool. VDefToolXYZ and VDefToolXYZUVW.

LabVIEW

34. Added new VI "EStopOn" to acquire emergency stop status. For more information, please see the EStopOn VI section in the RC+ API 7.0 manual.
35. Added new VI "SafetyOn" to acquire safety door status. For more information, please see the SafetyOn VI section in the RC+ API 7.0 manual.
36. Added password input to VI "Initialize" to initialize Spel instance. The description for this is:

“Optional. String expression for the connection password. If the controller has a password for its connection and the password was

not configured in the RC+ Setup | PC to Controller Communications dialog, then you must specify a password in order to connect with the controller.”

For more information, please see the Initialize VI section in the RC+ API 7.0 manual.

37. Added `ServerInstance` input to VI "Initialize" to initialize Spel instance. The description for this is:

ServerInstance “Optional. Specifies which instance of EPSON RC+ server to use.”

For more information, please see the Initialize VI section in the RC+ API 7.0 manual.

What's Fixed in version 7.5.2

General

1. Fixed an issue for Arm Wizard. When a tool is being used, the robot moves to the first point in tool 0 instead of the current tool.
2. Fixed an issue where sometimes the robot motor and safeguard status was not updated for jog & teach dialogs.
3. Fixed an issue where there was an issue where there was a difference between the number of font size selected on the editor screen of Controller Preferences and the number displayed.
4. Fixed an issue that occurred when trying to change the item while removing the PG board from a certain state.
5. Fixed to limit 255 characters even when using Space\$ in MsgBox, Inbox, etc.
6. Dll function call (Declare) has been corrected to display an error if the return value of Declare is a string.
7. Fixed an issue where background tasks in Controller Preferences were not enabled while task manager was open.
8. Fixed the hand setting screen to open when double-clicking on the robot manager's hand list screen.

9. Fixed to be able to select robots (such as GX4) that have been added even when using a virtual controller.
10. Hand_On, the hand number is checked to prevent unauthorized memory access with Hand_Off commands.
11. Fixed error messages for clarity when specifying invalid data types.
12. Fixed free joints from being able to operate until the controller is restarted when a critical error occurs.
13. Fixed to allow line breaks at any cursor position on a line containing full-width strings in the SPEL editor.
14. Fixed a bug that caused error 3326 in the next build when changing the argument yes/none of theFunction used in the IF statement.
15. Fixed an issue where the screen display would remain motor ON even if the safety gate operated and Motor OFF during conveyor tracking calibration.
16. Fixed a bug that caused unintended rebuilds after the build was suspended.
17. Fixed an issue where the initial operation of the robot could cause the robot to lose field of view when running the Expansion Arm Setup Wizard due to the amount of tool offset.

Force Guide

18. Fixed a problem when running AOI at the same time. AOI output an error when if AOIs are executed at the same time.

Vision Guide

Note: For Compact Vision, unless otherwise noted, CV2-A firmware version 3.1.5.0 or greater must be installed.

19. Fixed aspect ratio for video displays. Now images sizes with aspect ratios other than 4:3 are supported.
20. Fixed a problem for when an invalid drive letter was specified for VSaveImage and VSaveModel. Previously, error 7527 (Vision processor. Critical error.) was occurring.
21. Fixed a problem for when a task was completed, the hardware trigger used by another task was not working.

22. Fixed a problem for Compact Vision where if project 2 was being used, but there was no project 1, then the CV unit could not boot up.
23. CV units can now use external USB hard disks.
24. Fixed a problem where when a model origin is changed for an object, the new origin position is not used at runtime. CV2-A firmware v3.1.4.1 or greater must be installed.
25. Fixed a problem CheckClearanceFor operation for Edge. Not all results were displayed after an Edge result was not found. CV2-A firmware v3.1.4.1 or greater must be installed.

Force Guide

26. Fixed a problem for FollowMove and PressMove objects where if DestType was set to Relative, then the associated properties were not loaded during project open.
27. Fixed a problem for Mass setting wizard, Impedance wizard and Firmness wizard where points taught after using these wizards were not saved.

Simulator

28. Fixed a bug that hidden objects displayed in the simulator when editing and saving objects with force data in robot manager.
29. Fixed an issue where the selection was not retained when offline or when RC+ restarted.
30. Fixed a bug that caused an exception error when opening the robot operation panel after changing the robot while displaying the simulator.
31. Fixed a bug that caused the simulator to harden when detecting collisions in the monitoring area.
32. Fixed correction when entering numbers in the property grid to be correct.
33. Fixed to allow bar operation of the simulator's property grid while calibrating VisionGuide.

GUI Builder

34. Fixed an issue where form names were not displaying correctly in Project Explorer.
35. Fixed an issue where the TextAlign property of the Label control would not take effect when changed before displaying the form.

36. Fixed an issue where stopping a program with MsgBox out would allow the program to start while the MsgBox remained.

Vision Guide

Camera & Lens Selection Tool

A camera and lens selection tool is provided in the EpsonRC70\Tools folder after installation. A PDF file with instructions is provided in the folder.

Parameter Tuning Tool

A sample project for a vision parameter tuning tool is provided in EpsonRC70\Projects\Samples\Vision\VGTuningTool. A PDF file with instructions is provided in the folder. The GUI Builder option is required to use this tool.