RELEASE NOTES

RobotStudio 2024.2

Contents

Release Notes for RobotStudio 2024.2

General

The release name is RobotStudio 2024.2 and the build number is 24.2.10789.0. The build date is May 23, 2024.

User documentation

The RobotStudio Operating Manual is available in all languages supported by RobotStudio except Czech, i.e. English, German, French, Italian, Chinese, Japanese, Spanish. RobotWare manuals for IRC5 and OmniCore can be installed from the Add-Ins Gallery.

Tutorials

Tutorials are available at the RobotStudio product pages at https://new.abb.com/products/robotics/robotstudio.

System Requirements

Required Software

Microsoft Windows 10 Anniversary Edition or later, 64-bit edition, is required.

The Windows App Installer is a pre-requisite for the virtual OmniCore FlexPendant software, see https://www.microsoft.com/en-us/p/App-Installer/9NBLGGH4NNS1. The App Installer is a default built-in app in Windows 10 and later, but may have been removed on some PCs.

Sideloading of apps must be enabled on Windows to install the virtual OmniCore FlexPendant.

To enable sideloading follow these steps:

1. Open **Settings**.
2. Click **Update & Security** (Windows 10) or **Privacy & security** (Windows 11) > **For developers**.
3. Ensure **Developer Mode** is set to **On**.

Recommended Hardware

ITEM	REQUIREMENT
CPU	2.0 GHz or faster processor, multiple cores recommended
Memory	8 GB minimum 16 GB or more if working with large CAD models
Disk	10+ GB free space, solid state drive (SSD)
Graphics Card[1]	High-performance, DirectX 11 compatible, gaming graphics card from any of the leading vendors. For the Advanced lightning mode Direct3D feature level 10_1 or higher is required.
Screen Resolution	1920 x 1080 pixels or higher is recommended
Mouse	Three-button mouse
3D Mouse	Any 3D mouse from 3DConnexion, see http://www.3dconnexion.com.

ITEM	REQUIREMENT
Virtual Reality Headset	Meta Quest 2, HTC Vive or any Windows Mixed Reality Headset. Note that special PC hardware requirements apply when using RobotStudio with VR, see https://www.oculus.com/oculus-ready-pcs/, https://www.vive.com/us/vive-ready/, or, https://www.microsoft.com/en-us/mixed-reality/windows-mixed-reality, respectively.

[1] RobotStudio will not benefit from the additional features of so-called 'Professional' or 'Workstation' graphics cards. The price level of these are at a much higher range than gaming graphics cards with comparable performance. High-end gaming PCs are very suitable for offline programming with RobotStudio. Such a PC will provide good performance for a limited budget.

New Functionality

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ACIS 2024 support

The latest version of the ACIS engine has been integrated to ensure compatibility with current CAD formats.

Cancel button in Move Task Frame dialog

When moving a robot connected to a virtual controller by using *Move and Rotate* or *Set Position*, the user is presented with a dialog for selecting if the Task Frame in the station or the Base Frame in the controller should be moved.
This dialog now includes a Cancel button which will move the robot back to the previous position.
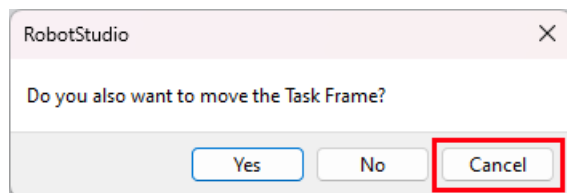
Check in network license when disabling license

When the option "Disable licensing" is selected, any checked out commuter license is now automatically returned to the server.

Collision Free Path: Optimize robot position

There is now support for optimizing the robot position when creating a collision free path. The new functionality can be accessed by ticking the new checkbox "Find optimal robot placement" in the Collision Free Path tool:
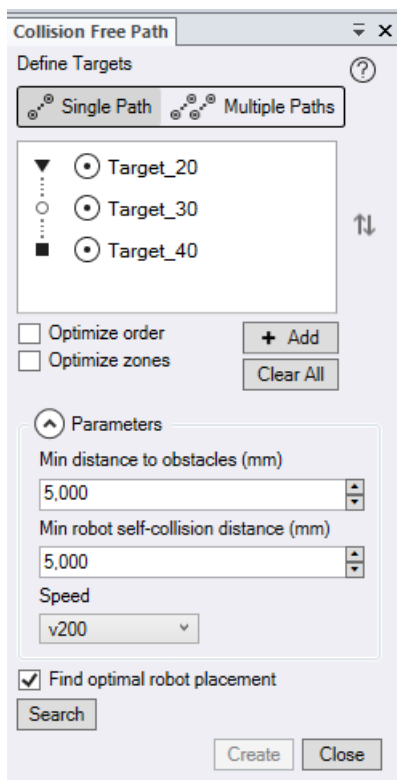
The search area is shown as a blue box surrounding the robot, and its X, Y and Z dimensions relative to the robot can be set up using the controls on the right. Furthermore, the number of positions tested can be changed by adjusting the distance between search positions:
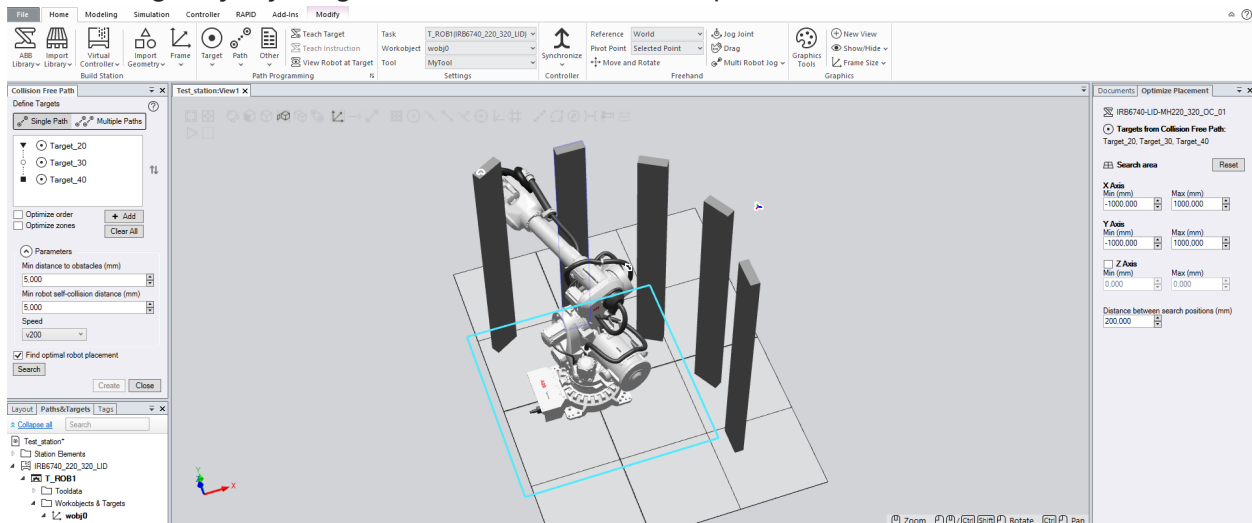
After setting up the search area and pressing the "Search" button, the results will be calculated and displayed in the 3D view, with a green box for each valid position:
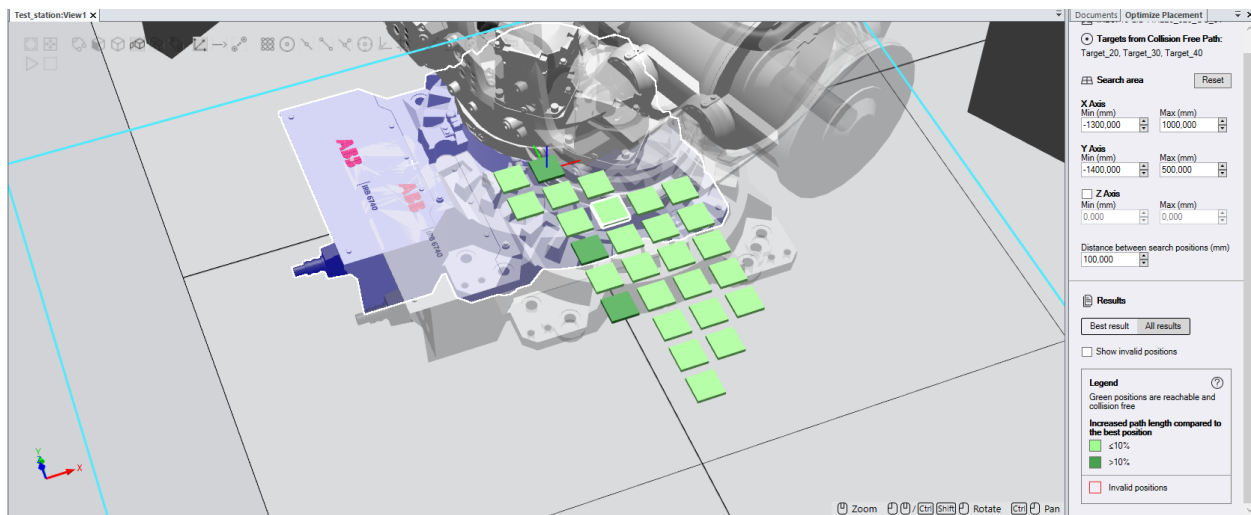
The best position (based on shortest path in joint space) is automatically selected, but another valid position can be selected by clicking the green box on that position. The invalid positions can also be shown by ticking the checkbox to the right. Once the preferred position has been selected, pressing the Create button in the Collision Free Path tool will move the robot to the selected position and create the collision free path.

Download simulation models for offline installation

It is now possible to download all or selected simulation model packages for offline installation. This requires the following steps:

1. In the Add-Ins Gallery - RobotStudio Models, either click "Select All" or check the box of desired packages.
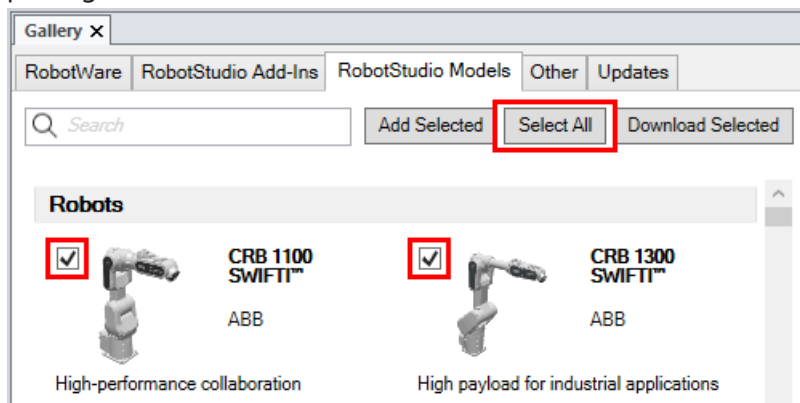
2. Click "Download Selected" and select a folder where the files will be stored. Wait for the download to complete.
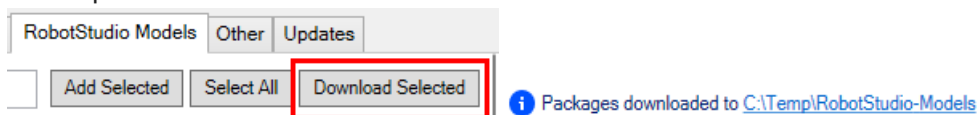
3. Transfer the files to the target PC.

4. On the target PC, click "Install" under Add-Ins. Multi-select the package files and wait for installation to finish.
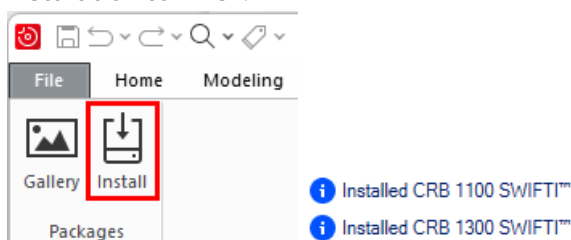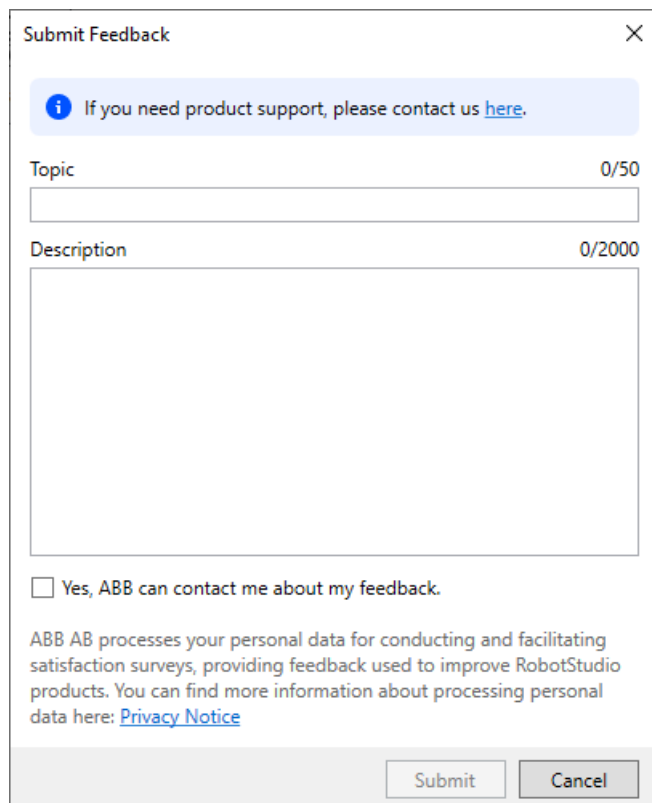
In-app feedback

It is now possible to submit feedback to the product development team from inside RobotStudio.
Click the "Submit Feedback" button in the ribbon and enter the details. If you approve to be contacted
by ABB about your feedback, you can enter your email address.
If you are not connected to the Internet, your feedback will be stored and sent when you are online.
Please note that this feature is not intended for bug reports. If you need product support, contact your
local ABB Robotics service representative.

MultiMove support in Controller From Layout for OmniCore

It is now possible to use Controller From Layout to create an OmniCore virtual controller with up to
three robots using MultiMove. RobotWare 7.15 or later is required.
Additional information:

- Each robot uses a separate controller cabinet for its drive system.
- Controller variant V250XT or V400XT must be selected for all robots.
- A total number of six additional drive units (ADUs) can be added. By default they are distributed
  evenly, but the configuration can be customized by selecting "Customize options" in Controller
  From Layout.

MultiMove support in installation framework

Modify Installation dialog now supports configuration of MultiMove systems

New Copy/Paste functionality between input controls

Copy/Paste functionality has been added to position, direction and orientation controls throughout
RobotStudio.

When one of these controls is used in isolation, one copy option will be enabled to copy the values in that specific control, such as in this case:
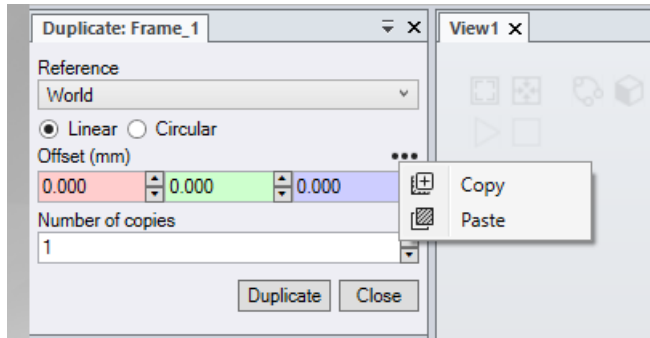
When both position and orientation controls appear together, an additional copy option is to copy the contents of both controls at once, such as in the example below, where the three-dot button was pressed on the position control:
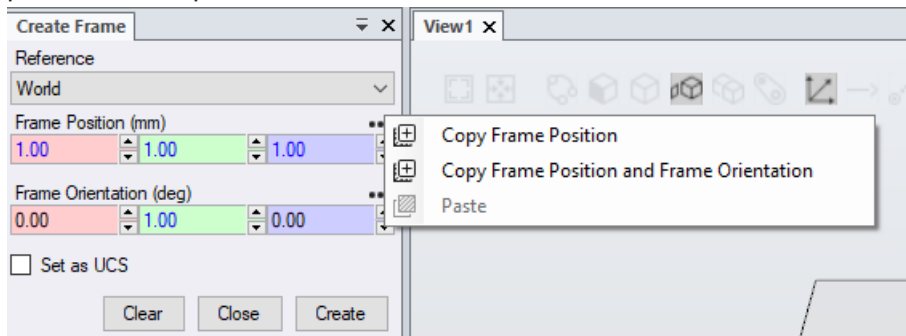
Below the button on the orientation control was pressed instead, also giving both copy options as well as the choice of Euler or quaternion representation. However, the copied representation will always be the quaternion representation since that is the representation used in Rapid. This enables pasting into Rapid regardless of how one chooses to display the orientation in the control.
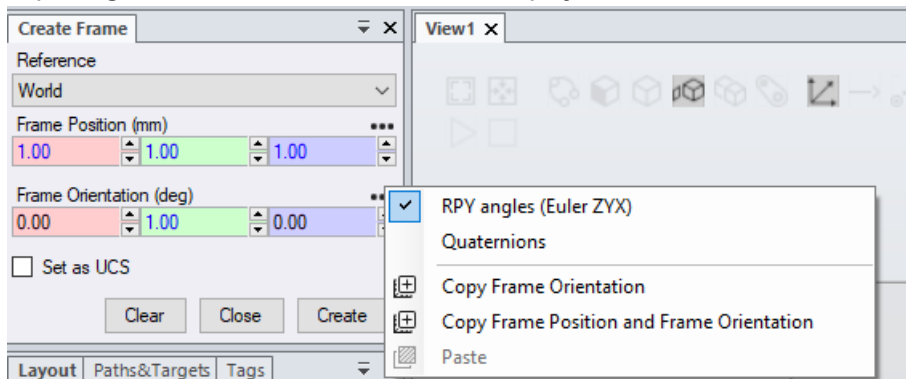
Pasting gives different results depending on the contents of the clipboard. If the clipboard contains any text, the paste button is enabled. If it contains a position in the format [x,y,z] and one tries to paste into a position or direction control, the values will be pasted. If it contains a quaternion [q1,q2,q3,q4] and one tries to paste into an orientation control, the values will be pasted into that control. If it contains both a position and a quaternion, [x,y,z][q1,q2,q3,q4], and there's both a position/direction and an orientation control, the values will be paste into both controls regardless of which the user pressed paste on. The formatting of the values must be as in Rapid, so the user can effortlessly copy from Rapid to the controls and vice versa. If the contents of the clipboard do not correspond to any of these formats, nothing is pasted.

For a direction control, the old functionalities to reverse direction and calculating a direction from two points have been moved into the same context menu as the new copy/paste commands:
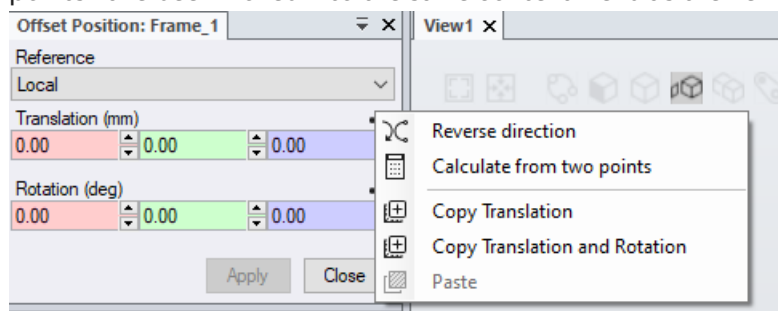
Pack and Go: Include ABB library distribution package

<span dir=ltr>There is now an option to 'Include ABB library distribution package' when creating a Pack & Go. When this option is selected, if a library is associated with an ABB distribution package, the entire package will be included in the Pack and Go. This means that an internet connection won't be necessary to download the library during the unpacking stage.

Power Supply Utilization signal

A signal called Power Supply Utilization was added to the Signal Analyzer and is supported starting with RobotWare 7.15. The new signal shows how much of the capacity of the controller's power supply is utilized. The signal can be used to determine if there is capacity left for external equipment, or if another controller variant is needed.
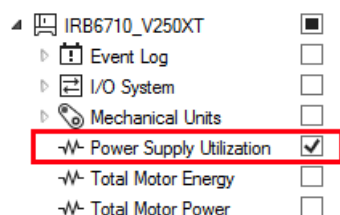
The default behavior is to show the Power Supply Utilization as a percentage between 0 % and 100 %, but the behavior can be configured to display a value between 0 and 1 instead by changing the unit of the new Fraction quantity from "%" to "fraction" in Options.
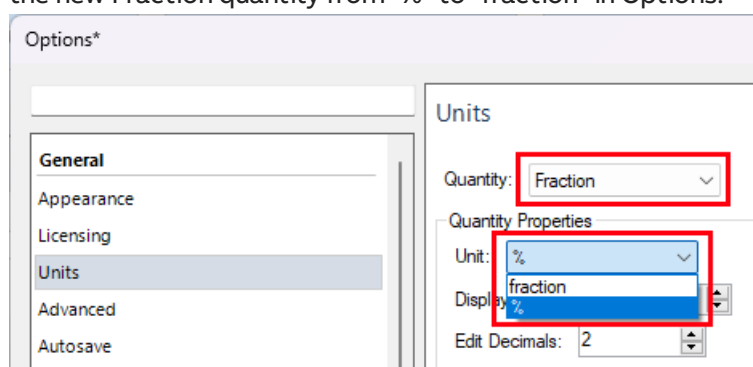
PowerPacs & Add-ins version number

The version number of PowerPacs and Add-ins that can be loaded will now appear next to the name.
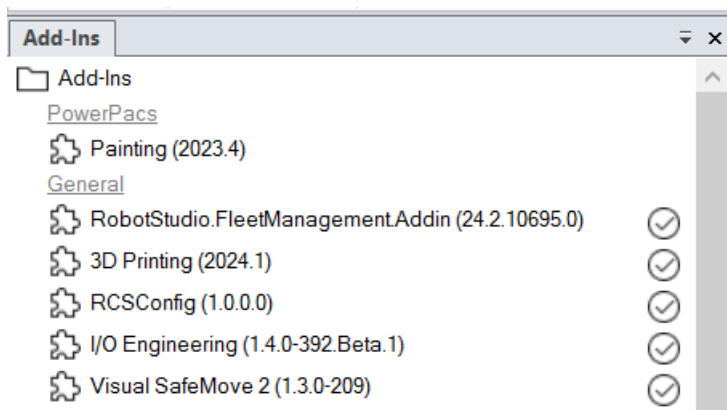
Recording playback support for robot on track stop position

It is now possible to visualize the category 0 and 1 stop positions for a robot mounted on a track.
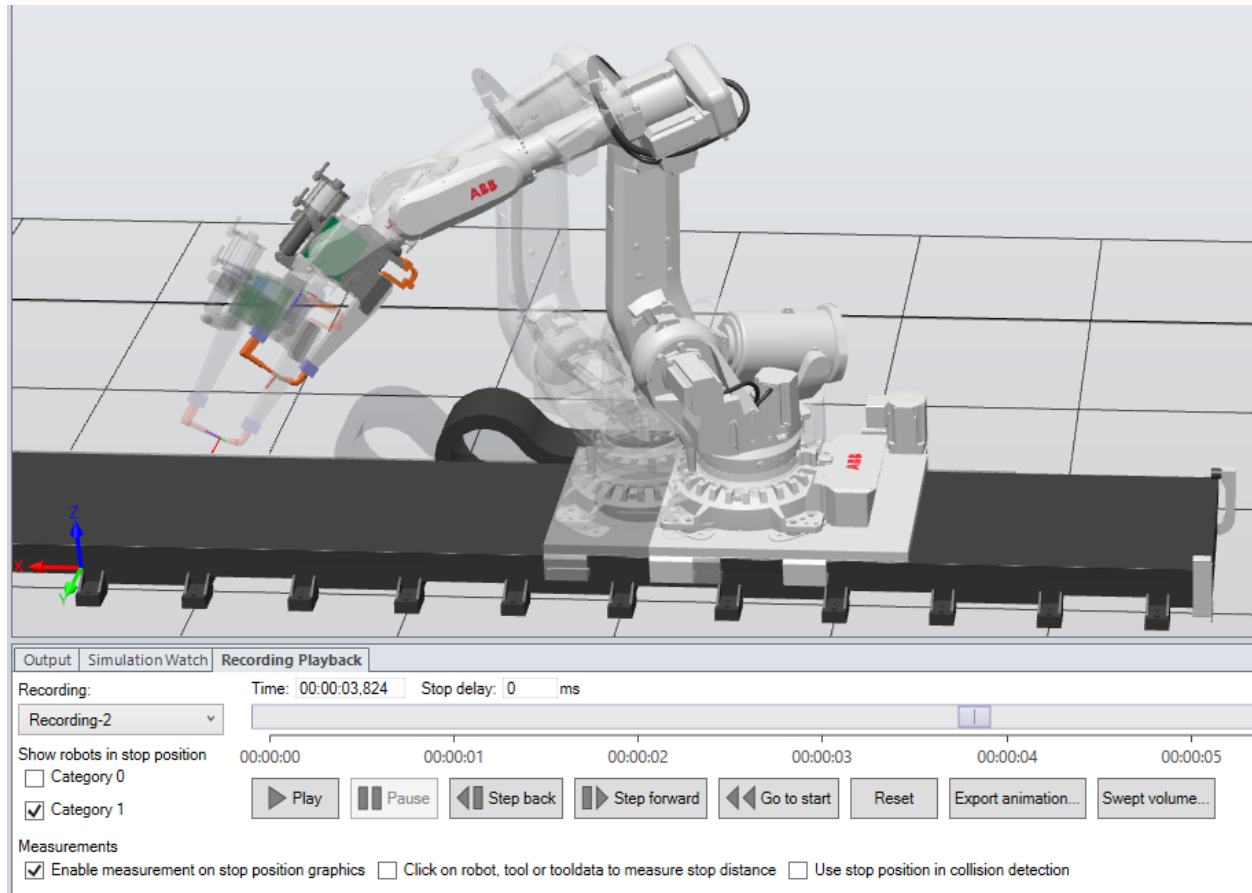
The track is also considered when generating a swept volume of the stop positions for a robot on a track.

Restore backup with UAS settings

Starting from RobotWare 7.15, backups will include the 'User Authorization System' settings. In RobotStudio it is possible to include the settings when restoring a backup. Note that this is only possible for real controllers.

Support for OmniCore positioners

OmniCore positioners IRP A, B, C, K, L and R are now supported in RobotStudio.

Requirements:

- RobotWare 7.15 or later is used.
- The Positioner RobotWare add-in is installed.

- Latest version of the positioner model package is installed (version 2.0 or later).
- In Virtual Controller from Layout, a controller variant that supports the required number of additional drive units must be selected.

Improvements

Target Selection Mode as Default

Target selection mode is now also activated by default. Upon launching RobotStudio, both Part and Target Selection Mode will be activated. Furthermore, the 'View Robot at Target' feature will enable the Target Selection Level by default, except when Instruction Selection Mode is already in use.

Cable simulation improvements

Two improvements have been made to physics cable simulation:

- When setting the joint values of a robot, large movements are now interpolated if one or more physics cables are attached to the robot. This prevents cables from getting entangled when performing for example *View Robot at Target* or *Jump To Target*.
- If a physics cable has become entangled, it can be recreated by executing the *"Reset"* context command. This should typically be performed with the robot in its home position.
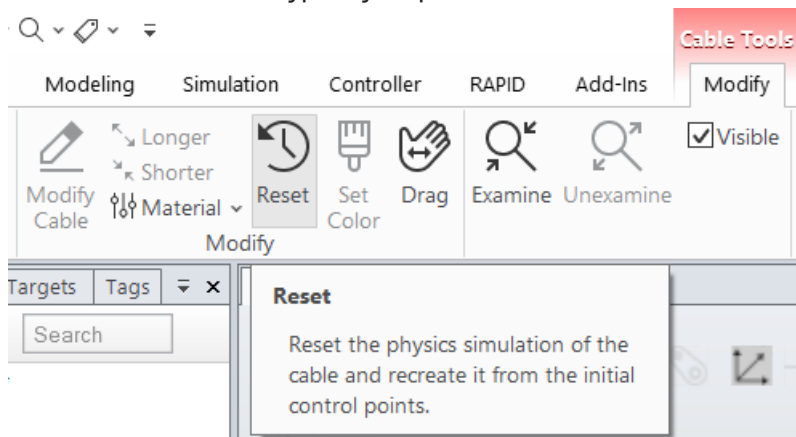
Link to saved configuration in Output window

When saving the configuration parameters of a robot controller to the local file system, there is now a clickable link in the Output window that opens up the folder where the file is located.
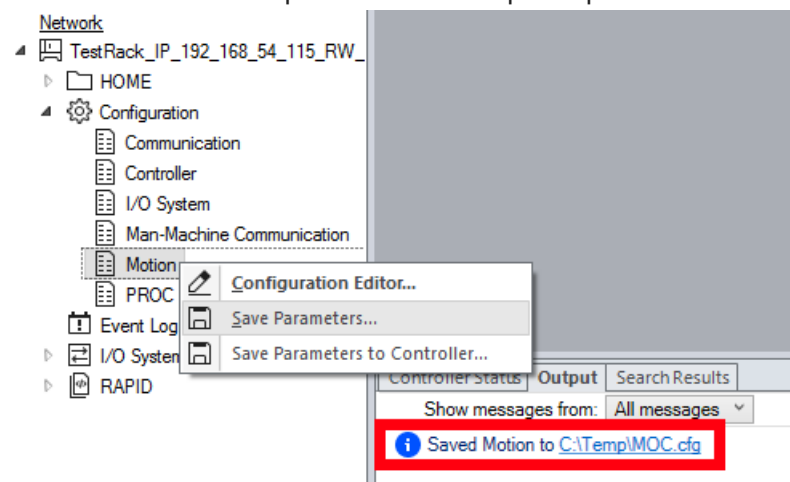
Make RobotStudio Cloud the default for Export Viewer

When exporting a project viewer from a RobotStudio Cloud project, the default location for the viewer is now in cloud storage.

Station Logic - remove duplicate connections and bindings

I/O connections or property bindings that are duplicated (i.e. have the same source and target) can significantly affect performance in Station Logic or a Smart Component. These duplicates are now detected when the editor window is launched, and can be removed automatically if desired.
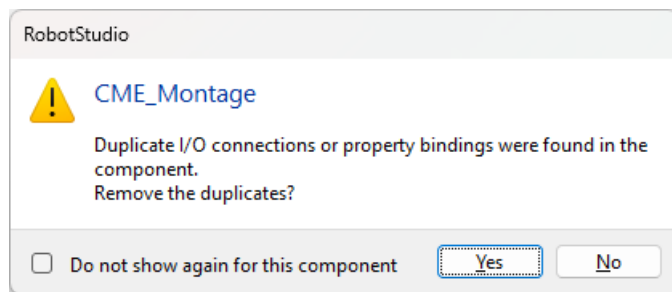
Station Logic performance improvements

Opening Station Logic and importing component XML files is now significantly faster for stations with many I/O signals.

In the Design view, dragging components with many connections or bindings is also faster.

Information

Gearbox Heat Prediction removed

The Gearbox Heat Prediction tool has been removed as it is superseded by the Mechanical Analysis add-in.

Modify Installation of a system in "system failure" state

From RobotWare 7.15 and RobotStudio 2024.2, it is possible to modify a system installation when a system is in "system failure" state as long as system startup is completed and the system is reachable. When modifying such system, the user can only select "Apply and Reset", which means that the system will be started with a fresh default state after the modification has been done.

Corrections

PDD	
	Improved error message when adding controller from backup We improved the message displayed for an error that can occur when loading backups.
	Cross connection configuration error Fixed an issue with configuring cross connections. When unsetting an operator, the related actor would not be unset and cause a validation error.
	RAPID Task status icon is not updated The status icon of a RAPID Task in the controller browser that indicates whether a RAPID Task is active or deactivated, did not update on changes. This issue has been addressed.
	Tear off window caption not updating Fixed an issue where the window caption for Tear Off windows would not update. For example the Mechanism Linear Jog window when changing the active tool.
	Creating a new branch with the same name as a previous branch leads to an unresolvable conflict RobotStudio Cloud: It is now possible to create a branch with the same name as a previous branch without issues.
	Local project name not fully displayed Local projects with a dot ('.') in the directory name were displayed with a caption containing only the characters before the first dot. Now the full directory name will be shown, with the dot included.
	Improved load time for 'Create Collision Free Path' window An issue where the Create Collision Free Path window would take up to a few seconds to appear has now been resolved.
	Exception when starting simulation The error handling when starting a simulation has been improved. A descriptive dialog is now displayed if Virtual Controller execution is blocked by the safety system.
	Invalid color when importing exported ACIS geometry Fixed an issue that could give imported ACIS geometries incorrect colors in some scenarios if the bodies or parts had previously been copied within RobotStudio before being exported.
	Gizmo moves instead of robot Fixed an issue where the robot would stop moving when starting the simulation via the RAPID tab and activating the gizmo during simulation on one of the robot links.
	Connect to controller: Device list exception Fixed a bug that cause an error when loading a device list that had blank Network Address cells.

PDD	
	Window size not remembered for docked windows The sizes of docked windows are now remembered correctly during a RobotStudio session and restored the next time RobotStudio is started.
	Snap Mid/End error The Snap Mid and Snap End features previously did not function correctly for certain geometries, such as cones. This issue has been resolved.
	Connect to controller: Load device list Fixed an issue where the device list would be empty if the same list that is already loaded was loaded again. Sometimes there could be duplicate nodes. In addition, double-clicking a controller in the list to connect will no longer close the window if the connection fails. Instead, there will be an error dialog that appears.
	Suggested location for New Virtual Controller not correct When creating a new Virtual Controller, the suggested location is now the same as the selected location in the Connect to Controller dialog.
	Collision Avoidance disabled Fixed an issue where the Collision Avoidance configuration button was disabled even though the required options were present in the controller.
	Robot not moving after stopping and starting RAPID execution during simulation Manually stopping and starting RAPID execution while a simulation is running now works correctly. Previously the robot would stop moving if execution was stopped and re-started from the RAPID tab.
	Data loss when synchronizing to RAPID. We have addressed a critical issue where synchronization to RAPID could, on occasion, lead to the unintended deletion of declaration values for systems using an OmniCore controller. This issue has now been resolved
	Connect to controller, wrong controller connected Fixed and issue when selecting a controller and sorting, the controllers that was sorted out of view would not deselect when selecting another controller in the list. This resulted in multiple or wrong controllers were connected.
	Signal Setup: Duplicate signals recorded Fixed an issue where duplicate signals could be recorded by undoing a selection and reselecting signals in Signal Setup.
	Execute instruction with Offs or RelTool does not work The command Execute Move Instruction now works correctly for instructions that use Offs or RelTool in the target arguments.

PDD	
	RobAPI Exception error observed after opening Operator Window Exceptions were thrown when opening operator window for RW 7.14 controllers. This is now fixed.
	Synchronization failure with TriggJIOs and TriggLIOs instructions We have addressed a problem where attempts to synchronize with RAPID were unsuccessful if the synched procedure included TriggJIOs or TriggLIOs instructions that utilized any of the optional parameters: TriggData1, TriggData2, or TriggData3.
	Exception when opening Project with RobotWare 5.x Virtual Controller Fixed two issues that caused an error to be logged when opening a Project with a RobotWare 5.x Virtual Controller. An erroneous data mismatch caused the controller to be recreated, and the recreation failed because the controller directory already existed.
	Improved error message when unable to create virtual controller from backup We improved the error message when a product is missing during creation of a virtual controller from a backup. It now provides information about which product could not be found.
	Connect to controller: Certain controllers not visible Fixed an issue where certain RobotWare 6 controllers would not be visible in the 'Virtual Controllers' tab.
	Error on launching Edit User Accounts Fixed an error that could occur when trying to edit user accounts for more than one controller at the same time.
	Syntax error after synchronizing a MoveGO instruction to RAPID We have identified and rectified an issue with the MoveLGO and MoveJGO instruction templates. Previously, the parameters '\Value' and '\DValue' were incorrectly marked as required, leading to a syntax error upon synchronization to RAPID. Note! The fix will not apply to old projects. As a workaround, 'Edit Instruction Templates' can be used to 'Add optional argument', select \Value and set a default value.

PDD	
	RobotStudio unhandled exception when creating P&G with system in sysfail Trying to create a Pack&Go from a system in System Failure state previously gave an unhandled exception. Now this action will instead be blocked with an explanatory error dialog appearing.
	Virtual Controller from Layout not possible for IRB 5500 on Paint Rail Fixed a regression that cause a validation error when trying to create a Virtual Controller from Layout for an IRB 5500 attached to a Paint Rail.
	Error when cancelling download of RobotWare add-in An error is no longer logged if the user cancels download of a required RobotWare add-in while creating a new Virtual Controller.
	Grants not visible in Edit User Accounts The scrolling behavior in Edit User Accounts has been improved to make sure Grants are visible for smaller window sizes.
	Generating swept volume fails for YuMi Fixed an error that could occur when using Simulation Playback to create a swept volume for a dual arm YuMi robot.
	Group Collision geometry gets unchecked when changing detail level When using the setting "Use group collision geometry" for a component group, the setting would be unset upon changing the collision geometry detail level of the group. This is now fixed.
	Password requirements not shown The required number of password characters is now shown when adding a new user to an OmniCore controller.
	Move and rotate not working correctly with orthographic projection Fixed an issue with interacting with the Move and Rotate gizmo when using orthographic projection. Mouse selection and hover would be registered on it despite the mouse cursor being somewhere else on the screen.
	Move and Rotate graphics made transparent when Automatic Transparency is enabled The Move and Rotate graphics are no longer affected when enabling Automatic Transparency in Graphics Tools.
	Signal Setup: Disabled stress signals can be selected Fixed an issue where disabled stress signal nodes could be selected for unsupported robots, by selecting parent nodes.

PDD	
	Recording Playback: Selecting point on stop position graphics doesn't select corresponding point on nominal robot
	In Recording Playback when "Click on robot, tool or tooldata to measure stop distance" is selected, it is now possible to measure the stop distance by clicking on the semitransparent stop position graphics. Earlier it was only possible when clicking on the nominal mechanism.
	Signal Analyzer Online: Stopping recording results in fatal error
	Fixed a crash that could occur if disconnecting a controller while using Signal Analyzer Online.
	Change Options - options cannot be unchecked
	The "Change Options" dialog for RobotWare 6 Virtual Controllers has been corrected and improved. • Cancelling the "Select dependency" dialog could lead to an invalid state where the original option could not be unchecked. This has been fixed. • Paint robot options are now only shown for paint systems. • The name of the Virtual Controller is added to the title bar.
	Unpack & Work fails to restore backup
	Fixed a problem in Unpack & Work where restore of a Virtual Controller could fail if the controller initially started up in system failure state.
	Full add-in name not shown in Unpack & Work
	The full RobotWare add-in distribution name is now shown in the Unpack & Work wizard. For example, 'Wizard Easy Programming' is displayed instead of just 'Wizard'.
	Jobs button enabled with basic license
	The Jobs button was always enabled regardless of the license type, even though a Premium license is required. When the button was pressed without a Premium license nothing happened. The button is now instead disabled with a text clarifying that a Premium license is required.
	Load Parameters from Controller error
	Fixed an error that could occur when loading a configuration parameter file from the disk of real controller.
	Output messages cannot be double-clicked
	Fixed a bug that prevented messages in the Output window from being double-clicked if a message informing about a new RobotStudio version had been added.
	ScreenMaker visual problems
	The ScreenMaker application did not adapt correctly to high-DPI displays. This has been remedied by scaling the interface instead.

PDD	
	Simulation continues after RAPID execution has stopped If a station contains physics objects with dynamic behavior, the simulation will keep running until it is stopped manually. This will no longer happen if the only dynamic objects are built-in cables on ABB robot models.

Known Limitations

IO Configurator 6

*Safety configuration problem with PROFIsafe Controller or CIP-Safety scanner

Changing safety settings in Visual SafeMove or IO Configurator 6 does not always work in conjunction with the "PROFISafe controller" or "CIP-Safety Scanner" option. Connection with robot controller can be lost during any IO-configuration, sometimes resulting in that the Flex Pendant reboots. Again this is only applicable when the PROFISafe controller or CIP-Safety scanner option is present in the system. Problem is dependent on how many devices are configured on respective industrial network. I.e. EtherNet/IP or ProfiNet.

Online

Signal Analyzer Online recordings not saved

When recording signals from a real controller with RobotWare 6.13.03 and later, or RobotWare 7.6.1 and later, there is a sporadic issue which causes the signal changes to not be recorded.

Routine variables can't be displayed in RAPID Watch with RobotWare 6.12

A limitation in RobotWare 6.12 prevents variables declared in a routine from being displayed in the RAPID Watch window.

Port speed cannot be set at the same time as 'Obtain IP address automatically'

In the Public Network settings dialog the Port speed drop down menu is disabled when 'Obtain IP address automatically' is selected.

Workaround:

1. Select 'Use the following IP address' and specify any valid IP address.
2. Select the desired port speed and press OK.
3. Select 'Obtain IP address automatically' and press OK.

Individual RAPID tasks cannot be stopped for RobotWare 5.60 and later

When running multitasking systems, it is not possible to start and stop individual tasks with the dropdown menu of the task node in the Controller browser. This is due a restriction introduced with RobotWare 5.60 and later. However, from RobotWare 6.03 onwards, then RAPID tasks to execute or to stop can be selected from RobotStudio RAPID tab.

FlexPendant Viewer running with automatic reloading

When having FlexPendant Viewer running with automatic reloading of the screens and at the same time jogging the robot with the joystick the robot jogging might halt when the FlexPendant Viewer reloads.

Cable harness not visible in Online Monitor

Physics-based dynamic cables that are part of a robot model are not visible in Online Monitor.

Online – Paint

Backup for Paint systems does not create backup of the PIB for IRC5P with RobotWare 5.xx

The Backup function of RobotStudio does not create a backup of the PIB board of the IRC5P system when running RobotWare 5.xx. Workaround: Create the backup of the PIB board with the FlexPaint Pendant using an USB-stick.

Go Offline does not work for *Paint* systems

The Go offline function will not create a working Virtual controller system for Paint system unless the Paint package I/O option is set to Simulated.

Online – Integrated Vision

Installation error when having previous versions of RobotStudio or Insight Explorer

If you have a previous version of RobotStudio or Cognex In-Sight software installed, installing a new version of RobotStudio may result in the following error message

Module C:\Program Files (x86)\Common Files\Cognex\InSight\5.7.1674.0\CvsInSightDisplay.ocx failed to register. HRESULT -2147220472. Contact your support personnel.

Workaround: To correct the issue, open Windows Settings -> Apps -> Apps & features, select the current ABB RobotStudio 2019.x, select Modify, and step through the installation wizard and select Repair. Alternatively, uninstall and reinstall RobotStudio.

Note: Only one version of the In-Sight Display Control can be registered at a time, and this is always the latest version installed. Although older versions of RobotStudio or In-Sight may seem to function with this version installed, their compatibility with this version is not guaranteed.

RobotStudio may hang for up to 60 seconds when configuring jobs with *PatMax 1-50*

The user interface of RobotStudio may freeze for up to 60 seconds when configuration Integrated Vision jobs with the tool PatMax 1-50.

Workaround: Use PatMax 1-10 instead

Remaining error – New Emulators

New camera models have been added to the camera emulator option in RobotStudio 6.04.01. Some of these new models are not yet fully compatible. Our recommendation is to choose a camera model from the 7000 series which is fully compatible with Firmware version 4.10.2.

Emulated cameras not discovered when controller in Motors On

For RobotWare 5.61 onwards, the camera discovery mechanism is disabled when the controller is in Motors On. As a consequence, the camera nodes will not appear in the controller browser.

Workaround: Switch to Manual Reduced Speed and use the Refresh command on the Integrated Vision node in the browser to make the cameras appear.

Information – Camera firmware version and update

The minimum firmware version to be used with Integrated Vision is 4.08. If this version is not available for a specific camera model, then the newest version available shall be used. There are two important things to know before upgrading a sensor:

- The user must make sure to first backup the files on the camera. This can be done using the Rapid snippets for camera backup/restore, or the FlexPendant Explorer.
- The latest available firmware version may vary across sensor types. However, when the firmware update utility presents the latest available version it shows the firmware with the highest version number which may not apply to the sensor to be updated. However, the appropriate firmware will be applied.

Information – The spreadsheet view

The spreadsheet view is not enabled when editing in the in the following modes "Add part location tool", "Add part inspection tool". Before entering the spreadsheet mode click for example "Setup Image" or Output to Rapid.

Information – Calibration board without fiducial

When using the calibration boards, checkerboard or board with dots, the user must select the preferred origin by clicking and accepting (press enter) three points on the board. Only after these three points have been selected it is possible to click "calibrate" to execute the calibration.

Information - Use default camera settings

If the camera is not using default communication settings the result may be that RAPID instructions return error code "Communication Error". The safest method to get default settings is to go to Connect->Add Sensor Right click and select "Show all sensors". Select the device to reset and click "Apply factory settings" in the lower right corner. The most important settings are:

```
Telnet port: 23
User: "admin"
Password: ""
```

Information – User Credentials

It is now possible to create user profiles with different access levels on the camera. For detailed information about this, please refer to the Integrated Vision User Manual.

Remaining error – Save image on camera

It is not possible to save an image on the camera using "Save Image". This is by design, but the dialog still allows the user to try to do this. The result is that the image is not saved and no error message is given.

Remaining error - Connect button greyed out for no reason

It may sometimes happen that the "Connect" button is greyed out, with the tooltip saying the camera is not on the correct subnet although the IP settings are OK.

Workaround: Restart the Integrated Vision Add-In

Remaining error – VC started from Controller->Add controller does not detect cameras

A VC that is started from Controller->Add controller does not detect cameras on the network, even if the VC_network_definition.xml is correctly configured and the firewall is turned off. The reason is that the controller is not able to detect new cameras on the network when it is in "Motors On" state. When the VC is started stand-alone in RobotStudio it is automatically set to "Motors On" when started.

Workaround: To allow it to discover cameras, turn the control panel key to manual mode or launch the VC as part of a station.

User tip - Removing cameras from configuration

To remove a configured camera from the list of configured cameras, use the configuration editor. Enter Configuration->Communication->Application Protocols and remove the desired camera. Perform a warm start to complete the operation.

User tip – Viewing all cameras present on the network

Connect->Add Sensor is normally used for setting the IP addresses of sensors that are not currently on the correct subnet (192.168.125.X). Since the dialog shows all cameras "seen" by the PC, this dialog is

useful when error tracing camera network problems. If a camera does not appear on the network using the "Add sensor" dialog as suggested above, it is advisable to cycle the power of the camera. If the camera receives power from the controller, then cycle power by turning the mains switch.

User tip – Warm start the controller after changing network settings

Whenever changing the network settings of the camera, either from Connect->Add Sensor or Connect->Network settings, it is important to warm start the controller. If this is not done, RAPID instructions will give the error "Communication Error" and the FTP-mounted camera disk is not accessible. If DHCP address is used and persist, please try a static address instead.

Offline

Point cloud data in JT files can't be imported

Point cloud data in JT files is not imported by RobotStudio.

Issue with collision avoidance for palletizer robots

When configuring collision avoidance for a palletizer robot using RobotWare 6.11, attaching an object to a mechanism link can result in an error and the configuration will not be loaded.

The YuMi library revision 1 cannot be successfully updated to YuMi revision 2

When opening a Pack&Go file with a station that has a reference to `IRB14000_0.5_0.5__01.rslib` you get the option to update it to the newer `IRB14000_0.5_0.5__02.rslib`.

The following issues occurs if you select 'Yes' and update the model:

- The attached parts, for example Smart Grippers, are detached.
- The new YuMi robot is not connected to the virtual Controller.
- The old YuMi mechanism is converted to a component.

Answer 'No' to this question to keep the original revision 1 model and avoid the problems mentioned above.

RobotStudio needs to be restarted to update a modified library instance

When editing a library file (.rslib) that is used in a currently open station, then RobotStudio needs to be restarted to update the library. Simply re-opening the station is not enough to update the content of the station. Unless RobotStudio is restarted, the old library instance will remain in memory and be loaded even though the underlying file has been updated. This is a known limitation and is expensive to fix. There is a workaround to the problem, which is to restart RobotStudio.

The robot IRB 1600ID 1.55 m / 6kg replaced by IRB 1660ID 1.55 m / 6 kg in RobotWare 6.04

The robot IRB 1600ID 1.55 m / 6 kg is not available in RobotWare 6.04 and later. It has been renamed to IRB 1660ID 1.55 m / 6 kg. Virtual controller systems for IRB 1600ID 1.55 m / 6 kg based on RobotWare 6.03 cannot upgraded to RobotWare 6.04 and later. This means that Pack&Go files for this robot based on RobotWare 6.03 cannot be upgraded to RobotWare 6.04 automatically

Workaround: Re-build or modify the virtual controller system to use IRB 1660ID 1.55 m / 6 kg instead when using RobotWare 6.04 or later.

FlexPendant and RAPID applications run with logged in user rights

A FlexPendant or RAPID application running on the virtual controller runs with the rights of the logged-in Windows user. RAPID applications running in a background task will start to execute when the Pack&Go

file is opened and FlexPendant applications will start to execute when the user starts the Virtual FlexPendant. A warning message has been added to the Unpack&Work wizard to make the user aware that only Pack&Go files (.rspag) from trusted sources shall be opened.
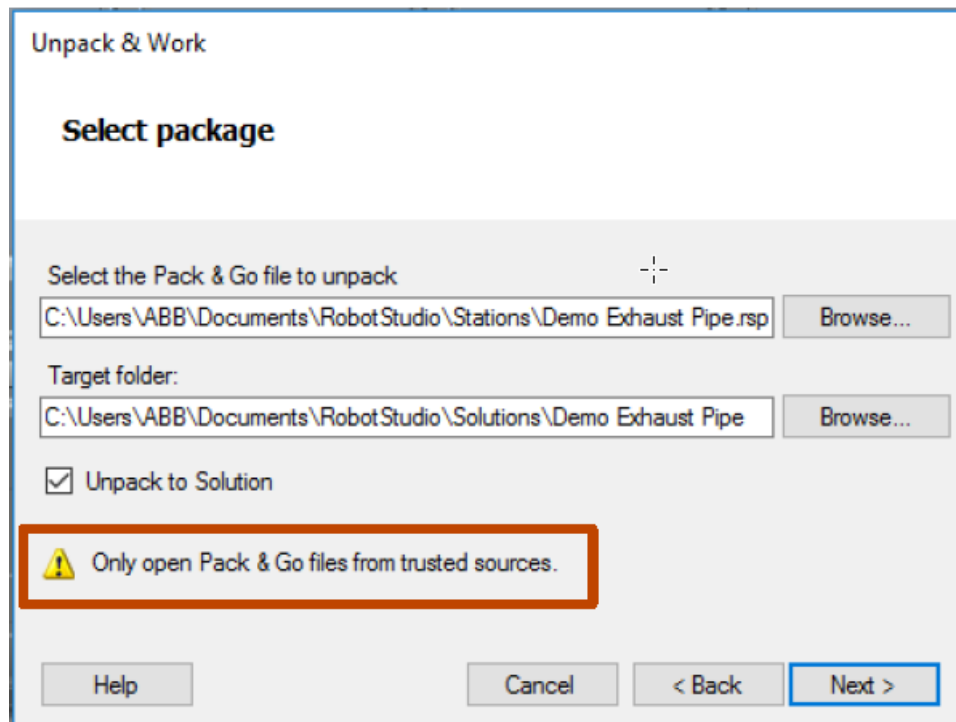
Compatibility of RobotStudio Library and Stations with older RobotStudio versions

RobotStudio is generally not forwards compatible, i.e. it is not possible to load stations or libraries created in RobotStudio 6.04 into an earlier version of RobotStudio such as e.g. RobotStudio 5.x, 6.03.02 or earlier. However, RobotStudio is backwards compatible, which means stations and libraries created in versions 5.x, 6.03.02 or earlier can be opened in RobotStudio 6.04

TrueMove path visualization fails for customized zone data

The TrueMove path visualization function only supports predefined zonedata. It will not work for user defined zonedata.

Backup fails for RobotStudio solutions with SafeMove or Electronic Position Switches

Backups are automatically created for virtual controller systems that are part of a RobotStudio solution when saving the station. For virtual controller systems with the RobotWare options SafeMove or Electronic Positioning Switches the backup will fail since these systems contain files that are read-only. As a result, an error message is presented in the output window: `<System name>: Backup failed`. The station will be successfully saved but there will be no backup created. Workaround: Ignore the error message `<System name>: Backup failed` and create a manual backup whenever needed. The RobotStudio Option "Enable automatic backup of controllers in solution" that is available in "RobotStudio Options -> Robotics -> Virtual Controller" can be de-selected to disable the backup function.

IRB 14000 cannot be combined with any other robot

The function system from layout fails if trying to create a MultiMove system where one robot is an IRB 14000. The reason is that the IRB 14000 cannot be combined with any other robot.

Workaround: Create a separate system for the IRB 14000.

The Work Envelope function does not support IRB 14000

The function is disabled for the IRB 14000 and cannot be activated.

The 2D work envelope fails for certain robot models

As a result, the generated work envelop may appear distorted.

Update of current selection in the 3D graphics window may be delayed

A problem related to the graphics driver has been observed on certain PCs. The problem is that the update of the current selection in the 3D graphics is delayed until the next redraw.

Workaround: Add or uncomment the following line in the file RobotStudio.exe.config

```
<add key="DoublePresentWorkaround" value="true" />
```

Failure to open Pack&Go file to same folder the second time

RobotStudio will prevent Pack&Go files to be opened to the same folder a second time if the station contains VC systems with the EPS or SafeMove option. This is by design to prevent the safety controller configuration file to be accidentally overwritten.

Workaround: Remove the write protection manually using Windows Explorer.

Updates of instruction template and code snippets

RobotStudio will not automatically update the user files for instruction templates and code snippets files in the folders:

…\My Documents\RobotStudio\Instruction Templates
…\My Documents\RobotStudio\Code snippets

Workaround: The user has to manually copy the latest files from

%ProgramFiles%\ABB Industrial IT\Robotics IT\RobotStudio 5.xx\Instruction Templates

and

%ProgramFiles%\ABB Industrial IT\Robotics IT\RobotStudio 5.xx\Code Snippets

to the data folder.

I/O signals configured with access level 'DEFAULT'

When IO signals are configured with access level 'DEFAULT', only input signals are possible to set/reset from the I/O Simulator and I/O Window. To be able to affect also output signals, set the access level to 'ALL' for them in the Configuration Editor.

VC does not start with RRI option and GSI folder structure missing

The VC will hang when started with a system containing the RobotWare option RRI (Robot Reference Interface) if the GSI folder structure is missing.

Workaround: Create GSI Folder before starting the VC inside the *HOME* directory of the system. See the Application Manual for Robot Reference interface for more information.

System in Guard Stop state in Automatic mode after run-time error

Certain run-time errors may cause the controller system to enter Guard Stop state in Automatic mode. This is the same behavior as in a physical robot controller system. This typically happens when a run-time error related to Conveyor Tracking occurs. A simulation cannot be started when the controller is in this

state.

Workaround: To reset the controller state, open the Control Panel window and first switch to Manual mode, and then back to Automatic mode.

Path handling of instructions with multiple joint targets

The path functions Rotate, Translate, and Mirror do not work as expected with instructions containing via points as jointtargets. The functions will leave the jointtargets as is. Interpolate Path gives an Unknown Error and Tool Compensation reports an error message.

Event Manager: Simulation cannot be triggered by analog system signals

The event manager only supports analog station signals, not analog system signals.

Conveyor Tracking

*Conveyor objects must be re-added for stations created prior to RS 6.05

When opening stations with conveyor tracking created prior to RobotStudio 6.05, conveyor objects must be re-added.

Incorrect default values for c1Position and c1Speed for RobotWare 5 with the PaintWare option

The default values for the parameters c1Position and c1Speed may become incorrect for a virtual controller system. The symptom is that its attribute values are all zero, see snapshot below.

Workaround: Save the following lines to a CFG file named 'TEMP.CFG' or similar and load in the virtual controller followed by a restart.

```
EIO:CFG_1.0:5:0::
#
EIO_SIGNAL:
 -Name "c1Position" -SignalType "AI" -Unit "CnvIf"\
 -SignalLabel "ctPosition" -UnitMap "0-31" -Access "ALL"\
 -MaxLog 21474.8 -MaxPhys 1 -MaxPhysLimit 1\
 -MaxBitVal 2147483647 -MinLog -21474.8 -MinPhys -1 -MinPhysLimit -1\
 -MinBitVal -2147483647
 -Name "c1Speed" -SignalType "AI" -Unit "CnvIf" -SignalLabel "ctSpeed"\
 -UnitMap "32-63" -Access "ALL"\
 -MaxLog 21474.8 -MaxPhys 1 -MaxPhysLimit 1\
 -MaxBitVal 2147483647 -MinLog -21474.8 -MinPhys -1 -MinPhysLimit -1\
 -MinBitVal -2147483647
```

MultiMove

MultiMove error: 'Object reference not set to an instance of an object'

When the Test Play button is pressed in the MultiMove tool, the following error message may be displayed: 'Object reference not set to an instance of an object', but the robot moves and the Status 'Calculation OK' is displayed. In addition, when 'Create Paths' is pressed the following message is displayed: 'Can't create paths : Value cannot be null', and no paths are created. In the 'Create Paths Settings', is the WP TCP drop down empty.

Reason: Workobject is not set for the current task.

External Axis

Error 50091: 'Restart not possible' after warm start of a system with external axis

When restarting a system with activated mechanical units the activation state is lost. Then the program

---

can no longer be started from the Virtual FlexPendant, the RAPID Editor or the RAPID Tasks window.

Workaround: Reset the program pointer ('Program Pointer to Main') before starting the program from the Virtual FlexPendant, the RAPID Editor or the RAPID Tasks window, or, start the program from the Simulation Play button.

Network Drives and UNC Paths

RobotStudio on computers with roaming user profiles

RobotStudio may fail on PC configurations with roaming user profiles, i.e. when the users' documents folder resides on a server and not on the local disk.

Workaround: Redefine the 'User Project Folder' to a folder on the local disk (File → Options → General → Files&Folders → User Project Folder).

Virtual Controller does not support UNC paths

UNC paths cannot be used to locate Virtual Controller systems. Using UNC paths for VC systems will cause the log message 'Failed to initialize FW upgrade framework' to appear when the system starts. Subsequent attempts to work with the VC such as synchronizing RAPID data will fail.

Creating and starting systems located on a network drive

When using a network drive to store RobotStudio data such as RobotWare systems or the RobotWare mediapool, the following problems may occur:

- Virtual controller does not start
- Not possible to open Virtual FlexPendant

Cause: By default, the .NET Framework does not allow execution of code from a remote file system. This means the application may behave unexpectedly if the media used by the system or the system itself resides on a network share.

Workaround: To resolve this, the user must explicitly grant the required permissions:

1. Open the file *Virtual FlexPendant.exe.config* located in *C:\Program Files (x86)\ABB Industrial IT\Robotics IT\RobotStudio 5.61\Bin*

2. Add the following lines:

```xml
<?xml version="1.0"?>
<configuration>
    <startup useLegacyV2RuntimeActivationPolicy="true">
        <supportedRuntime version="v4.0" sku=".NETFramework,Version=v4.0"/>
    </startup>
    <runtime> <!-- THIS IS ONE OF THE NEW LINES!!! -->
        <loadFromRemoteSources enabled="true"/> <!-- THIS IS ONE OF THE NEW LINES!!! -->
    </runtime> <!-- THIS IS ONE OF THE NEW LINES!!! -->
</configuration>
```

The Virtual FlexPendant must be restarted for the changes to take effect. For further information, see http://msdn.microsoft.com/en-us/library/dd409252(v=vs.100).aspx

RAPID

Robtargets that are LOCAL to a PROCEDURE cannot be synchronized with RobotStudio

The RobotStudio synchronization engine that translates 3D data of the station to RAPID code and vice

versa does not support robtargets that are declared locally to a procedure.

Workaround: Declare the robtargets as global or local to a module instead.

Robtarget names must be unique in RAPID even if they are LOCAL

RobotStudio requires that robtarget names are unique for the RAPID synchronization to work properly, i.e. you cannot have a global robtarget named pMyTarget1 in module A and a local robtarget with the same name in Module B.

Global robtargets cannot be made local through Synchronization to VC

Global robtargets cannot be changed to local through Synchronization to VC, the option is disabled (PDD 3140).

Workaround: Change the robtargets to module local in the RAPID Editor and Synchronize to station.

Error Message: Sync. to Station completed with errors

Error Message: Sync to Station completed with errors: New data *name type* has same name as existing object in same block *routine*.

When this error message appears, there is a storage type mix-up between data already stored in RS and in the VC. Because of this, and per design, the data is not considered the same data.

Workaround:

1. Ensure all data declarations have the same definition in RS as in RAPID (there is no user interface for this).
2. Sync to station should now work.
3. Sync back to controller, and remember to change the data declarations back to what you want.

Paint

The new conveyor tracking module DSQC2000 is not supported for paint robots.

The new conveyor tracking module DSQC2000 is not supported for paint robots.

Lack of Virtual Controller support for the Paint systems

Paint systems that are configured using the Paint package I/O option Discrete, Compact or Fieldbus, will result in a SysFail state.

Workaround: Re-create the system with the simulated I/O option.

Graphics and Geometry

*Display of working range optimized for furthest reach

The current algorithm uses a fixed value for joint five which gives the furthest reach for a given tool. The sweep is not optimized to get the shortest reach on the "inside" of the working area.
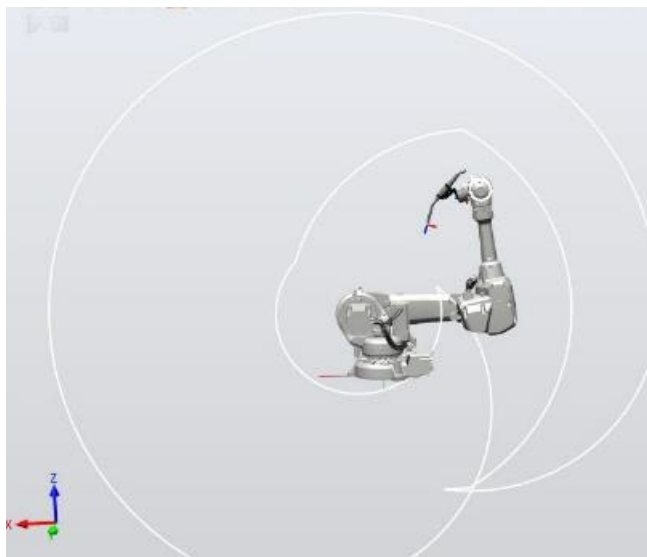
Enforce selected graphics device for PCs with multiple graphics cards

For best performance when running RobotStudio on a PC with multiple graphics cards, RobotStudio can be configured to use a specified device. By this option you can ensure maximum performance. This is useful for e.g. Lenovo W540 that has both an integrated Intel graphics device and a discrete NVIDIA card.

Open the file *RobotStudio.exe.config* that is located in the folders

C:\Program Files (x86)\ABB Industrial IT\Robotics IT\RobotStudio x.y\Bin64

and

C:\Program Files (x86)\ABB Industrial IT\Robotics IT\RobotStudio x.y\Bin

and uncomment the line:

```
<add key="GraphicsDeviceType" value="Discrete"/>
```

Valid values are 'Discrete', 'Integrated' and 'Warp' (software renderer). Note that there are two different files, one for the 32-bit version, and another for the 64-bit version.

Problems when undoing Boolean operations on Geometry

Undoing a Boolean operation might not succeed. To recover from these problems, you need to delete the items that caused the problem.

ScreenMaker

Numeric controls and decimal separators

To use numeric controls in ScreenMaker on the PC set the decimal symbol to a single period ('.'). Other decimal symbols are not supported and binding values will not work in the Virtual FlexPendant. The behavior on the real FlexPendant is not affected by this PC setting.

Graphs on secondary screens

To use a Graph on a secondary screen (not the main screen) a custom action is needed. Otherwise, the Graph will not be updated properly. In the ScreenForm that contains the Graph add a Load event. In this event add an action using Add Action->Advanced->Call Custom Action. Select the Graph control and the UpdateValues action.
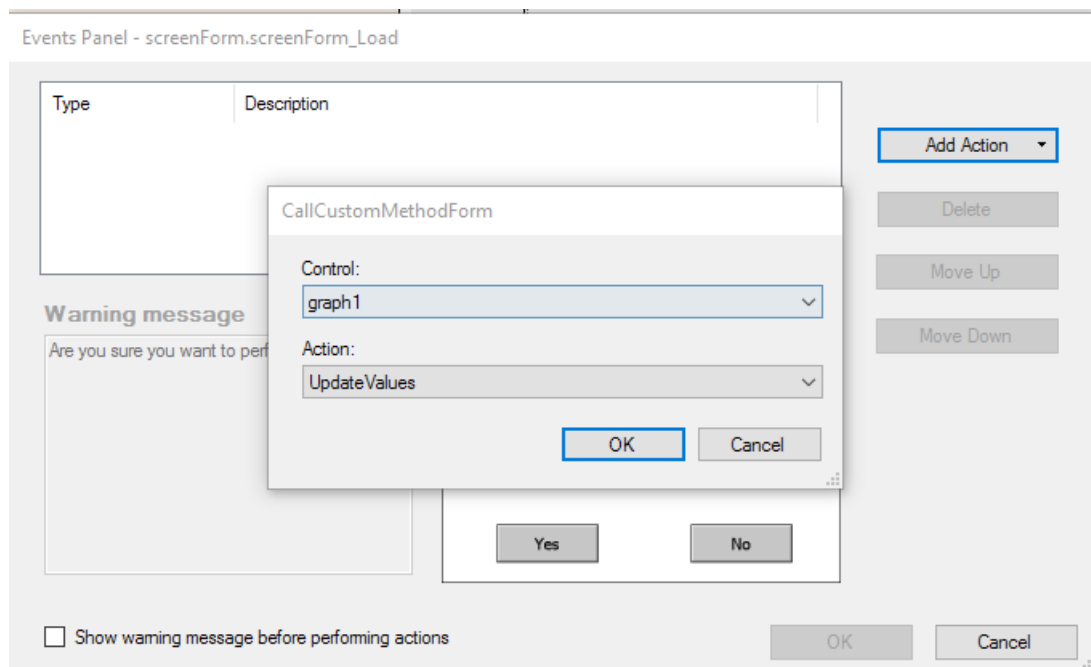
Binding to the Enabled property

Connecting the *Enabled* property of any control to a BOOL variable or IO signal may not work as expected. The variable or signal may be inadvertently changed leading to unexpected behavior. Instead, bind to a digital output where the *Access Level* is set to *ReadOnly*

A *ScreenMaker* cannot be deployed a controller with disabled Default User

Workaround: Enable the Default User.

NumEditor in ScreenMaker disables the controls in a group box or panel

If you are using the NumEditor control in a group box or a panel, and that box or panel is enabled by an input signal, then all other controls of that group or panel will become disabled if the editor is opened and closed.

Button with multiple states in ScreenMaker app do not update the images if button is disabled

For an app which uses Buttons with multiple states connected to images that change depending on the value of a RAPID variable, then if the button is disabled, the button shows the greyed image of the state which was active when the disabled state was shown the first time.

ScreenMaker fails for RobotWare 5.12

ScreenMaker fails to build applications for RobotWare 5.12.
Workaround: Update to a later RobotWare version.

A *ScreenMaker* application may fail to build if the DPI setting is not set to 100%

Certain UI controls in ScreenMaker may fail to build correctly if the DPI setting is not set to 'Smaller – 100%'.
Symptom: The error message caused by this problem will read 'System.Drawing.Font' does not contain a constructor that takes 2 arguments.
Workaround: Set DPI to 100% on your PC.

File changes to FlexPendant applications does not load the changes until a FlexPendant reset

With RobotWare 6.0x the controller's restart will no longer reset the FlexPendant memory. This was part of an effort to improve the restart time of the controller. This means that after placing a new

FlexPendant application file(s) on the FlexPendant unit, you need to manually reset the FlexPendant for it to reload its assets.

To manually reset the FlexPendant you need to use the reset button on the FlexPendant's backside. (See Operating Manual – IRC5 with FlexPendant, 3HAC16590)

Running Routine with Movement

RunRoutine Button control does not always work correct when a routine with movements is called. As a workaround use instructions like StopMove, StorePath, RestorePath and StartMove to control the movements of the robot. A Trap routine could be called with a normal button control and in the Trap the above instructions can be used to control the movements of the robot.

PictureBox control as a Widget

If a Picture Box control is created as a widget from a Windows 8 operating system, the control is not shown on the FlexPendant. The behavior is fine with any other operating system like Windows 7.

RobotWare Compatibility

Supported RobotWare versions

RobotStudio works with RobotWare 5.07 and later. Please check details below. The latest supported RobotWare version for IRC5 and OmniCore controllers is stated under Help/About in RobotStudio. RobotWare packages can be added to RobotStudio from the Add-Ins Gallery window.

RobotWare 5.05 and 5.06 Compatibility

RobotWare 5.05 and 5.06 including revisions thereof are not supported by RobotStudio 5.15 and later versions. Please use the corresponding version of RobotStudio for managing robot controllers with any of these RobotWare versions.

RobotWare 5.07 Compatibility

General

The location of the program pointer is not updated in the RAPID Editor during program execution.

Offline

A limitation in the versions 5.07.02, 5.07.03, and, 5.07.04 of RobotWare may cause the Virtual Controller to System Failure state during I-start on certain computers. The problem is due to the ctrl.bin-file not being correctly created.
Workaround: Create an empty ctrl.bin file in the INTERNAL folder of the controller system, and then perform a warm start.
Note: The problem will reappear if the system is I-started. The virtual controller does not support RobotWare 5.07.08 and RobotWare 5.07.07.

Online

FlexPendant Viewer does not work RobotWare 5.07.

RobotWare 5.08 Compatibility

RobotWare 5.08 and its revisions of are supported with the following limitations:

Offline

RobotWare 5.08 is not supported.
Workaround: Use RobotWare 5.08.01 or later.

RobotWare 5.10 Compatibility

RobotWare 5.10 and its revisions of are supported with the following limitations:

Offline

Starting a controller will generate internal UAS error in controller error log.

RobotWare 5.11 Compatibility

RobotWare 5.11 and its revisions of are supported with the following limitations:

Offline

Linear jogging of a robot across joint values that will cause a change of confdata may fail. For example, if the robot is jogged linearly when joint values is passing 90 degrees for axis 1 may cause the robot to stop or to change configuration.

RobotWare 5.12 Compatibility

RobotWare 5.12 and its revisions of are supported with the following limitations:

Paint

Paint backups from RW 5.12.01 are not compatible with RW 5.12.02 or later. Restoring a paint system backup from RobotWare 5.12.01 will cause SysFail for RobotWare 5.12.02 or later.
Workaround: Add the following parameters to the configuration files:
EIO.CFG

```
EIO_SIGNAL:
-Name "doMainInMC" -SignalType "DO" -Unit "SysComm" -UnitMap "44"
-Name "A1HVErrNo" -SignalType "GO" -Unit "SysComm" -UnitMap "150-151"\
-Access "ALL"
-Name "A1HVEn" -SignalType "DO" -Unit "SysComm" -UnitMap "155"\
-Access "ALL"

EIO_CROSS:
-Res "A1HVEn" -Act1 "HVEnabled"
```

SYS.CFG:

```
CAB_TASK_MODULES:
-File "INTERNAL:/pntrapid/T_ROB1/cycinfo.sys" -ModName "cycinfo"\
-Task "T_ROB1"
-File "INTERNAL:/pntrapid/csvlkup.sys" -ModName "csvlkup" -AllTask \
-Hidden
```

RobotWare 5.13 Compatibility

RobotWare 5.13 and its revisions of are supported with the following limitations:

Paint

Paint backups from RW 5.12.02, 5.12.03 or RW 5.13 or 5.13.01 not compatible with RW 5.13.02 or RW 5.13.03. There are several changes in the configuration database for I/O (EIO.CFG) and Controller (SYS.CFG) that will cause System Failure if an old backup is loaded. There are also changed in installed RAPID modules. To create a compatible configuration, proceed as follows:

1. Create and start a VC with a RobotWare 5.13.03 system containing the same options as your original backup, but do not load the backup.
2. Save the EIO.CFG and SYS.CFG to file.
3. Compare the saved files with the corresponding files of your backup. (You can use a text file comparison tool for simplification.)
4. Add your system-specific configuration to the general configuration files saved from the 5.13.01-system using a text editor.
5. Replace the files of the original backup with the corresponding modified configuration files.
6. Go through the RAPID modules of the backup and remove the default modules (i.e. those that are not changed by the user).
7. Load the backup and restart the system. You are done.

RobotWare 5.15 Compatibility

Signal Analyzer Online

The feature Signal Analyzer Online requires RobotWare 5.15.03 or later.

RobotWare 6 Compatibility

Overview

RobotWare 6.00 and 6.00.01 systems cannot be directly upgraded to RobotWare 6.01. To upgrade a system, you need to create backup and migrate it using the tool 'Migrate Backup or Folder', then recreate the system and finally, restore the backup. For this reason, the functions 'Unpack&Work', 'Go Offline' and 'New Solution with Station and Robot Controller – From backup' are blocked to prevent upgrade from RobotWare 6.00 or 6.00.01 to RobotWare 6.01. RobotStudio, however, is compatible with both RobotWare 6.00 / 6.00.01 and 6.01.

General Compatibility Limitations

Safety Configuration

Safety configuration of a track motion IRC5 system equipped with a safety controller of type EPS or SafeMove can be done without the need to read track motion parameters manually when using RobotWare 5.11.01 or later. Encrypted parameters needed by the safety controller will be automatically read by EPS Wizard and SafeMove Configurator, respectively.

Configurations

The feature *Configurations* for selecting the robot arm configuration (confdata) may fail, or not present all solutions, in some specific circumstances even when the target is reachable if RobotWare 5.14 or earlier is used.

Workaround: Upgrade to RW5.14.01 or later