
RELEASE NOTES

RobotStudio 2022.3.1

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Release Notes for RobotStudio 2022.3.1

General

The release name is RobotStudio 2022.3.1 and the build number is 22.3.10141.1. The release date is December 7, 2022.

User documentation

The RobotStudio Operating Manual is available in all languages supported by RobotStudio except Czech, i.e. English, German, French, Korean, Chinese, Japanese, Spanish. A selected set of RobotWare manuals are available. Each of them is available in two versions, one for IRC5 and one for OmniCore.

Tutorials

Tutorials are available at the RobotStudio product pages at <http://www.abb.com/roboticssoftware>.

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	Oculus Rift, 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/ready/ , or, https://www.microsoft.com/enus/windows/windows-mixed-reality-devices , respectively.

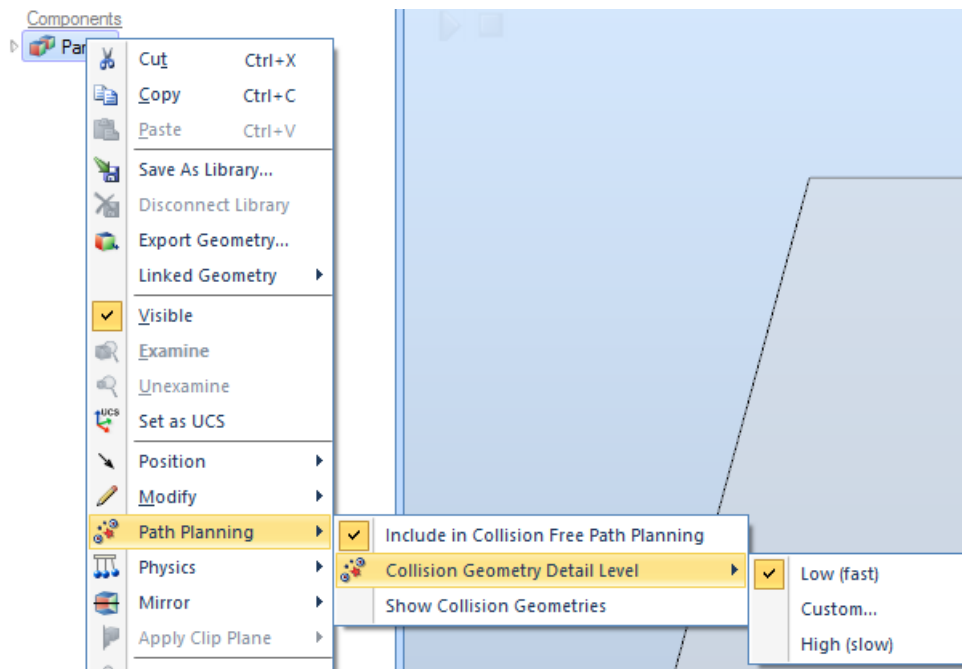
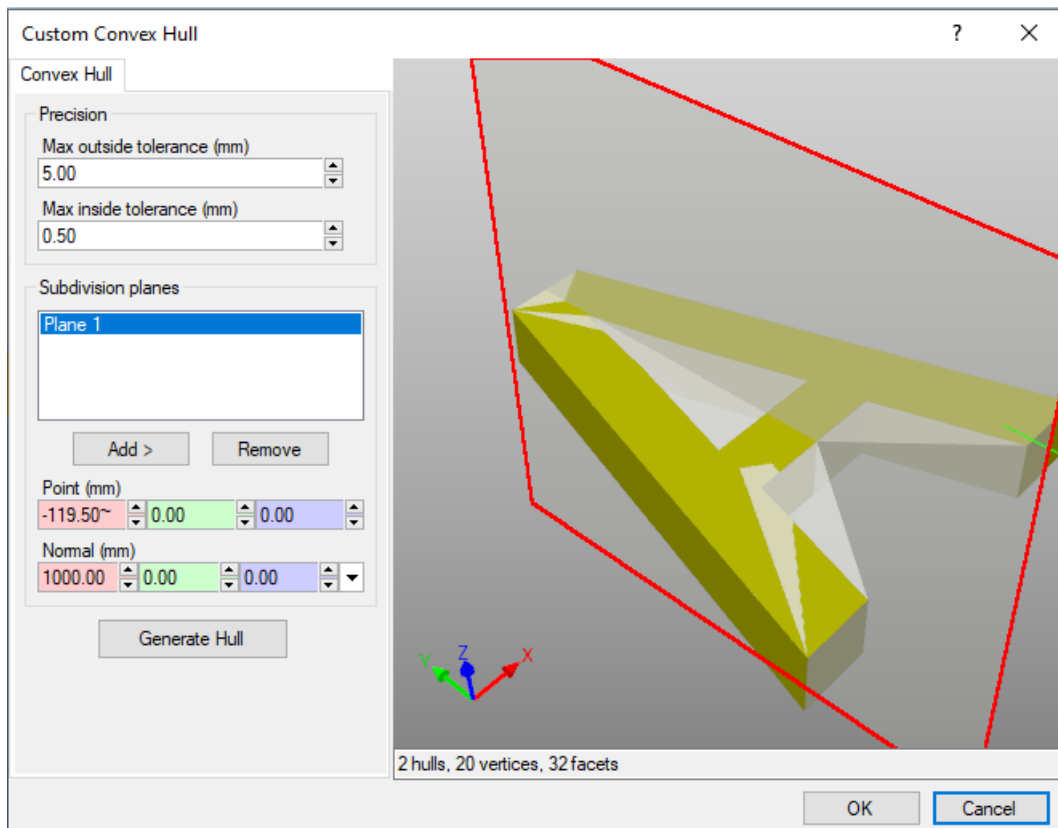
¹ RobotStudio will not benefit from the additional features of so-called 'Professional' or 'Workstation' graphics cards. The price level of these are at a much higher range than gaming graphics cards with comparable performance. High-end gaming PCs are very suitable for offline programming with RobotStudio.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

New Functionality

- [Collision Free Path: Detail Level](#)
- [Collision Free Path: Use Group's Collision Geometry](#)
- [Collision Free Path: View Collision Geometries](#)
- [IRB 365-1.5/800 and IRB 365-1.5/1300](#)
- [Add IRB 1100 Bottom connector variant](#)
- [Collision Free Path: "Include in Collision Free Path Planning" moved](#)
- [Collision Free Path: CRB 1500 \(GoFa\) support](#)
- [FlexPendant Viewer for OmniCore](#)
- [Improved OPC UA Client Smart Component performance](#)
- [IRB 2600 OmniCore support](#)
- [Laser scanner zone size calculation tool](#)
- [Leave the Find/Replace window open](#)
- [Parallel support for LineSensor](#)
- [RobotStudio Cloud version control](#)
- [Save Project As](#)
- [Show Parent Frame](#)
- [Update Collision Avoidance configurator with new I/O features](#)
- [VR: Added support to copy and apply orientation](#)
- [VR: Name changes to the Manipulate tab](#)
- [VR: Show measurement labels on top](#)

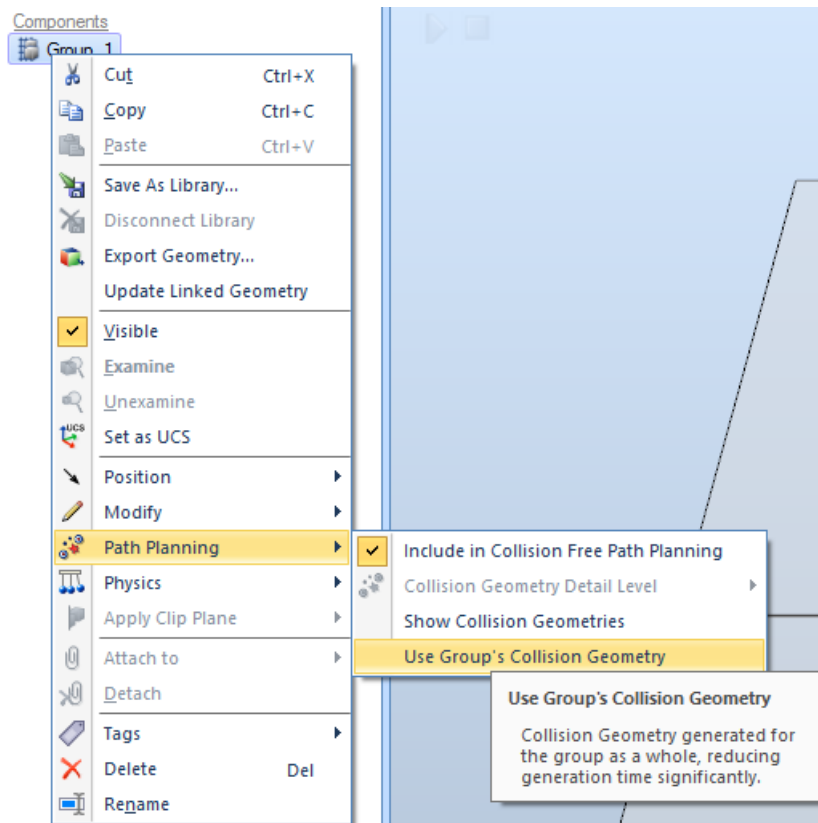
Collision Free Path: Detail Level

Added functionality to set what detail level the collision geometry should have. The option can be set in the Path Planning popup and the default detail level is "Low" which means that a geometry consisting of only one convex hull in order to speed up the generation of collision geometries. Prior releases used the "High" setting. "Custom" is the same as "Low" but you can decrease the volume by adding planes to split up the collision geometry in multiple convex hulls.



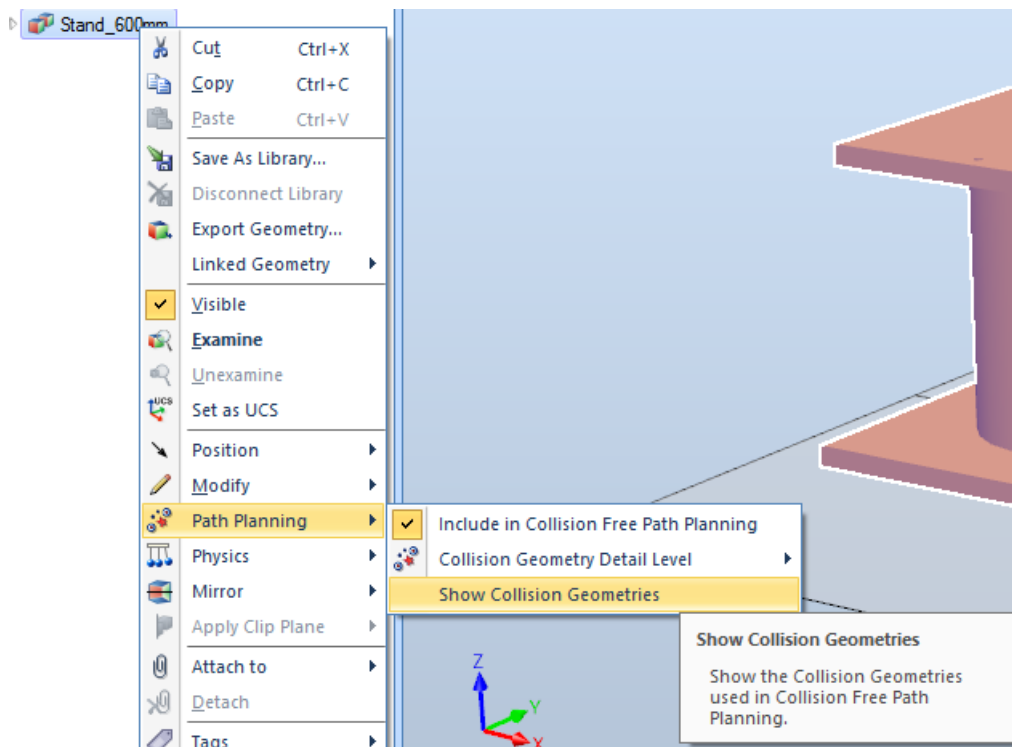
Collision Free Path: Use Group's Collision Geometry

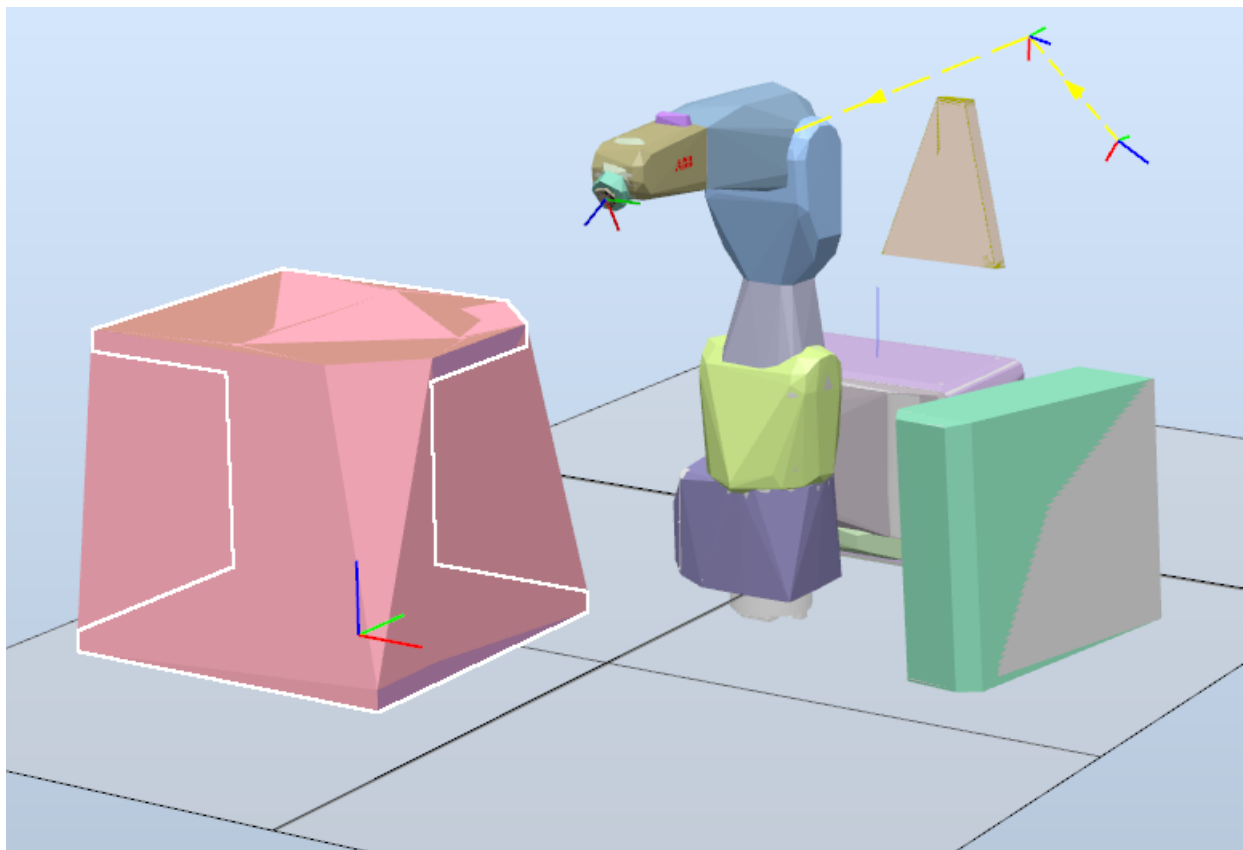
A command named "Use Group's Collision Geometry" is added to the Path Planning popup and is visible if a Component Group is selected. With this enabled, only one Collision Geometry is generated for the Component Group instead of one for each part. This can improve the speed of generating Collision Geometries when a Component Group contains many parts.



Collision Free Path: View Collision Geometries

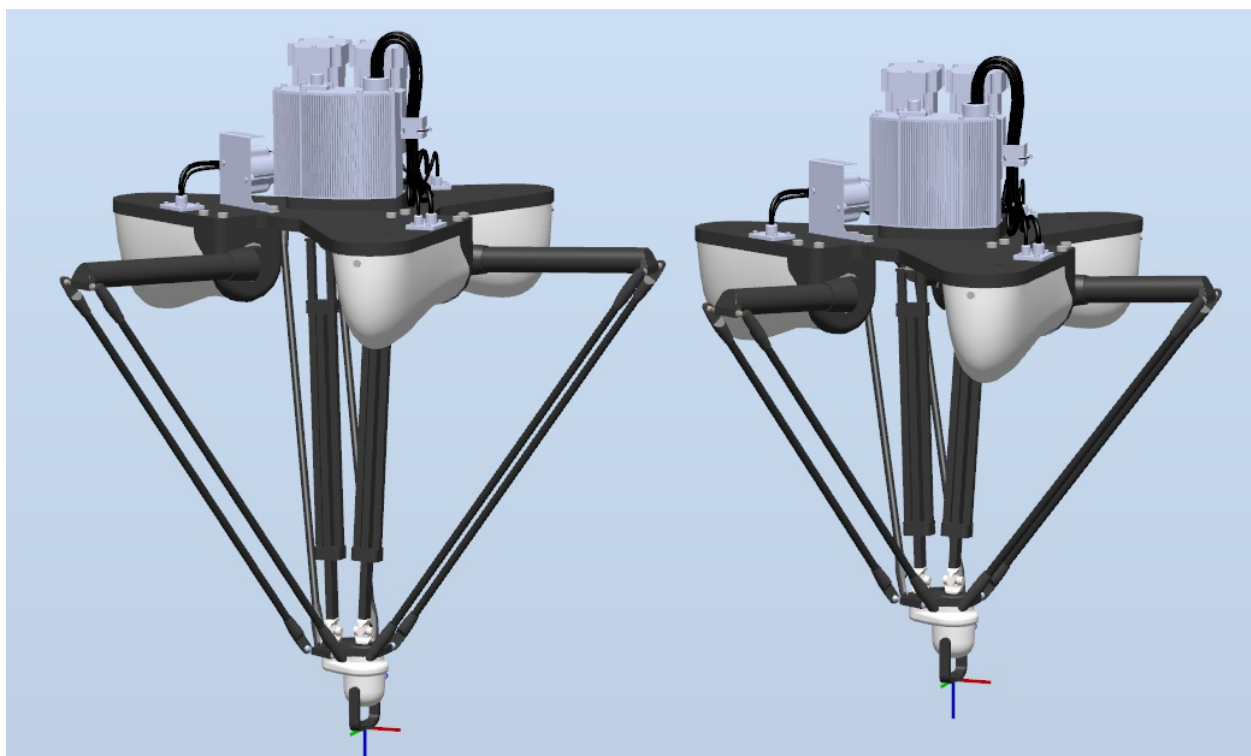
A command is added to the Path Planning popup named "Show Collision Geometries". Enabling this will show all collision geometries which are used in the generation of a Collision Free Path, not just the one selected.





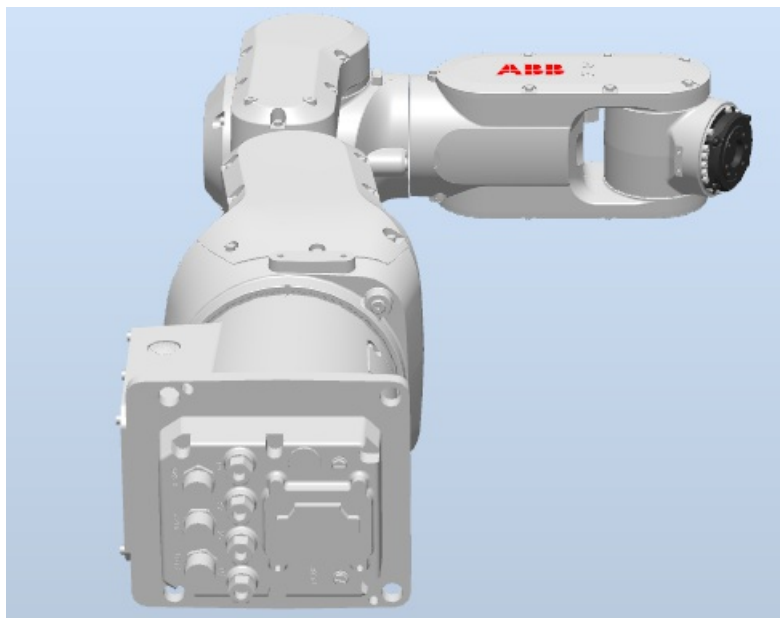
IRB 365-1.5/800 and IRB 365-1.5/1300

IRB 365-1.5/800 and IRB 365-1.5/1300 have been added to ABB Library. They are supported from RobotWare 7.7.



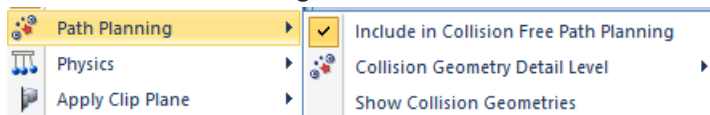
Add IRB 1100 Bottom connector variant

Models of IRB 1100 with bottom connectors have been added to ABB Library.



Collision Free Path: "Include in Collision Free Path Planning" moved

Include in Collision Free Path Planning has been moved into a context menu called "Path Planning" that contains all Path Planning related commands.



Collision Free Path: CRB 1500 (GoFa) support

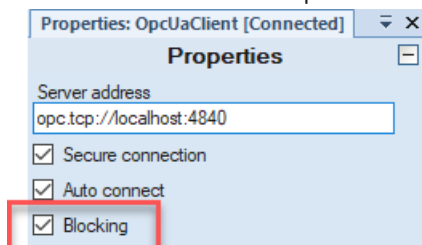
Added support for CRB 1500 (GoFa) in Collision Free Path.

FlexPendant Viewer for OmniCore

FlexPendant Viewer is now enabled for OmniCore controllers with RobotWare 7.3 or higher.

Improved OPC UA Client Smart Component performance

A "Blocking" property was added to the OPC UA Client Smart Component. When enabled the simulation will wait for the OPC UA communication to complete in each time step. This is the default behavior and the same behavior as before the property was added. Disabling "Blocking" can improve the simulation performance if the communication with the OPC UA server is slow, but then there is not guarantee that the OPC UA data is updated in each simulation time step.



IRB 2600 OmniCore support

IRB 2600 and 2600ID can now be used with either IRC5 or OmniCore (RobotWare 7.8 or higher) when creating a Virtual Controller.

Laser scanner zone size calculation tool

Added a laser scanner zone size calculation tool in Visual SafeMove. The calculation of the safety zones and of the laser scanner areas is often one of the most critical pain point for a non-expert user. This tool

provides an automatic calculator that will provide suitable results to set up the safety zone.

Leave the Find/Replace window open

The Find/Replace window will now stay open after using the Find/Replace all button.

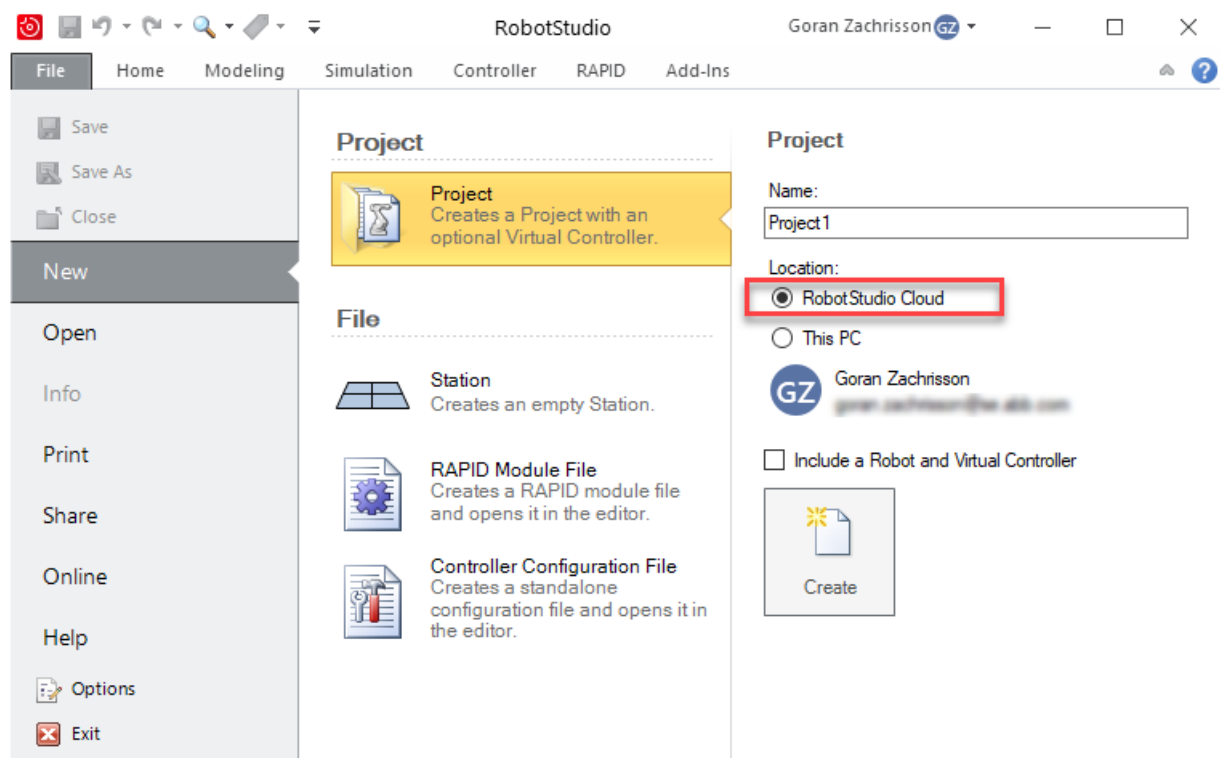
Parallel support for LineSensor

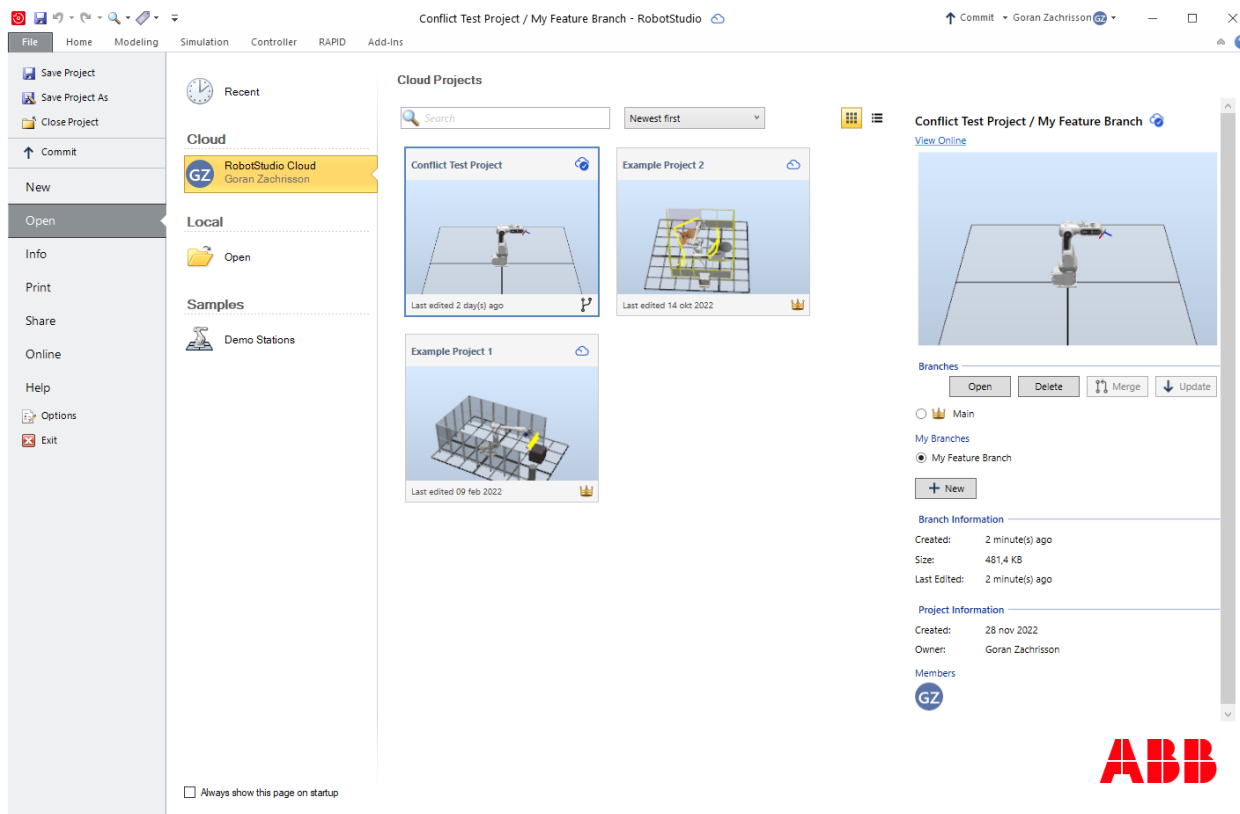
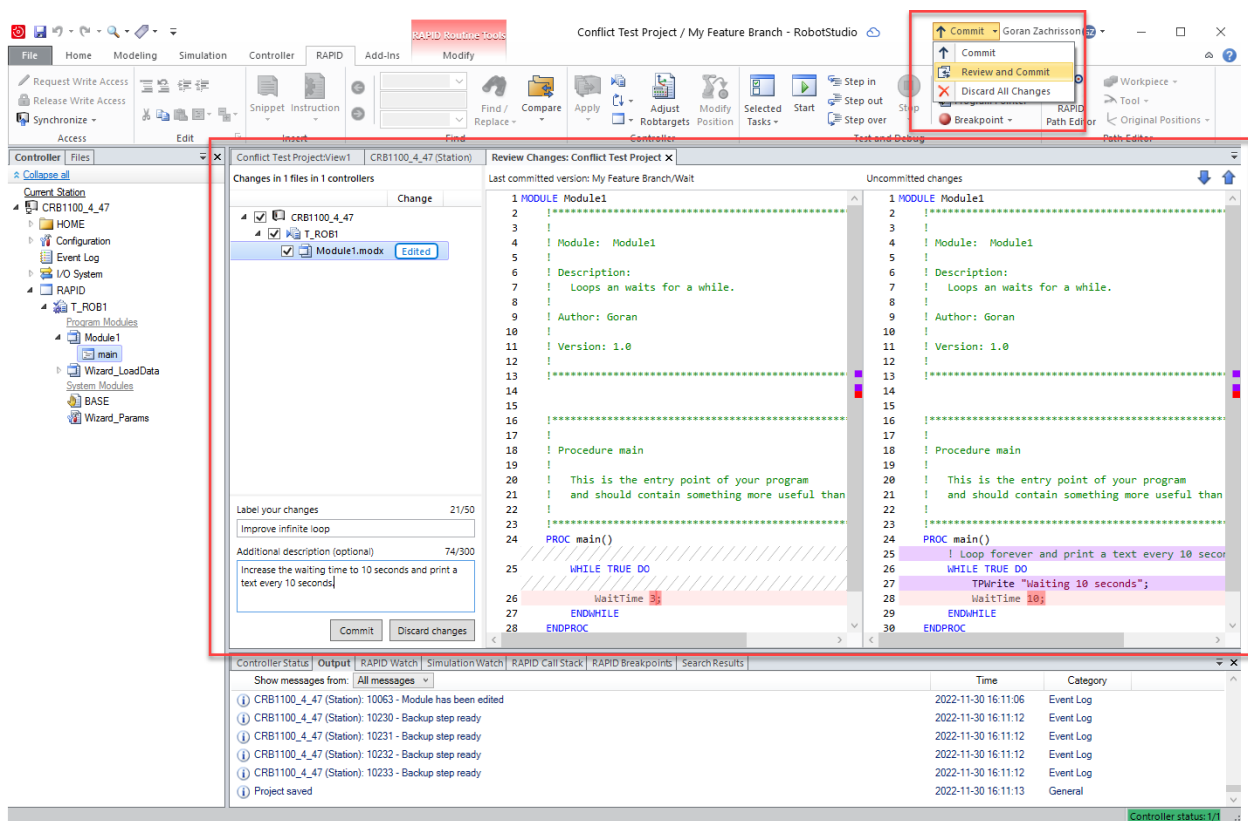
When simulating a station with multiple LineSensor Smart Components, the sensors are now updated in parallel threads. This can greatly improve the performance on a multicore system.

RobotStudio Cloud version control

RobotStudio now supports version control of RobotStudio projects in combination with the RobotStudio Cloud release. This feature, along with other cloud related functionality in the RobotStudio desktop application will only be visible for users that have purchased or renewed their RobotStudio subscription after the release of the RobotStudio Cloud.

When

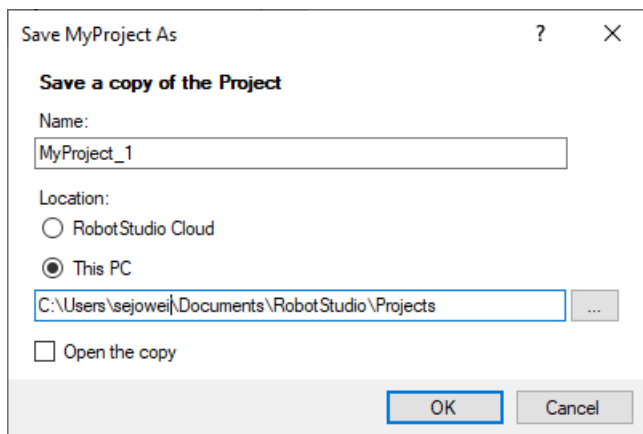




Save Project As

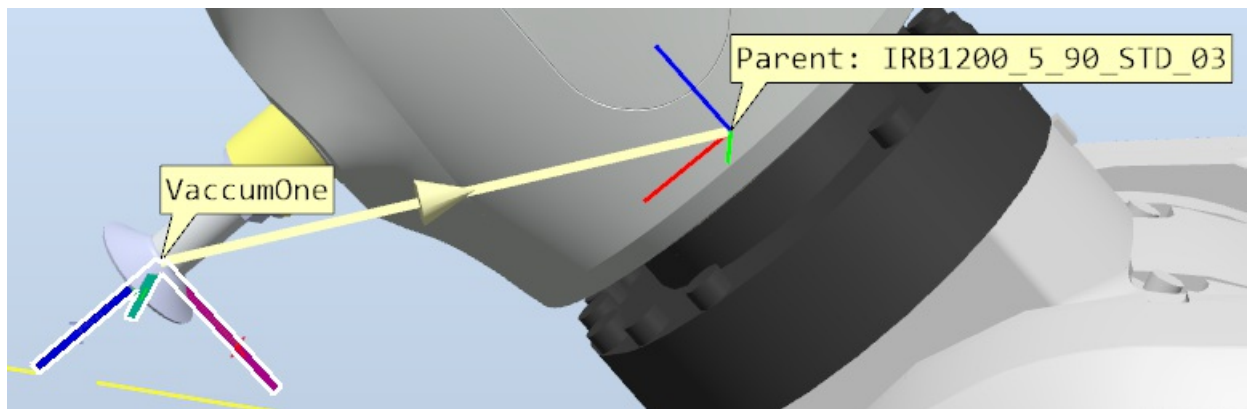
Added the "Save Project As" function in the File menu for saving a copy of a Project.

The copy can be saved either locally or in RobotStudio Cloud. The entire Project structure including Virtual Controllers, library components and user files inside the Project folder will be copied to the new location. The user can select to open the copy or keep the current Project open.



Show Parent Frame

Added a function "Parent Frame" under the "Show/Hide" menu for visualizing the hierarchy of transformations in the offline programming environment. When this function is activated and an offline programming object such as a target, workobject, tooldata or task is selected, an arrow will point from the object to its spatial parent.



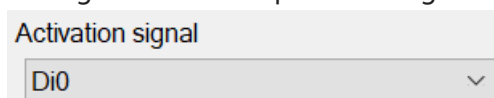
Update Collision Avoidance configurator with new I/O features

From RobotWare 6.15 and 7.9 the Collision Avoidance functionality supports new I/O features that can be configured in RobotStudio.

Activation signals

Any collision object can be configured with an activation signal that controls whether the object is active or not. This can be useful, for example, to model several tools where only one tool at a time is active. It can also be useful for modelling objects that can be present or absent in the robot cell, for example, a pallet.

The signal must correspond to a digital input.



Trigger signals

Any non-moving collision object can be configured with a trigger signal. A trigger signal is a signal that reflects which robots are in contact with the object. The output of a trigger signal should be interpreted as a bit-field, where bit n tells the contact status of robot n. The user can specify the timing behavior of the signal in a number of ways.

The signal must map to a group signal in a MultiMove system, otherwise it can be a digital output.

Trigger signal

Go1

Timing on contact

lookahead

Stop-active signal

Any non-moving collision object can be configured with a stop-active signal. This signal determines whether the stopping functionality of the zone is active or not. If the signal is low, then the robot will not stop if it comes into contact with this zone/collision object.

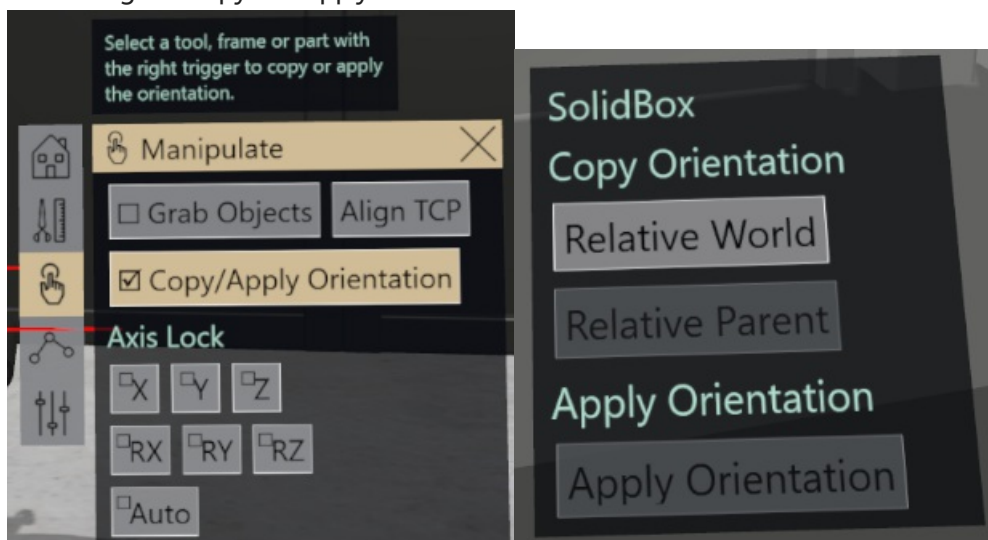
The signal must correspond to a digital input.

Stop-active signal

Di1

VR: Added support to copy and apply orientation

A button called Copy/Apply Orientation added to the manipulate tab. Selecting this enable the user to select a part, frame or tool in the graphics view. This will launch a context menu at the selection point, containing the copy and apply commands.



VR: Name changes to the Manipulate tab

Axis Lock is now named Constraints. Movement control is named Movement. Show measurement is called Measurement and in its dropdown, None is now called Hide.

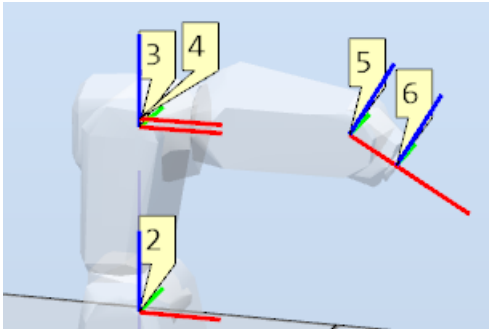
VR: Show measurement labels on top

Measurement labels in VR are now shown "on top" so they are not hidden behind objects in the station.

Corrections

PDD	
13783	Robot on gantry rotation not updated Changing the base frame rotation for a robot that is moved by a gantry will now properly prompt the user to update the robot mechanism in accordance with the new rotation after a restart.
14121	Incorrect RobotWare add-ins order when creating a new project from a backup Fixed an issue where RobotWare add-ins for a backup would not be ordered as specified in the license file of the backup, when creating a new RobotStudio project.
14156	Missing Physics property when creating an rslib When exporting a component to a library file (.rslib), Smart Component properties that referenced Physics joints were not saved correctly. This has been fixed.
14238	Timeout when run Distribute Update Package Jobs Fixed timeout issue when running Distribute Update Package Jobs
14481	RAPID program pointer destroyed when applying code The RAPID program pointer is sometimes destroyed if the user includes whitespaces at the end of a comment. This is due to a limitation in RobotWare. A new feature was added to the 'Format document' function that will trim all trailing whitespaces at the end of comments.
14673	Incorrect program pointer in the RAPID editor when the ruler is displayed The program pointer is now on the correct line when the ruler is displayed in the RAPID editor.
14880	Modifying an Action Instruction automatically selects first variable for mutually exclusive arguments Arguments will now display "Disabled" if a mutually exclusive argument gets modified.
14884	RobotStudio editor changes files to UTF-8-BOM encoding RobotStudio editor now saves files to UTF-8 encoding.
15044	OPC UA Smart Component very slow to load up OPC UA server structure. Server structure tree nodes is now browsed on demand. Only expanded nodes' children will be loaded and already browsed nodes will be saved for next visit.
15059	Robot on track freehand jog issue Fixed an issue with incorrect linear freehand jogging of a robot mounted on a track when the Base Frame calibration position had been modified.

PDD	
15120	<p>Error starting RAPID execution after Move Along Path</p> <p>The Move Along Path function could cause issues with subsequent RAPID execution because the active tool and work object in the task could be defined in a temporary module that was deleted. This has been fixed by setting the active data to tool0 and wobj0 at the end of the execution.</p>
15150	<p>Update issue with signals defined in Station Logic</p> <p>After a Virtual Controller is started, the automatic update of I/O signals that are connected in Station Logic has been improved to support connections to other Virtual Controllers.</p>
15206	<p>Crash in Path Editor</p> <p>Fixed a crash that could occur in the Path Editor if two consecutive move instructions used the same target point.</p>
15210	<p>ScreenMaker: Error creating project</p> <p>Fixed the error "Could not load file or assembly VSLangProj" that could occur when creating a project in ScreenMaker.</p>
15272	<p>Error when opening a Project with RobotWare 5</p> <p>An error saying, "A duplicate system name found." was shown in the output window when opening the Project. This is now fixed.</p>
	<p>Virtual Controller From Layout performance</p> <p>Fixed issues with lag in the Controller From Layout wizard.</p>
	<p>AutoConfiguration slider arrow buttons looks bad on high DPI</p> <p>The AutoConfiguration slider arrow buttons do not overlap other components any more.</p>
	<p>Failing to start Signal Analyzer Online recording</p> <p>After closing RobotStudio 5 times with Signal Analyzer Online recording active, it was no longer possible to start a new recording to the same controller. The Signal Analyzer Online recording is now stopped correctly when closing RobotStudio.</p>
	<p>Signal Setup - Physics - Only one instance of objects with same name is shown</p> <p>Signals for rigid objects that had the same name was collected under the same node. This made it difficult to know which object each signal was referring to. This is now corrected and each rigid object has their own node in the tree. The tool tip shows the mechanism name for mechanism links.</p>
	<p>Exception occurs when Making union of two wire bodies</p> <p>It is now possible to make a union of two wire bodies.</p>
	<p>WAN1 connection information is not present in Controller Properties</p> <p>Controller Properties does now show the same information for network connections as Network Summary in the FlexPendant.</p>

PDD	
	<p>Conveyor Jog slider arrow button looks bad on high DPI</p> <p>The Conveyor Jog slider arrow buttons do not overlap other components any more.</p>
	<p>Cannot create a mechanism with more than 12 joints.</p> <p>Fixed errors that occurred when trying to create a mechanism with more than 12 joints.</p>
	<p>Can't scroll to bottom in diff control</p> <p>There is now possible to scroll to the end in the text comparer.</p>
	<p>Incorrect link tooltip in Output window</p> <p>Corrected the tooltip for Output messages that contain a hyperlink.</p>
	<p>Add Signals: Internal devices visible</p> <p>The list of available I/O devices in the Add Signals dialog is now filtered in the same way as in the Configuration editor, so that internal devices are not selectable.</p>
	<p>Tool attached to robot is not made as active tool</p> <p>When a system from layout is created, where a tool is attached to a robot, the default tool is set as active tool after the system is build instead of the attached tool. Now the attached tool is still the active tool after the system has been created.</p>
	<p>Collision Avoidance: Bad visibility of attachment frame numbers</p> <p>Improved the visibility of attachment frame numbers in the Collision Avoidance 3D view.</p> 
	<p>Tooltip incorrect for Collision Avoidance</p> <p>Corrected the required RobotWare option number (613-1) indicated in the tooltip for Collision Avoidance functionality on RobotWare 6.x.</p>
	<p>VR Meeting: Meeting info and Teach buttons are overlapped</p> <p>Virtual Reality Meeting Info Pane is now located to the left side of the hand controller.</p>
	<p>Visual SafeMove: Not possible to include Safety config on I/O-only when creating system from backup</p> <p>Now it is possible to include Safety config on IO only when creating system from backup</p>

PDD	
	<p>Size of vertical tab group changed when maximizing</p> <p>Fixed a bug that occurred when having vertical tab groups and switching tab from Home to Controller and then minimizing RobotStudio. This caused the sizes of vertical tab groups to change.0</p>
	<p>Possible to disable mandatory network services</p> <p>It is no longer possible to inadvertently disable all network access to a controller by selecting and editing multiple instances under "Firewall Manager" in the Configuration editor.</p>
	<p>Can't call axis-calibration service routine for IRT 710 transfer</p> <p>The Axis Calibration feature is now included when creating a Virtual Controller from layout for an IRT710 transfer track.</p>
	<p>Missing robots with Basic license</p> <p>Fixed an issue that caused several robot models to be missing from ABB Library when using RobotStudio with Basic license.</p>
	<p>Visual SafeMove: Can't delete signals</p> <p>Cant delete signals that not yet has been committed. This is now corrected.</p>
	<p>RobotStudio Operating Manual update: Non-Latin1 characters not supported in VC file path</p> <p>The RobotStudio Operating Manual has been updated to include information on limitations when using non-Latin1 characters in the Windows file path for Virtual Controllers running RobotWare versions lower than 7.3.</p>
	<p>Visual SafeMove: Fatal error on switching to VSM Tab when controller is in restart state</p> <p>The Visual SafeMove button is disabled when any added controller isn't connected. Disable reason added to the Visual SafeMove button.</p>
	<p>Module named #SYS created when syncing</p> <p>Synchronizing from Rapid to Station and then from Station to Rapid could sometimes create an empty Module named #SYS. This has now been fixed.</p>
	<p>File comparison scroll bar issue</p> <p>Fixed an issue that prevented scrolling the scroll bars in the RAPID file comparison window all the way down.</p>
	<p>Unicode issue in Pack&Go</p> <p>Fixed an issue in Pack&Go where filenames using non-ASCII characters could become garbled.</p>

PDD	
	<p>Text Comparer improvements</p> <p>The marking in the vertical scrollbars which shows where the mismatches in the text are, has been corrected.</p> <p>Loading time on large files has been reduced.</p> <p>Scrolling in large files has been improved.</p>

Known Limitations

Visual SafeMove

E10 virtual controller not supported

It is not possible to create a valid safety configuration file for a virtual controller where the controller model is E10. The device mapping of signals on the internal feedback device will be incorrect. There is no information about this limitation inside Visual SafeMove because it is currently not possible to know the model of a virtual controller.

Configurations with Basic Joint Supervision disabled can be created

For SCARA robots, like for example IRB 920T, only the limited functionality Basic Joint Supervision is supported by the Safety Controller. Visual SafeMove allows the full set of functionality to be configured even though it is not supported. Writing a safety configuration file with Basic Joint Supervision disabled results in an error since it is invalid. Workaround: Enable the option Basic Joint Supervision on the robot node in Visual SafeMove.

Current joint values cannot be retrieved when external axes are included in the configuration

It is not possible to retrieve the current joint values using the Read current values function on the Synchronization node when external axes are included in the configuration. Workaround: Read the values from the FlexPendant and update manually.

The safety controller is not forwards compatible

When writing a safety configuration file of a later version than the current safety controller image, then RobotStudio will generate an error of type "C00FFFE: Unknown error (0xC004FFFE)LoadSafetyConfigurationFile". (Note that this error may occur for other reasons as well and is thus not unique to this case).

The function Get vectors from active tool reads values from the robot

The idea behind this function is to read the data from the currently active tool of the robot in order to define a corresponding SafeMove Tool in the safety configuration. That is the reason why the tool information is read from the robot and not the safety controller. The tools of the safety configuration are visible the Visual SafeMove itself and does not need a special function to be retrieved.

Protected checksum may change when upgrading RW from 6.04.0x to 6.05 or 6.06

The protected checksum will change if the input and output modules of the internal device is protected. The reason is that two attributes change order.

No visualization of Safe Range for external axes in Visual SafeMove for SafeMove Basic or Pro

When Safe Range is used to limit the axis range of an external axis such as a track motion, there will be no visual indication of the actual range in the graphic view.

Visual SafeMove windows can be re-opened from the Quick Access Toolbar menu

Any windows that are closed can be re-opened using the Quick Access Toolbar menu, as the command Default Layout does not recover these windows.

SafeMove Tool Zone visualization in Online Monitor for robots with external axes

Only TCP robots and track mounted robots will be visualized in the Online Monitor, no other external axes or positioners. As a consequence, the Online Monitor may show the robot in a non-violating position, even though the safety controller has detected a safety violation and stopped the robot.

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.

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.

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 warmstart 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

Auto save for projects not working

Auto save is not working for RobotStudio projects created with RobotStudio 2022.2 or later.

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.

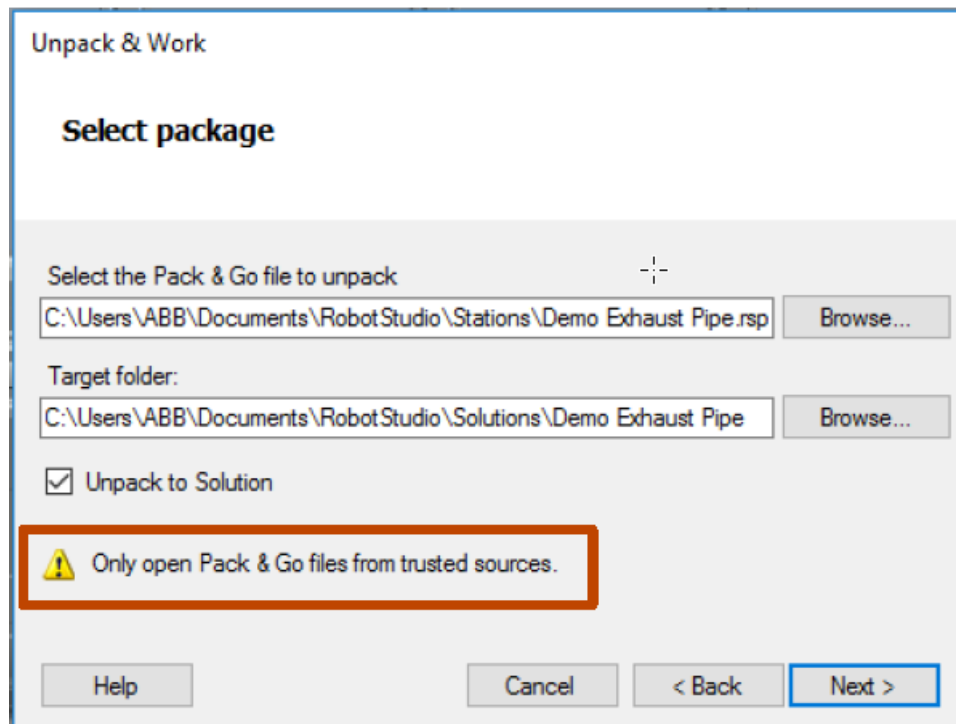
The robot IRB 1600ID 1.55 m / 6kg replaced by IRB 1660ID1.55 m / 6 kg in RobotWare 6.04

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 be 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 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](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

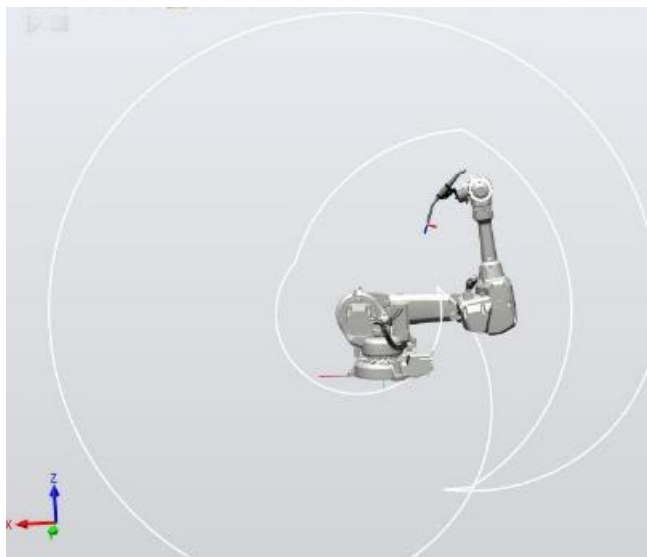
Paint systems that are configured using the Paint package I/O option Discrete, Compact or Fieldbus, will result in a SysFail state.

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.

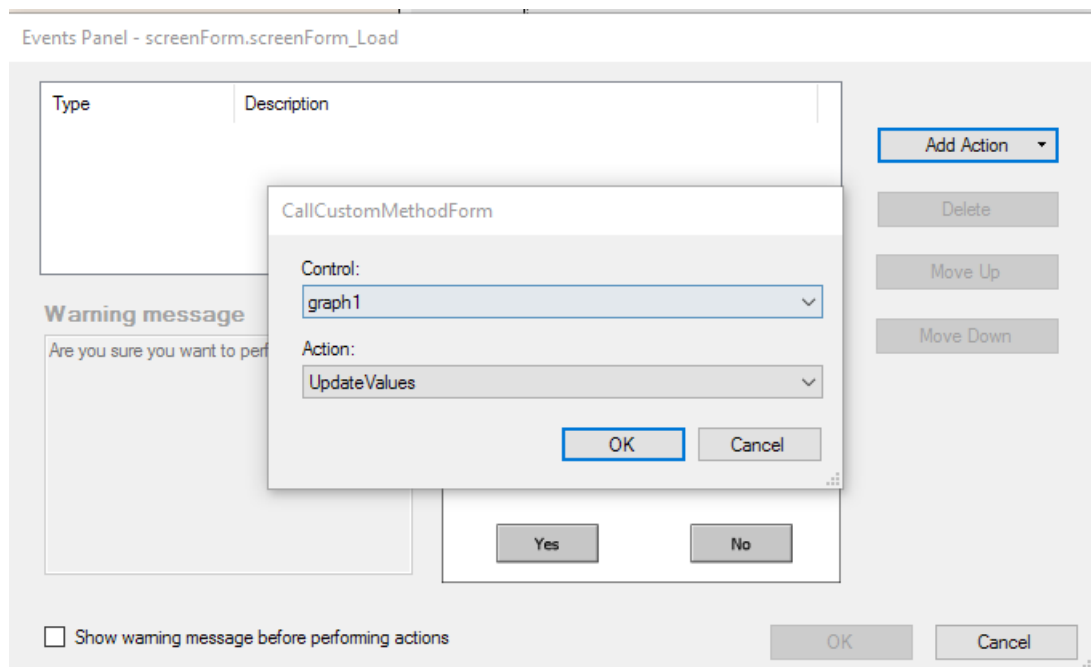
ScreenMaker

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 "A1HVErr" -SignalType "DO" -Unit "SysComm" -UnitMap "155"\
-Access "ALL"

EIO_CROSS:
-Res "A1HVErr" -Act1 "HVErrEnabled"
```

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