RELEASE NOTES

RobotStudio 2021.1

Contents

Release Notes for RobotStudio 2021.1

General

The release name is RobotStudio 2021.1 and the build number is 21.1.9385.0. The release date is March 17, 2021.

User documentation

The RobotStudio Operating Manual is available in all languages 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.

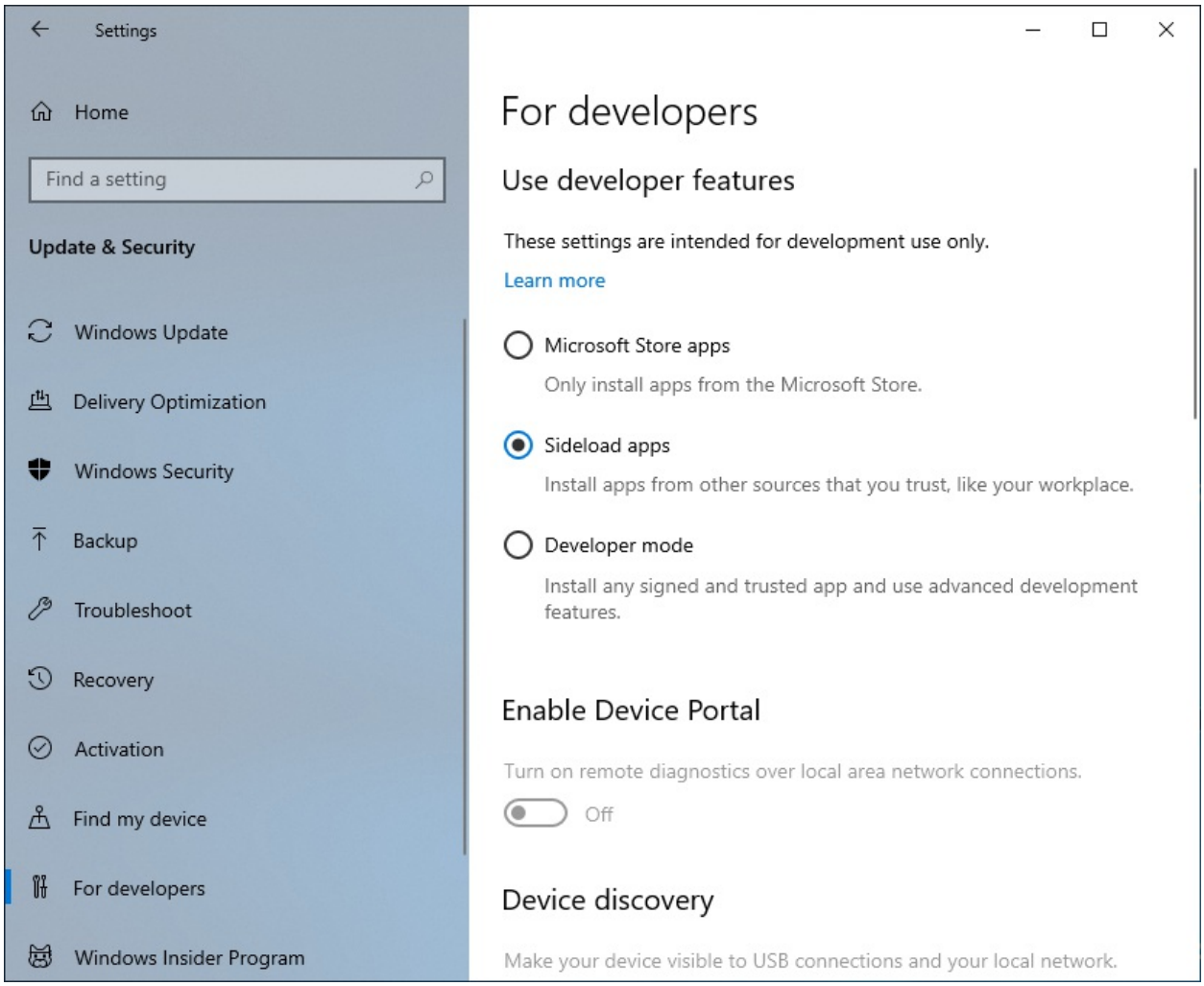
System Requirements

Required Software

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

The Windows AppInstaller 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, but may have been removed on some PCs.

Sideloading of apps must be enabled on Windows 10 to install the virtual OmniCore FlexPendant, see below:



Recommended Hardware

ITEM	REQUIREMENT
CPU	2.0 GHz or faster processor, multiple cores recommended
Memory	8 GB minimium 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.
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.

What's new in RobotStudio 2021.1

Control if physics behavior is enabled automatically on attachment

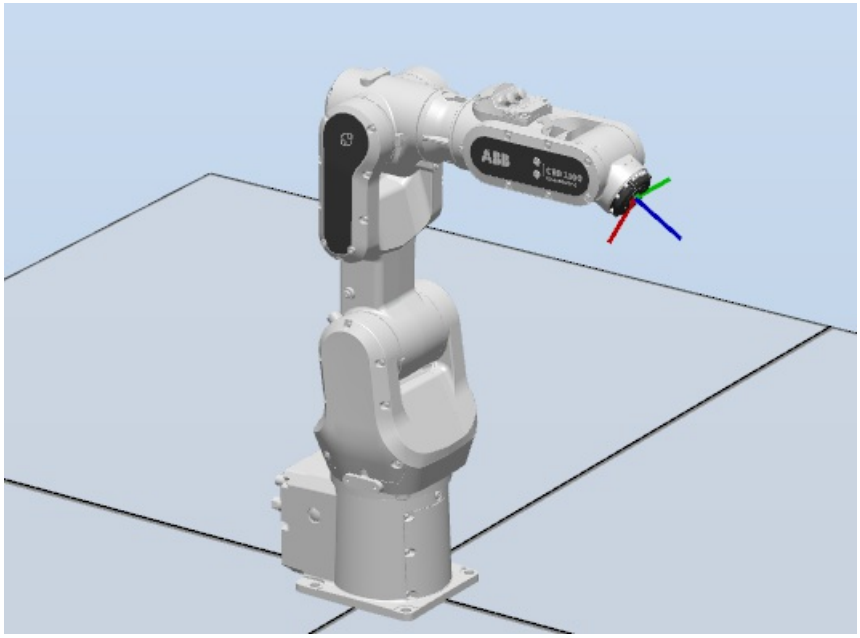
Added an option to automatically enable physics behavior of objects when attached to a kinematic object like a robot.

Conveyor tracking: Retransmission support in CTM communication

Support has been added for retransmission of lost UDP-datagrams when communicating with a Conveyor Tracking Module (CTM) having software version 1.2.0 or greater.

CRB 1100 SWIFTI

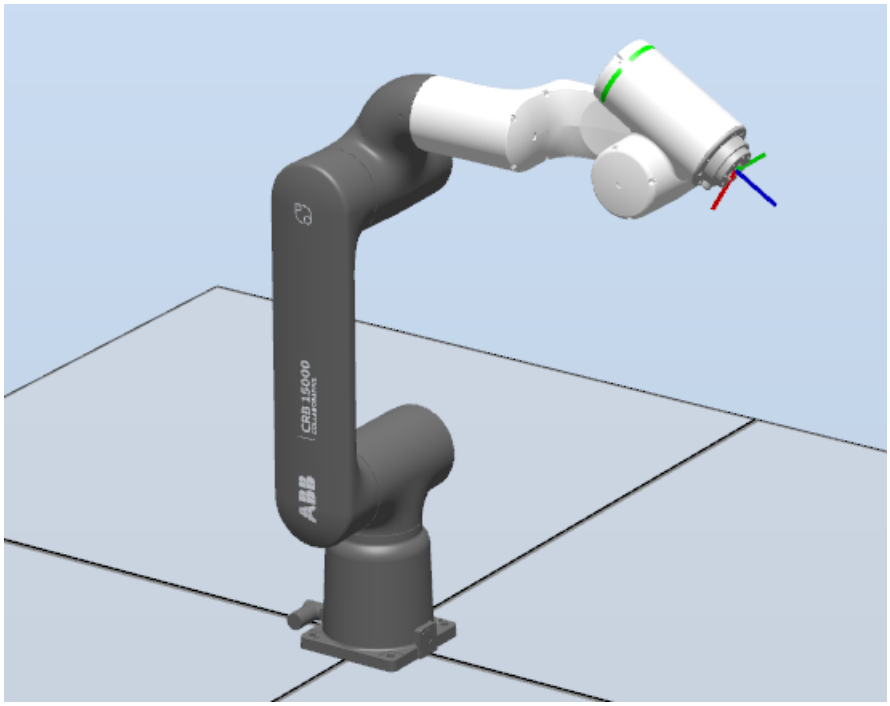
The CRB 1100 SWIFTI™ has been added to ABB Library. At the time of release of RobotStudio 2021.1 it is not supported by RobotWare, but will be supported in a future version of RobotWare. Without RobotWare support you will not be able to for example jog linearly or use a virtual controller with the manipulator. But you can import it to a station, view it, and jog it joint by joint.



CRB 15000 GoFa

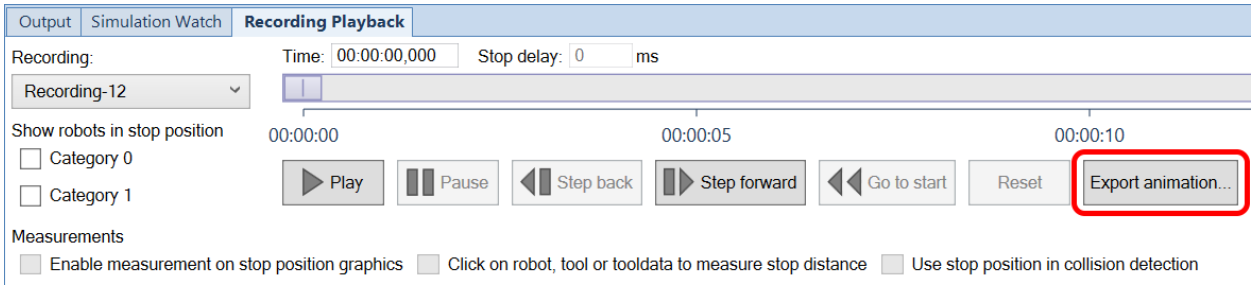
The CRB 15000 GoFa™ has been added to ABB Library. At the time of release of RobotStudio 2021.1 it is not supported by RobotWare, but will be supported in a future version of RobotWare. Without

RobotWare support you will not be able to for example jog linearly or use a virtual controller with the manipulator. But you can import it to a station, view it, and jog it joint by joint.



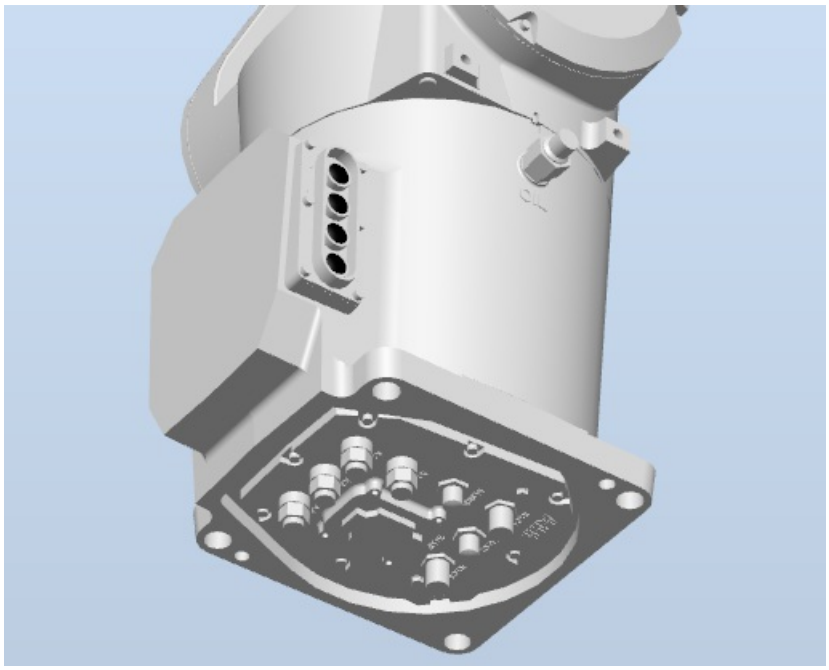
Export Signal Analyzer recording to glTF

A Signal Analyzer recording with joint signals can be exported to a 3D animation in glTF (.glb) format from the Recording Playback window.
Robots in stop position can be included if enabled in Recording Playback. SafeMove zones and geometries can be included if Visual SafeMove is open.



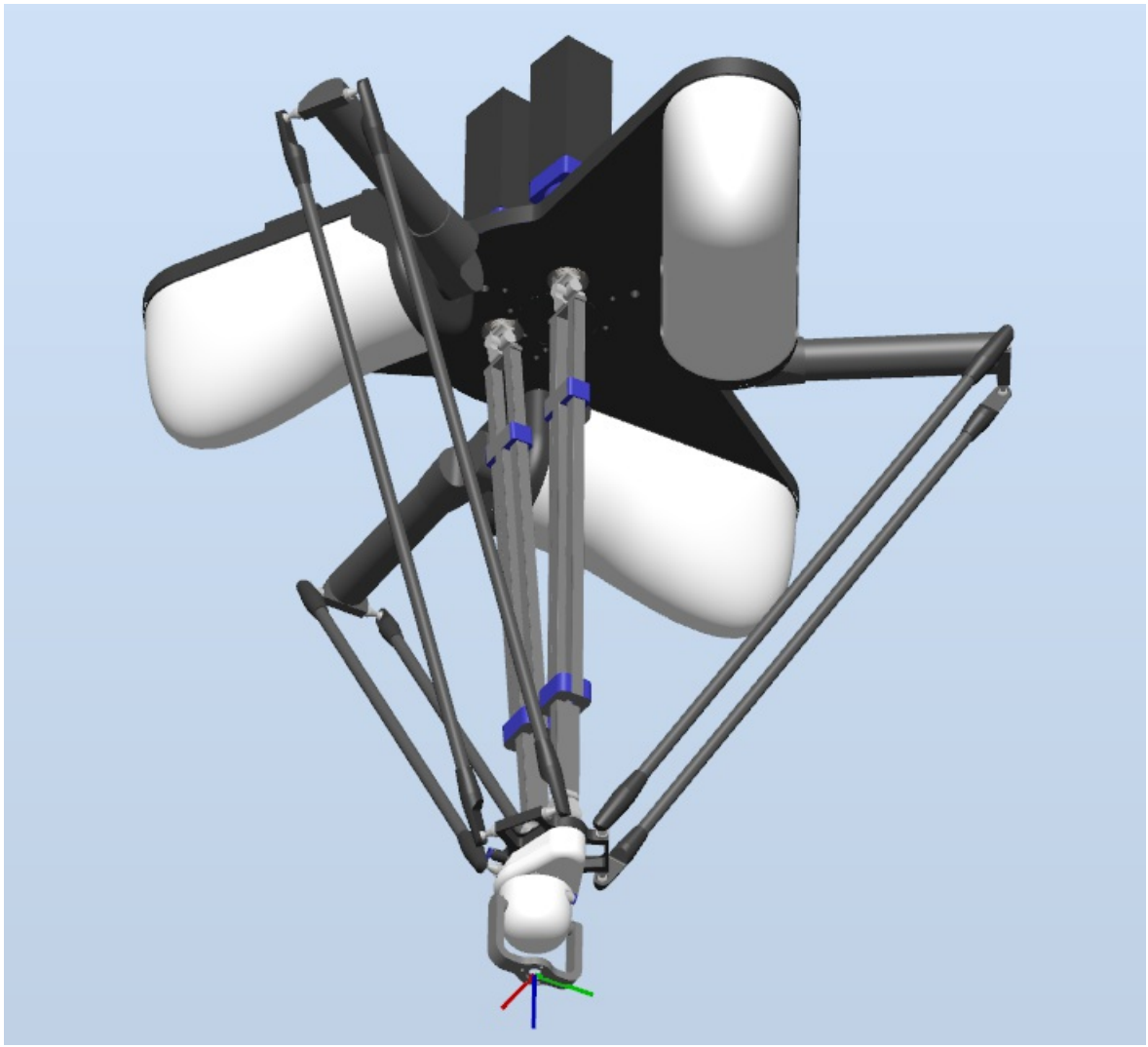
IRB 1300 bottom connector variant

Models of IRB 1300 with bottom connectors have been added to ABB Library.



IRB 369C1

The IRB 369C1 has been added to ABB Library. It is supported in RobotWare 6.12.



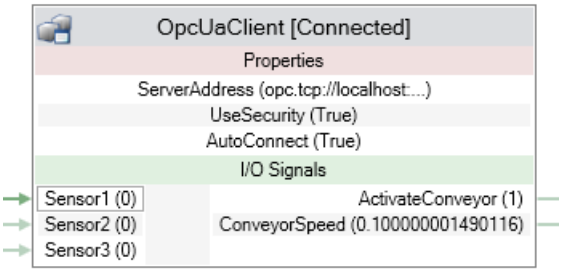
Measure distance to SafeMove zones and geometries

Graphical measurements on SafeMove zones and geometries have been improved. It is now possible to measure the minimum distance between a zone or geometry and another object. Dynamic

measurements that updates when an object is moved is also supported. The standard measurement tools are used.

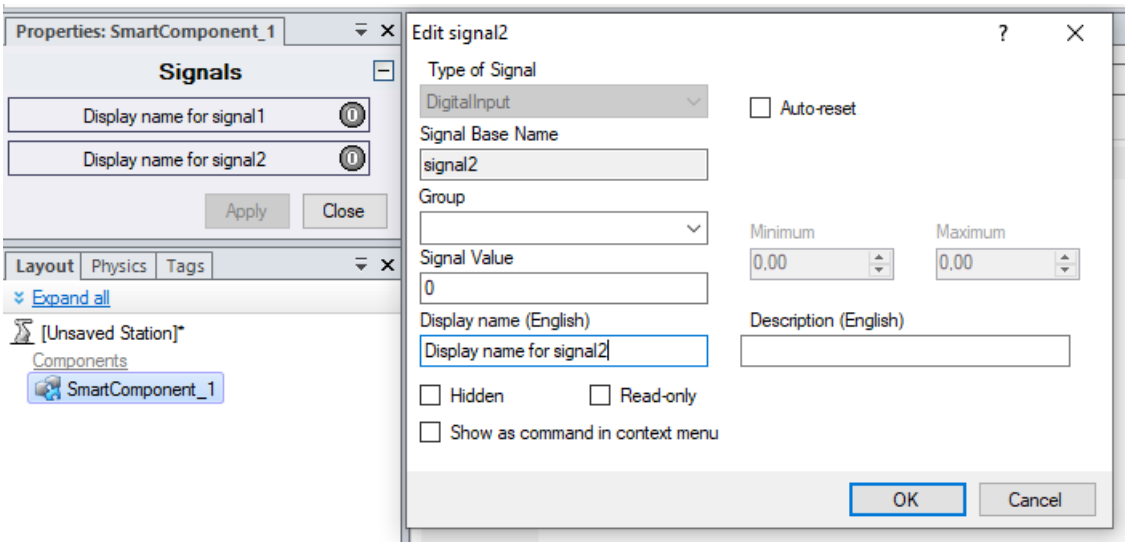
OPC UA Smart Component

The new OPC UA client Smart Component enables virtual commissioning of a cell that has both a robot controller and an OPC UA enabled device, for example a B&R PLC.



Signal display name in Smart Component Properties window

The signal display name is now shown in the Smart Component Properties window. If no display name has been entered, the signal base name is used instead.



Corrections

PDD	
12064	**Safety Controller Not Ready** Removed the possibility to include internal I/O signals such as panel signals and safety controller signals in a saved state. Setting such signals during simulation start could cause the simulation to fail.
12409	**Adding error handler from OmniCore FlexPendant corrupts code in routine** When a RAPID module was open in RobotStudio and edited by another client (for example FlexPendant), the module text would sometimes become corrupt in RobotStudio. This has been fixed.
12439	**Timeout after applying changes (large modules)** When applying changes to large RAPID modules the controller (real or virtual) can become unresponsive, causing other operations to time out. To avoid this, a modal progress dialog is shown during the operation.
12482	**RAPID Overview help won't open** It is now possible to open multiple help windows.
12491	**Missing robtargets in Synchronize to Station window** Fixed an issue where robtargets were missing in the Synchronize to Station window.
12498	**Slider handle can move outside Joint Jog window** The Joint Jog window has been updated making sure the slider handle doesn't move outside the slider when adjusting joints with a large value span.
12551	**ScreenMaker: Not possible to remove ActionTrigger** It was not possible to remove UI-less components such as ActionTrigger and ConditionalTrigger from a ScreenMaker screen. This has been fixed by enabling the right-click context menu for such components.
12623	**Visual SafeMove: Validation info not reset when writing to controller** If a safety configuration was set to validated and the configuration was changed and written again, the state was still validated. Now the validation info is reset after writing the configuration even if there are no changes.
12647	**Visual SafeMove: Speed supervised points are not in flange coordinates** Speed supervision points are now in flange coordinates.
12759	**Visual SafeMove: System name not updated in the user interface** Fixed a bug where the old system name was shown even if the system was renamed from the Installation Manager.

PDD	
12980	**RAPID Editor performance issue** RAPID Editor has been updated, fixing a bug which caused performance issues on large modules.
12984	**Work envelope not correct for IRB360 3-axes** Corrected the work envelope visualization of IRB 360 3-axes.
13051	**Visual SafeMove: Calibration position is read from the safety configuration file instead of the controller** The calibration position is now read from motion system parameters instead of the safety configuration.
13110	**Visual SafeMove: SafeMove configuration fails due to base frame quaternion value** Before a validation error on the base frame could occur on very small quaternion values. This is now fixed.
13124	**Gearbox Heat Prediction function gives exception** Fixed an error in Gearbox Heat Prediction for other robots than IRB 6700.
13136	**Failed to connect to controller for user with long user name.** Fixed failure to connect to a controller (real or virtual) if the Windows user name was longer than 16 characters.
13154	**Red wavy lines when adding comment in RECORD definition block** In the RAPID editor, comments in a RECORD definition were incorrectly flagged as an error. This has been fixed.
13165	**Unwanted surfaces when importing SolidEdge assembly** Fixed a problem in CAD import where hidden or no-show entities could be included even though that option was unchecked.
13192	**Collision Avoidance with parallel robots robots (8700, 6660)** Corrected the display of parallel rod and counterweight for six-axis parallelogram robots in the Collision Avoidance configurator. The geometries were displayed in the wrong location, but the internal controller configuration was correct.
13193	**Compressed backup version is wrong** The RobotWare version of a compressed (.tar) backup could be displayed wrongly, this has been fixed.
13218	**CAD converters not working for AutoCAD** Fixed an error that occurred when importing certain AutoCAD files.

PDD	
13239	**Visual SafeMove:Error message "Attribute is requiredChecksumShort" after upgrade** After upgrading a safety configuration with version 1.01.00 or older, it was no longer possible to write to the controller. This is now fixed.
13244	**Visual SafeMove: Possible to create entity-type with same name** Visual SafeMove has been updated, making sure an error is shown when several entity-types (e.g. a specific supervision function) have the same name.
13254	**Visual SafeMove: Elbow offset is calculated in relation to Base instead of 3rd axis** It is now possible to set elbow position correctly by clicking in the graphics view.
13258	**Visual SafeMove:Controller configuration cannot be read** This error was introduced in RobotStudio 2020.4 and is now resolved.
13286	**Updates in CAD Models (rev6) on the ABB Library for IRB 6650S are not updated in Robotstudio 2021.1** The models of the IRB 6650S have been updated to the latest version. This includes corrections of axis calibration parts and updated motor sizes.
13307	**Outdated jQuery in SLP Distributor** The jQuery component used in the SLP Distributor web interface has been updated to the latest version.
	When clicking in search results, caret is not moving to the selected line in the RAPID editor for unsaved module After performing a search in a new module that had not been saved to a file, clicking in the search results would not move the caret to the correct location. This has been fixed.
	Visual SafeMove:Can't open a configuration with only geometries It is now possible to open a simplified configuration file containing only geometries.
	Visual SafeMove button disabled Fixed a bug where the Visual SafeMove button was not enabled after adding the SafeMove option to the controller.
	Visual SafeMove: Locked axes should be excluded from the safety configuration Locked axes in the controller's motion configuration will no longer be shown in Visual SafeMove and will be excluded from the safety configuration.
	Disable "Shutdown main computer" for RobotWare 7.0 and 7.1 The operation "Shutdown main computer" is not supported on RobotWare 7.0 and 7.1 so the menu item is now disabled for those controllers.

PDD	
	Visual SafeMove: Safe Zone is not created in MultiMove controller after record simulation Data is only recorded for the robot that is selected. Before the buttons for creating Safe Zones where enabled on all robots. Now they are only enabled for the robot which has recorded data.
	VSM: Unauthorized combination possible in properties of Tool Speed Visual SafeMove has been updated, to not allow that a value for minimum speed is specified at the same time as a stop is configured.
	Visual SafeMove:No visualization of Tool Visual SafeMove has been updated to show Tool points and labels in the 3D view.
	RAPID editor: String variable value automatically turns to upper case if keyword Fixed a bug in the RAPID editor which caused keywords typed in a string literal to be converted to upper case.
	Visual SafeMove:Blank error dialog after warning message When the system can't load a configuration, a message box is displayed describing the problem. When the user clicks ok another empty message box was displayed. This empty message box is now removed
	Errors in RAPID code after FlexPendant edit Fixed a problem where the RAPID code in the RobotStudio editor was corrupted after the same module had been edited from the FlexPendant.
	Visual SafeMove:Violation not displayed when supervision names starts with underscore Visual SafeMove has been updated making sure no underscore is allowed as first character in supervision names.
	Visual SafeMove:Min speed can exceed Max speed Visual SafeMove has been updated, showing an error when Min speed exceeds Max speed in Axis Speed Supervisions.
	Visual SafeMove: Prompt to load controller configuration after adding signal Every time the user added a global signal in Safe IO Configurator for RobotWare 6 the user was prompted to the load controller configuration after writing the safety configuration and restarting the controller. This was caused by the added signals ending up in a different position in the safety configuration than in Visual SafeMove. After this fix a new signal will have the same position after it has been read from the controller as in Visual SafeMove. The question to load the controller configuration no longer appears.
	Visual SafeMove: Allow in manual mode is not visible in the safety report Fixed an issue where the 'Allow in manual mode' check box would be available for older RobotWare versions where the function is not actually supported.

PDD	
	Visual SafeMove:Possible to create supervision function with empty name Visual SafeMove has been updated, showing an error message when a supervision function name is left empty.
	AutoPath: Switch place on "Depart" and "Approach" In AutoPath, "Depart" was displayed to the left of "Approach" which is not intuitive. This has been fixed.
	Visual SafeMove: Combinatory Logic and Feedback device not listed as signal user The drop down for global signals has been updated to show when a signal is used by the feedback device or a CL expression.
	SmartComponent signals with UIVisible=false are visible Fixed the visibility of signals and properties on child components in the Smart Component designer view. Signals and properties that are set to Hidden (UIVisible=false in API and .rsxml) are now only shown if they are involved in a connection or binding.
	Visual SafeMove: Synchronize read current values are not working properly for positioner It is now possible to read current joint values for RBP A.
	Operator Message: TPWrite cannot display quotation mark In the Operator Window, quotation marks (") at the start or end of a TPWrite message were incorrectly removed. This has been fixed.
	Physics cables drops off from robot when simulation starts Fixed a problem that caused physics cables to lose their connection to another object when the object was detached and re-attached. This could happen when a saved state with attachments was restored before simulation start.
	Unknown error: Play Fixed an error that could occur when a physics enabled object was detached and re-attached. This could happen when a saved state with attachments was restored before simulation start.
	Visual SafeMove: Arrows have wrong directions in Function Mappings UI The direction arrows on mappings between a function and signal had opposite direction. This has been fixed.
	Visual SafeMove: Error when writing safety configuration, FuncIOMapping signal does not exist Fixed a problem that made it impossible to use FuncIOMappings with PROFISafe signals for RobotWare 7. It was introduced in RobotStudio 2020.4 together with a change in the Safety Configuration file format. Now the format is the same as prior to 2020.4. This will result in a checksum change for a configuration file made with RobotStudio 2020.4 and then opened with RobotStudio 2021.1.

PDD	
	RAPID Editor: Error messages displayed in black color when dark mode is used. Changed color of RAPID editor error messages in dark mode, so that they become visible.
	Visual SafeMove: Possible to add already existing signal from IO Engineering Tool Fixed an issue that made it possible to add a global PROFISafe signal in IO Engineering Tool with the same name as a global signal already added from the Safe IO Configurator Tool in Visual SafeMove.
	Physics: Detached object flies away An object with dynamic physics behavior could instantly move to a position far away instead of falling down when being detached. This happened when there was no other dynamic objects in the station than the object being attached and detached. When the dynamic object is attached it's physics behavior is temporarily changed to kinematic and there are no longer any dynamic objects left in the station. This will suspend the physics simulation and it is resumed again when the object is detached and it's behavior is changed back to dynamic. In this transition between suspended and active physics simulation a very high speed was calculated for the detached object which made the physics simulation unstable. This has been fixed by calculating the correct speed at the time of resuming the physics simulation.
	Visual SafeMove: Fixed an issue in I/O Configurator 6 which caused group signals in the safety configuration to have width 32 instead of the actual number of bits specified.
	Missing buttons in Installation Manager Certificate dialog In Installation Manager, the buttons for connecting or not connecting to a controller for which the identity cannot be verified were missing. This has been fixed.

Known Limitations

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 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

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 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

***Issue with collission 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 mecanism 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

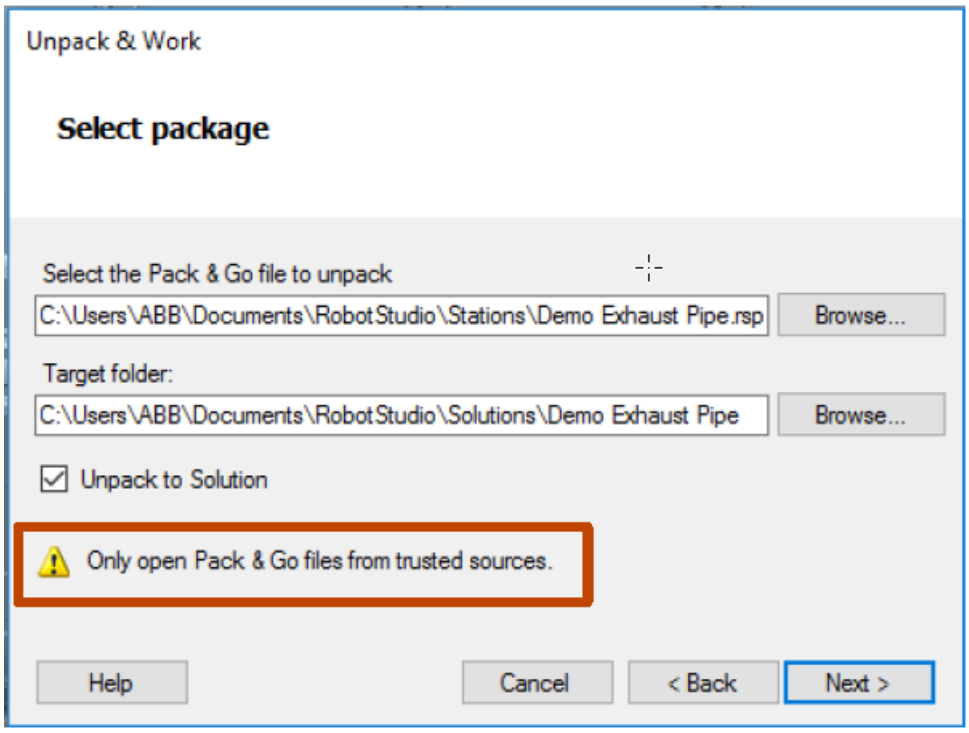
The robot IRB 1600ID 1.55 m / 6 kg is not available in RobotWare 6.04 and later. It has been renamed to IRB 1660ID 1.55 m / 6 kg. Virtual controller systems for IRB 1600ID 1.55 m / 6 kg based on RobotWare 6.03 cannot upgraded to RobotWare 6.04 and later. This means that Pack&Go files for this robot based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

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

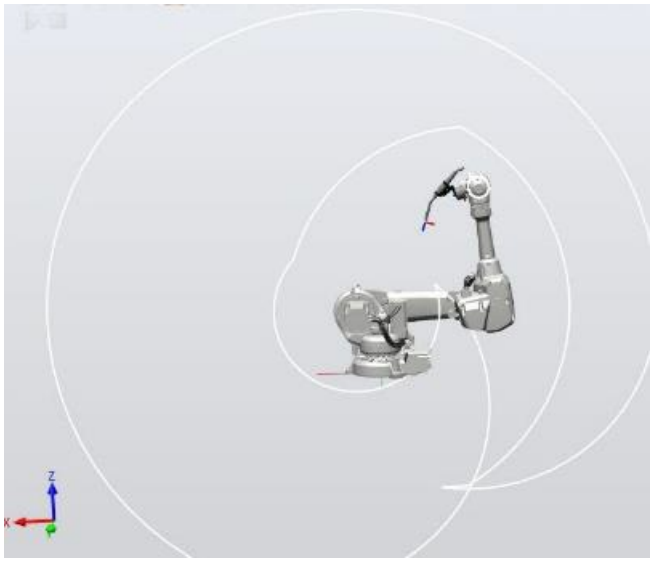
Paint systems that are configured using the Paint package I/O option Discrete, Compact or Fieldbus, will result in a SysFail state.

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.

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 RobotApps 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