

Release Notes

RobotStudio

2020.1.2

Revision: -

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1 Release Information

1.1 General

Release Name

The release name is RobotStudio 2020.1.2 and the build number is 20.1.9056.2.

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. The OmniCore manuals are only available in English.

Release Date

The release date is August 17th, 2020.

Demo stations

The following demo stations are included in this version.

- Demo AW Station
- Demo Solar Simulation
- Demo Exhaust Pipe
- Demo FlexLoader
- SC demo station finished.rspag
- SC demo station start.rspag

They are stored in the Pack & Go format (.rspag) and can be opened with the command Unpack & Work on the Share section of the RobotStudio menu.

ScreenMaker Demo Station and Project

There is a demo station and associated ScreenMaker project available.

- SCM_ExampleProject (*ScreenMaker Project*)
- SCM_ExampleStation (*RobotStudio station*)

These files are found in the 'Addins/ScreenMaker/Samples' folder under the RobotStudio installation folder.

Tutorials

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

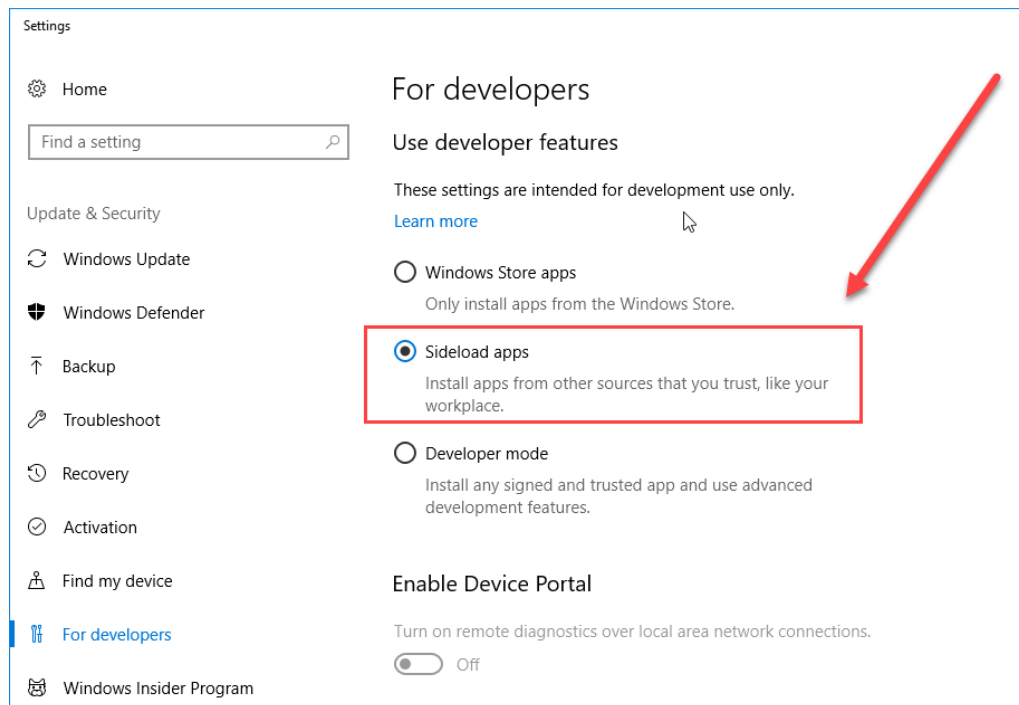
1.2 System recommendation

Recommended Software

Operating System	
Microsoft Windows 10 Anniversary update or later (recommended) ^{1,2}	64-bit edition
ABB RobotWare 5 for IRC5	5.06 to 5.16.x 5.60.x and 5.61.x
ABB RobotWare 6 for IRC5	6.0 to 6.11.x
ABB RobotWare for OmniCore	7.0.x

¹ 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.

² Sideloading of apps must be enabled on Windows 10 to install the virtual OmniCore FlexPendant, see below



It is recommended to run Windows Update to get the latest updates to Windows prior to installing and running RobotStudio.



Note

The Windows Firewall will try to block features necessary to run RobotStudio. Make sure to unblock these features when asked (Industrial Robot Discovery Server, RobotStudio StudioAppFramework module, Virtual RobotController (all published by ABB). The blocking state of a certain program can be viewed and changed at *Start/Control Panel/Windows Security Center/Windows Firewall*. Read more on <http://www.microsoft.com>.

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
DPI	Normal size (100% / 96 dpi) up to Large size (150% / 144 dpi) Only Normal size supported for Integrated Vision.
Mouse	Three-button mouse
3D Mouse [optional]	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/en-us/windows/windows-mixed-reality-devices , respectively.

¹ A note on graphics cards and PC hardware. 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.

2 What's new in RobotStudio 2020.1

2.1 Virtual Reality – Flat tabbed menus

Overview

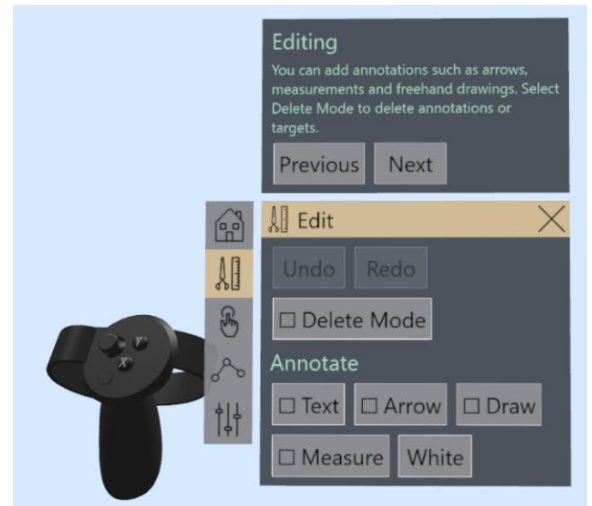
RobotStudio 2020 replaces the Virtual Reality functions that were displayed on a cube attached to the left hand controller with flat menus for easy navigation and better usability. Integrated tips introduce the functionality of each button.

From the five tabs on the vertical bar you will reach the corresponding page.

All the commands from the four sides of the menu cube in RobotStudio 2019.5 are organized under the five tabs **Home**, **Edit**, **Manipulate**, **Path** and **Settings**.



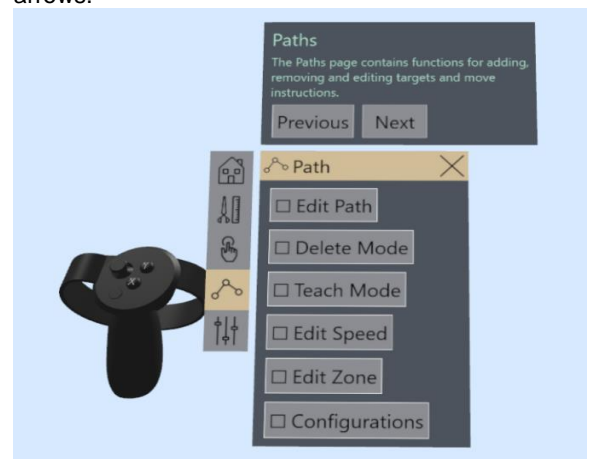
Home tab: Navigation options and simulation.



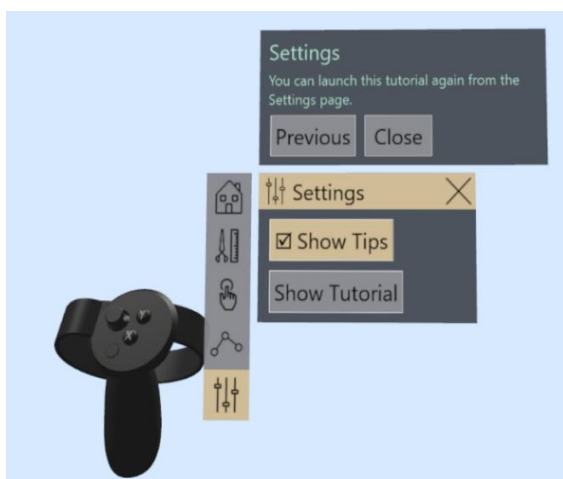
Edit tab: Add annotations like text markups and arrows.



Manipulate tab: Allow objects being grabbed with your hand and limit robot axis while jogging.



Path tab: Add, remove and edit target and move instructions.



Settings tab: Show or hide Tips and start the tutorial again.

2.2 Virtual Reality – Tutorial

Overview

The first time you start a Virtual Reality session a tutorial gets started as a series of simple instructions. The tutorial can be started again from the **Settings** tab.

2.3 Virtual Reality - Improved navigation experience

Overview

The new Drag move navigation mode allows you to drag and rotate yourself around in the 3D environment by pressing both the left and right grip buttons on the hand controllers.

The teleportation is now initiated by pressing the the left grip button to show the teleport beam and then the left trigger to confirm the movement.

Using the left joystick/trackpad, you can now move yourself step by step forward, backwards and rotate to the left and right. Enable Walk mode to prevent walking through objects and allow climbing stairs or other objects with a height similar to the steps of a stair.

2.4 Virtual Reality – Support for more headsets and hand controllers

Overview

Support has been added for the following virtual reality headsets and hand controllers:

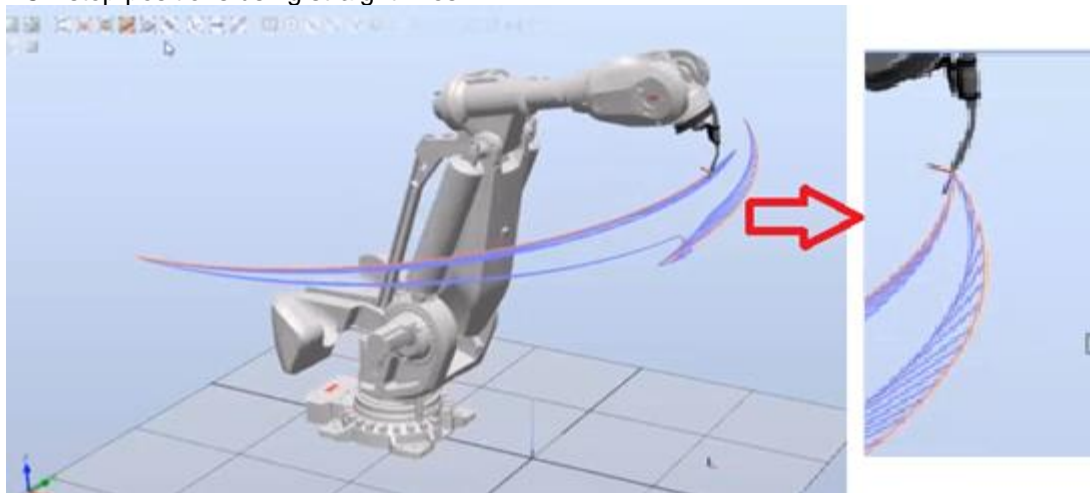
- Valve Index
- Samsung HMD Odyssey (Windows Mixed Reality)
- HTC VIVE Cosmos

All hand controllers are visualized with the corresponding 3D model in the virtual reality environment.

2.5 Visualization of simulated stop positions

Overview

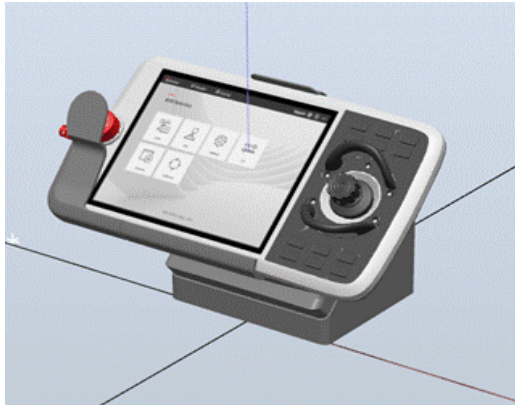
The final stop positions of TCP when a category 0 stop occurs can be visualized. At regular intervals along the path, programmed TCP positions are connected to the corresponding TCP stop positions using straight lines.



2.6 New libraries

Overview

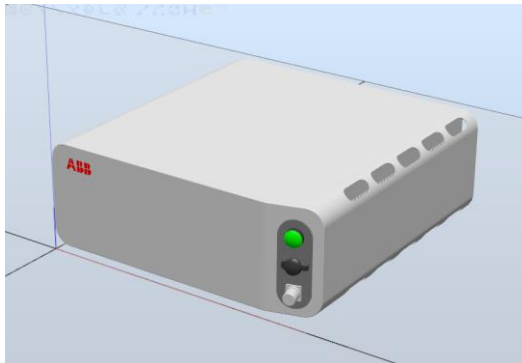
Models for the IRB760-445 palletizing robot as well as all variants of the OmniCore C30 controller and OmniCore FlexPendant has been added to ABB Library.



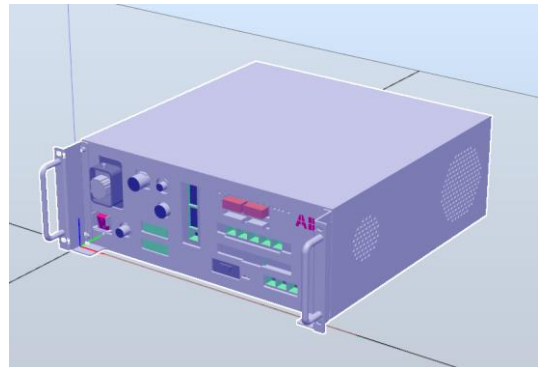
OmniCore FlexPendant



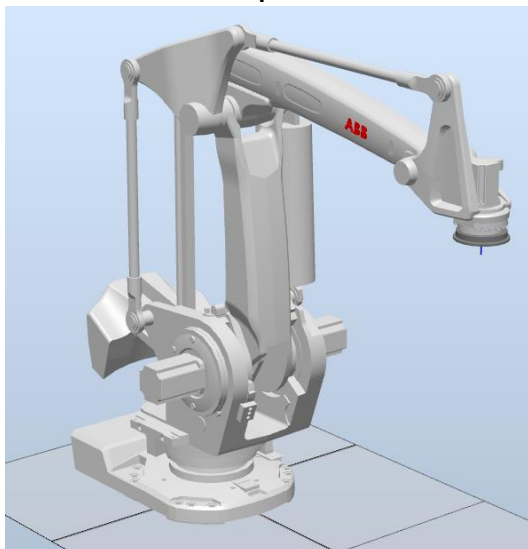
OmniCore C30



OmniCore C30 Desktop



OmniCore C30 Rack mounted



IRB 760-445

3 Late changes

3.1 Minimal installation

Overview

The minimal installation option has been removed because of its low usage.

4 CAD import formats and versions

Overview

This section describes the supported CAD formats and versions.

CAD formats

The table below lists all formats and versions supported by RobotStudio

Format	File extensions	Option required
3DStudio	.3ds	-
ACIS, reads versions R1 - 2020 1.0, writes versions R18 - 2020 1.0.	.sat, .sab, .asat, .asab	-
CATIA V4, reads versions 4.1.9 to 4.2.4	.model, .exp, .session	CATIA
CATIA V5/V6, reads versions V5R8 – V5/V6R2019 writes V5R15 – V5/V6R2019	.CATPart, .CATProduct, .CGR, .3DXML	CATIA
COLLADA 1.4.1	.dae	-
DirectX writes 2.0	.x	-
DXF/DWG, reads versions 2.5 – 2020	.dxf, .dwg	AutoCAD
FBX writes version 7.5	.fbx	-
GLB writes version 2.0	.glb	-
IGES, reads up to version 5.3, writes version 5.3*	.igs, .iges	IGES
Inventor, reads V6 – V2020	.ipt, .iam	Inventor
JT, reads versions 8.x, 9.x and 10 and 10.2	.jt	JT
LDraw, reads version 1.0.2	.ldr, .ldraw, .mpd	-
NX, reads versions NX 11 – NX 1899	.prt	NX
OBJ	.obj	-
Parasolid, reads versions 9.0.* – 32.0.x.	.x_t, .xmt_txt, .x_b, .xmt_bin	Parasolid
Pro/E / Creo, reads versions 16 – Creo 6.0	.prt, .prt.*, .asm, .asm.*	Creo
Solid Edge, reads versions V18 – SE2020	.par, .asm, .psm	SolidEdge
SolidWorks, reads versions 2003 – 2019	.sldprt, .sldasm	SolidWorks
STEP, reads versions AP203, AP214, AP242, writes version AP214	stp, step, p21	STEP
STL	Stl	-
VDA-FS, reads 1.0 and 2.0, writes 2.0	vda, vdafs	VDA-FS
VRML, reads VRML2 (VRML1 not supported)	wrl, vrml, vrml2	-

5 Corrections

Overview

This section lists the corrections made.

5.1 Corrections made in 2020.1.2

PDDs and other corrections

ID	Title
12702	Visual SafeMove can't be started with RobotWare 6.07.03/Safety Controller Image version 1.02.05 <i>This problem is a regression compared to 2019.5 and has now been resolved.</i>
	Visual SafeMove could not read current joint values in the Synchronization properties if an external axis was present <i>This problem is a regression compared to 2019.5 and has now been resolved.</i>
	Error in Collision Avoidance for palletizers <i>When configuring Collision Avoidance for a palletizer robot, some of the robot parts were displayed in the wrong position. This has been fixed.</i>

5.2 Corrections made in 2020.1.1

PDDs and other corrections

ID	Title
12097	RobotStudio library bug <i>Fixed a problem where internal I/O connections and property bindings were lost when a SmartComponent library file was replaced.</i>
12157	SafeMove 2 and Gantry <i>SafeMove does not support that robots are moved by more than one axis. If you try to use SafeMove with for example a gantry with two axes the an error message like the following will be displayed: ROB_1 is moved by a multi axis unit which is not supported.</i>
12561	Fatal error from Visual SafeMove during a simulation <i>Resolves a crash that occurred when visualizing a violation which includes a Tool Speed violation.</i>
12572	Virtual Reality - missing button SetBrush <i>Added "Edit Brushes" Virtual Reality input mode for adding and editing SetBrush instructions in paint systems.</i>
12580	Visual SafeMove - Difference in brake ramp parameters of an additional axis is erroneously displayed.

12600	TCP trace - use color scale can't be selected <i>Fixed a bug which prevented the "use color scale" controls in TCP Trace from being enabled.</i>
-	Unable to download EPS configuraiton to controller
-	In Visual SafeMove the Cyclic brake check attribute was present when it shouldn't <i>An issue where the Cyclic brake check joint attribute for an external axis was present in the safety configuration file even though the external axis was not included has been corrected.</i>
-	Change system options – chosen options not applied Fixed an issue in "Change Options" which caused incorrect system options to be displayed.
-	Stop position visualized in the wrong location when base frame has been changed <i>Robot base frame transform is now taken taken into account.</i>
-	Unpacking a Pack&Go with several controllers fails to restore <i>Sometimes the restore operation fails on one or several of the controllers in a Pack&Go fails while unpacking it.</i>
	Write access is lost and cannot be taken back after working with EPS wizard
	Exception in Collision Avoidance when adding a primitive box
	Online Monitor - IRB5500-27 Fixed an error in Online Monitor with IRB 5500-27.
	in I/O Engineering Tool – Can't save PROFINET device changes In some scenarios the dialog asking if changes should be saved to the controller did not appear, and changes could not be saved. This has been corrected.

5.3 Corrections made in 2020.1

PDDs

ID	Title
9417	SetBrush Event coordinates are not updated when workobjects are changed which the function adjust robtarget <i>In the special case when the two workobjects have the same orientation has been fixed</i>
11035	The screen tip of Save Station as viewer stated any recorded simulation will be included. <i>The screen tip has been changed to 'Packages the station for viewing on computers that do not have RobotStudio installed'.</i>
11485	Gearbox Heat Prediction Add-In – clarification in Operating Manual about 'Use Temperature from Controller(s)' <i>The Operating Manual has been updated to state from which system parameters the controller temperature is retrieved: "Select Use</i>

	<i>temperature from controller(s) to reset the the ambient temperature and read the temperature from the robot configuration as specified in the parameter Motion->SIS Parameter -> r1_sis_param->Robot temperature."</i>
11649	<p>Error when adding more users than allowed in the RobotWare User Authentication System (UAS) is wrong in the Operation Manual</p> <p><i>The Operating Manual has been updated to state the maximum number of users, 100 for RobotWare 6, and 123 for RobotWare 7.</i></p>
11973	<p>Virtual Single Arm YuMi 14050 - Manipulator IO device is missing</p> <p><i>The following features has been added to the system template: abb.robotics.robotcontrol.options.calhall abb.robotics.robotcontrol.options.contact_I</i></p>
12109	<p>Not able to open RobotStudio .exe file. Shows an error message when try to open</p> <p><i>The problem occurred when names of libraries in the station contained certain characters. It has been corrected.</i></p>
12178	<p>Online Monitor shows IRB360 upside down</p> <p><i>The IRB360 is modeled with its base frame rotated 180° around X and the values for base frame are usually left at its defaults 0,0,0 translation and no rotation. The Online monitor has been updated to take account for this and rotate the task frame around X for the imported model. The result is that the IRB360 model does not appear upside down.</i></p>
12195	<p>External axis values not stored in target when inserting instruction in VR</p> <p><i>External axis values are now stored in the new target. The same configuration as in the previous target with configuration, if any, is assigned to the new target.</i></p>
12202	<p>Problem with Solidworks import on Windows 10 machines</p> <p><i>The ACIS geometry engine has been updated to a new version where the problem is corrected.</i></p>
12210	<p>Single Arm Yumi - SmartGripper Alias Error with Virtual Controller</p> <p><i>The system template has been updated. See PDD 11973.</i></p>
12262	<p>Error create Virtual System with duplicate products in its manifest</p> <p><i>The problem was caused by duplicate entries in the controller.rsf file. RobotStudio now ignores duplicates.</i></p>
12267	<p>Wrong dimension after exporting layost as .dxf and importing it again</p> <p><i>The scale is set to meter.</i></p>
12278	IRB5350 is attached at the wrong position on its rail

	<i>The attachment position has been corrected.</i>
12514	Exception when linear jogging Stand Alone Controller <i>The problem has been corrected.</i>
12298	RS/Visual SafeMove doesn't read the current position of the 7th axis as Sync position, if SafeMove 1 is used. <i>The 7th axis is now read.</i>
12315	Wrong work area for IRB5510 in Robotstudio <i>Work envelope updated.</i>
12345	RS Improvement: The upper arm enclosure was visible after a zone violation even if it was not part of the violation.
12349	Exception when opening Event Log: Cannot parse input: ms <i>Certain event log messages where the null termination was not in the end of the string caused this exception. The problem has been corrected.</i>
12367	ContactL doesn't appear <i>ContactL and Leadthrough options added to YuMi system template.</i>
11915	IRBT6004 19m double CAD models and RobotStudio library are different <i>The lengths of IRBT6004 variants has been adjusted so that they correspond to the actual model. Before the 19m variant was 20m long for example.</i>
12164	Crash in Robotstudio meeting when the station contains certain move instructions <i>The problem occurred when the RobotStudio instance on the client side did not have the same set of move instruction templates as on the host side, and has been corrected.</i>
12272	Cad Converter Issue - Import STEP file on Turkish Windows <i>This problem has been corrected by an upgrade of the ACIS geometry engine.</i>
12240	Not possible to use wildcards Jobs when searching for RAPID <i>This is a regression. It was possible to use wildcards in a previous version, and it's now possible again.</i>
12199	GLTF export is missing cables, physics objects and visibility state

	<i>The following improvements has been made: Each physics cable segment is exported as a capsule. Objects can be shown or hidden.</i>
12153	<p>RobotStudio hangs when transferring file to OmniCore</p> <p><i>This problem could happen when RobotStudio was gathering information about a network share from Windows with slow response. This has now been corrected so that RobotStudio will not hang in the situation.</i></p>

6 Known Limitations

Overview

This section describes known limitations in RobotStudio.

6.1 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.

6.2 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.

6.3 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.

6.3.1 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.

6.3.2 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\In-Sight\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 is it 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.

6.4 Offline

*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

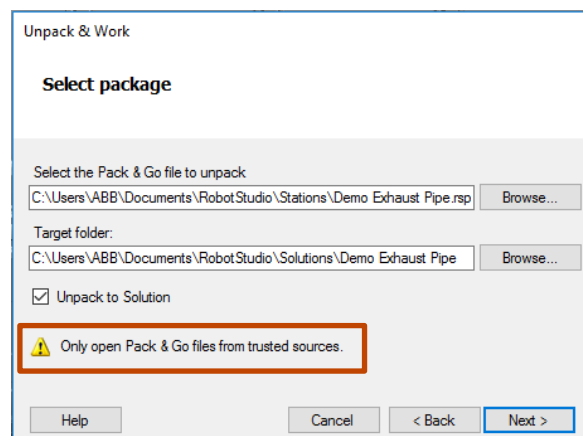
The robot IRB 1600ID 1.55 m / 6 kg is not available in RobotWare 6.04 and later. It has been renamed to IRB 1660ID 1.55 m / 6 kg. Virtual controller systems for IRB 1600ID 1.55 m / 6 kg based on RobotWare 6.03 cannot be upgraded to RobotWare 6.04 and later. This means that Pack&Go files for this robot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

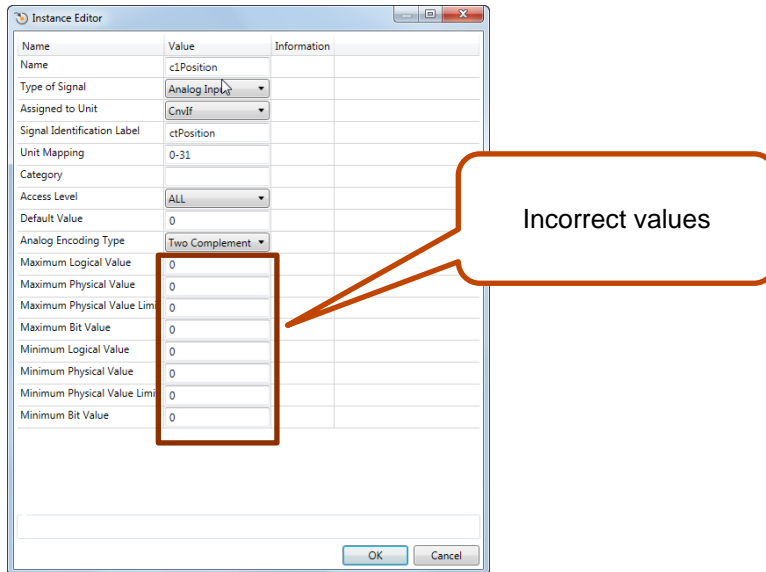
Conveyor Tracking

***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
```

6.4.2 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

6.4.3 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.

6.4.4 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)



Note

Windows security settings may prevent the file from being directly edited in the default location. Copy the file to your local Documents folder to edit it. Upon completion, you need to manually copy the file back to its original location.

6.4.5 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.*

6.4.6 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

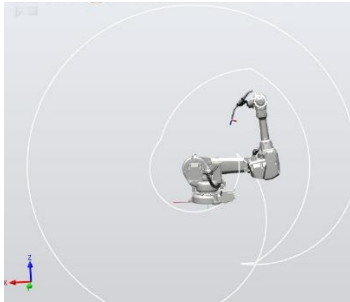
Paint systems that are configured using the Paint package I/O option Discrete, Compact or Fieldbus, will result in a SysFail state.

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

6.4.7 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.

6.5 ScreenMaker Limitations

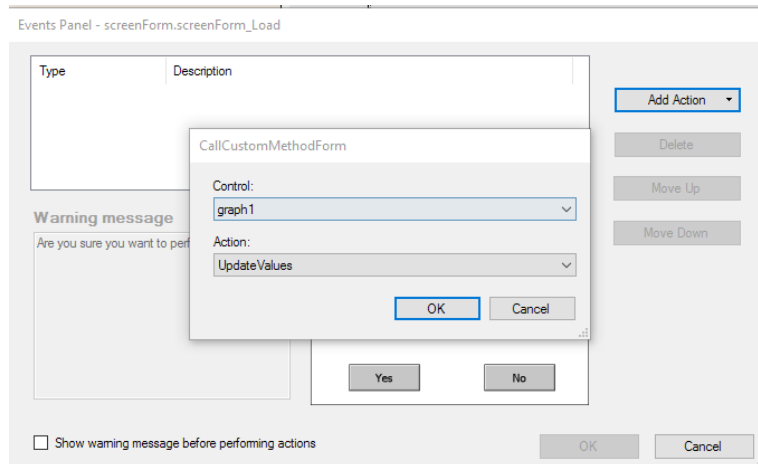
Numeric controls and decimal separators

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.

7 RobotWare Compatibility

7.1 General

Supported RobotWare versions

RobotStudio is distributed with the corresponding version of RobotWare and works with RobotWare 5.07 and later. Please check details below.

7.2 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.

7.3 RobotWare 5.07 Compatibility

RobotWare 5.07 and its revisions of are supported with the following limitations:

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

7.4 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.

7.5 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.

7.6 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.

7.7 RobotWare 5.12 Compatibility

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

Paint backups from RW 5.12.01 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 "AlHVErrNo" -SignalType "GO" -Unit "SysComm" -  
UnitMap "150-151"\
```

```
-Access "ALL"
```

```
-Name "AlHVEn" -SignalType "DO" -Unit "SysComm" -UnitMap  
"155"\
```

```
-Access "ALL"
```

EIO_CROSS:

```
-Res "AlHVEn" -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
```

7.8 RobotWare 5.13 Compatibility

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

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.

7.9 RobotWare 5.15 Compatibility

Signal Analyzer Online

The feature Signal Analyzer Online requires RobotWare 5.15.03 or later.

7.10 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.

7.11 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

7.12 ScreenMaker Compatibility

RobotWare

It is possible to use previous RobotWare versions, but with some limitations.

- ActionTrigger will work only on RobotWare 5.12.02 or later.
- The controls *Button*, *TpsLabel* and *PictureBox* controls was modified in RobotStudio 5.13. The property '*Allow MultipleStates*' of these controls can be accessed from RobotWare 5.13 and later.
- Variant Button will work only on RobotWare 5.14.01 or later
- Conditional Trigger will work only on RobotWare 5.14.01 or later
- Widgets will work only on RobotWare 5.60 or later.

FlexPendant SDK

ScreenMaker should be used with FlexPendant SDK 5.12.02 or later. ScreenMaker allows selection of FlexPendant SDK version when it is launched. If only one version of FlexPendant SDK is available in the system, it is loaded by default.