

Release Notes

RobotStudio

5.14.02

Revision: -

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Overview

Description

This document provides information about the new features, problems corrected, and installation of RobotStudio.

Product Overview

RobotStudio lets you install, configure, and program ABB robots. You can do this both offline, using virtual robots, and online, connected to real robots.

RobotStudio is categorized into the following two feature levels:

- **Basic** - Offers selected RobotStudio functionality to configure, program, and run a virtual controller. It also includes online features for programming, configuring, and monitoring a real controller connected over Ethernet.
- **Premium** - Offers full RobotStudio functionality for offline programming and simulation of multiple robots. The Premium level includes the features of the Basic level and requires activation.

RobotStudio offers the following installation options:

- **Minimal** - Installs only the features required to program, configure, and monitor a real controller connected over Ethernet. If installed with this option, only the Online tab is available.
- **Complete** - Installs all the features required to run the complete RobotStudio. If installed with this option, additional features of Basic and Premium functionality are available.
- **Custom** - Installs user-customized features. This option allows excluding unwanted robot libraries and CAD converters.

1 Release Information

1.1 General

Release Name

The release name is RobotStudio 5.14.02 and the build number is 5.14.4460.2031.

Release Date

The release date is 14th of Oct, 2011.

CAD Converter Options

The CAD Converter options can be set by using the Advanced button of the Settings dialog of the CAD Converter. By pressing the Advanced button, the CADConverter.ini file is opened. The file specifies all available options for CAD conversion. To change an option, simply uncomment the line by removing the semicolon and modify the option as desired. All options are described in the file '*AcisInterOpConnectOptions.pdf*' in the RobotStudio folder of the RobotWare DVD.

Demo stations

There are six demo stations included in this version.

- Demo AW Station
- Demo Two Robots and Conveyor
- Demo FlexLoader
- Demo Exhaust Pipe 2
- Demo Palletizer
- Smart Component Solar Simulation

They are stored in the Pack & Go format (.rspag) and can be opened with the command Unpack & Work on the Collaborate 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 folder '*My ScreenMaker Projects*' folder in the user's *RobotStudio* folder after installation.

Tutorials

Tutorials are available at the RobotStudio Community at <http://www.robotstudio.com/community>.


Language Support

RobotStudio is available in the following seven languages: English, French, German, Spanish, Italian, Japanese, and Chinese (simplified).

ScreenMaker supports only English when building the application in RobotStudio. ScreenMaker Designer does not provide a localization tool. Therefore, applications created with ScreenMaker will display the same text specified at design time, regardless of the choice of language on the FlexPendant.

If Asian languages are used (Chinese, Japanese, Korean) then these screens will display correctly only when the FlexPendant language matches the ScreenMaker language. Otherwise empty markers will appear where the text characters should be.

Documentation

User documentation for RobotStudio is available from the *Help* button () in the upper-right corner of RobotStudio.

The complete documentation in PDF for RobotWare including RobotStudio is available on DVD and can be ordered separately from ABB

1.2 Simulation Models

Robot Libraries

Variant	Library name	Variant	Library name
120 3kg/0.58m	IRB120_3_58_01.rslib	4400 45kg	IRB4400_45_196_01.rslib
140 5kg/0.8m Type A/B	IRB140_5_81_01.rslib	4400 60kg	IRB4400_60_196_01.rslib
140 5kg/0.8m Type C	IRB140_5_81_C_01.rslib	4400L 10kg	IRB4400L_10_255_01.rslib
140 6kg/0.8m Type C	IRB140_6_81_C_01.rslib	4400L 30kg	IRB4400L_30_243_01.rslib
1400 Type A/B	IRB1400_5_144_01.rslib	4400S 30kg	IRB4400S_30_243_01.rslib
1400H Type A/B	IRB1400H_5_128_01.rslib	4450S 30kg	IRB4450S_30_240_01.rslib
140T 5kg/0.8m Type C	IRB140T_6_81_C_01.rslib	4600 20kg/2.5m	IRB4600_20_250_02.rslib
1410	IRB1410_5_144_01.rslib	4600 40kg/2.55m	IRB4600_40_255_02.rslib
1600 5kg/1.2m	IRB1600_5_120_01.rslib	4600 45kg/2.05m	IRB4600_45_205_02.rslib
1600 5kg/1.2m Type A	IRB1600_5_120_A_01.rslib	4600 60kg/2.05m	IRB4600_60_205_02.rslib
1600 5kg/1.45m	IRB1600_5_145_01.rslib	460	IRB460_110_240_01.rslib
1600 5kg/1.45m Type A	IRB1600_5_145_A_01.rslib	6400R 200kg/2.5m	IRB6400R_200_250_01.rslib
1600 6kg/1.2m	IRB1600_6_120_02.rslib	6400R 200kg/2.8m	IRB6400R_200_280_01.rslib
1600 6kg/1.45m	IRB1600_6_145_02.rslib	660 180kg/3.15m	IRB660_180_315_01.rslib
1600 7kg/1.2m	IRB1600_7_120_01.rslib	660 250kg/3.15m	IRB660_250_315_01.rslib
1600 7kg/1.2m Type A	IRB1600_7_120_A_01.rslib	6600 175kg/2.55m	IRB6600_175_255_01.rslib
1600 7kg/1.45m	IRB1600_7_145_01.rslib	6600 175kg/2.80m	IRB6600_175_280_01.rslib
1600 7kg/1.45m Type A	IRB1600_7_145_A_01.rslib	6600 225kg/2.55m	IRB6600_225_255_01.rslib
1600 8kg/1.2m	IRB1600_8_120_02.rslib	6600ID 185kg/2.55m	IRB6600ID_185_255_01.rslib
1600 8kg/1.45m	IRB1600_8_145_02.rslib	6620 150kg/2.2m	IRB6620_150_220_01.rslib
1600ID 4kg/1.5m	IRB1600ID_4_150_03.rslib	6620LX-150/1.9m	Wizard
2400 10kg	IRB2400_10_150_02.rslib	6640 130kg/3.2m	IRB6640_130_320_03.rslib
2400 16kg	IRB2400_16_150_02.rslib	6640 180kg/2.55m	IRB6640_180_255_03.rslib
2400L	IRB2400L_7_180_03.rslib	6640 185kg/2.8m	IRB6640_185_280_03.rslib
2600 12kg/1.65m	IRB2600_12_165_01.rslib	6640 205kg/2.75m	IRB6640_205_275_03.rslib
2600 20kg/1.65m	IRB2600_20_165_01.rslib	6640 235kg/2.55m	IRB6640_235_255_03.rslib
2600 12kg/1.85m	IRB2600_12_185_01.rslib	6640ID 170kg/2.75m	IRB6640ID_170_275_04.rslib
2600ID 8kg/2.0m	IRB2600ID_8_200_01.rslib	6640ID 200kg/2.55m	IRB6640ID_200_255_04.rslib
2600ID 15kg/1.85m	IRB2600ID_15_185_01.rslib	6650 125kg/3.2m	IRB6650_125_320_01.rslib
260	IRB260_30_150_01.rslib	6650 200kg/2.75m	IRB6650_200_275_01.rslib
340	IRB340_01.rslib	6650ID 170kg/2.75m	IRB6650ID_170_275_01.rslib
360 1kg/1130 Std No axis 4	IRB360_1_1130_3D_STD_03.rslib	6650S 125kg/3.5m	IRB6650S_125_350_01.rslib
360 1kg/1130 Wash-down No axis 4	IRB360_1_1130_3D_WD_03.rslib	6650S 200kg/3.0m	IRB6650S_200_300_01.rslib
360 1kg/1130 Standard	IRB360_1_1130_4D_STD_03.rslib	6650S 90kg/3.9m	IRB6650S_90_390_01.rslib
360 1kg/1130 Wash-down	IRB360_1_1130_4D_WD_04.rslib	6660 130kg/3.1m	IRB6660_130_310_02.rslib
360 1kg/1130 Stainless	IRB360_1_1130_4D_WDS_03.rslib	6660 205kg/1.9m	IRB6660_205_190_01.rslib
360 1kg/800 Std No axis 4	IRB360_1_800_3D_STD_03.rslib	7600 150kg/3.5m	IRB7600_150_350_01.rslib
360 1kg/800 Wash-down No axis 4	IRB360_1_800_3D_WD_03.rslib	7600 325kg/3.1m	IRB7600_325_310_01.rslib
360 1kg/800 Std	IRB360_1_800_4D_STD_03.rslib	7600 340kg/2.8m	IRB7600_340_280_01.rslib
360 1kg/800Wash-down	IRB360_1_800_4D_WD_04.rslib	7600 400kg/2.55m	IRB7600_400_255_01.rslib
360 3kg/1130 Std No axis 4	IRB360_3_1130_3D_STD_03.rslib	7600 500kg/2.3m	IRB7600_500_230_01.rslib
360 3kg/1130 Wash-down No axis 4	IRB360_3_1130_3D_WD_03.rslib	7600 500kg/2.55m	IRB7600_500_255_01.rslib
360 3kg/1130 Standard	IRB360_3_1130_4D_STD_03.rslib	760	IRB760_450_318_01.rslib
360 3kg/1130 Wash-down	IRB360_3_1130_4D_WD_04.rslib	940	IRB940_01.rslib
360 3kg/1130 Stainless	IRB360_3_1130_4D_WDS_03.rslib		
360 1kg/1600 Standard	IRB360_1_1600_4D_STD_02.rslib		

Robot Libraries Paint

(an asterix * indicates a new item for this release)

Variant	Library name
52 short vertical arm	IRB52_12_475_1005__01.rslib
52 std vertical arm	IRB52_12_700_1005__01.rslib
540-12 std arm	IRB540_12_1000_1620__01.rslib
580-12 std arm	IRB580_12_1000_1620__02.rslib
580-12 short arm	IRB580_12_1000_1220__01.rslib
5300-12 left	IRB5300_12L_804_530__01.rslib
5300-12 right	IRB5300_12R_804_530__01.rslib
*5320-1500	IRB5320_1500
*5320-2000	IRB5320_2000
5400-12 std arm	IRB5400_12_1200_1620__02.rslib
5400-13 std arm	IRB5400_13_1200_1620__02.rslib
5400-14 std arm	IRB5400_14_1200_1620__02.rslib
5400-22 process arm	IRB5400_22_1200_1620__02.rslib
5400-23 process arm	IRB5400_23_1200_1620__02.rslib
5400-24 process arm	IRB5400_24_1200_1620__02.rslib
5400-12 std arm axis 2 +60 deg	IRB5400_12_1200_1620_60P_01.rslib
5400-13 std arm axis 2 +60 deg	IRB5400_13_1200_1620_60P_01.rslib
5400-14 std arm axis 2 +60 deg	IRB5400_14_1200_1620_60P_01.rslib
5500 35A b_00 / b_80	IRB5500_35A_1300_1720__01.rslib
5500 35B b_00 / b_80	IRB5500_35B_1300_1720__01.rslib
5500 ProArm 35A b_00 / b_80	IRB5500_ProArm_A_1300_1720__01.rslib
5500 ProArm 35B b_00 / b_80	IRB5500_ProArm_B_1300_1720__01.rslib

Track Libraries

RobotStudio is distributed with the following track types that are available in the Track folder of the ABB Library.

Track family	Length
IRBT4003	1.7 m to 10.7 m
IRBT4004	1.9 m to 19.9 m
IRBT6003	1.7 m to 10.7 m
IRBT6004	1.7 m to 19.7 m
IRBT7003	1.7 m to 10.7 m
IRBT7004	1.7 m to 19.7 m
RTT_Bobin	1.7 m to 11.7 m
RTT_Marathon	1.7 m to 11.7 m
Paint Rails	2 m to 20 m



NOTE!

To use the IRBTX004 tracks the user must install the appropriate Track mediapool from the RobotWare DVD.

Positioner Libraries

RobotStudio 5.13.02 and later is distributed with the new M2009 generation of positioners of type IRBP A, B, C, D, K, L and R and MTD. This represents the complete product range of the M2009 positioner series. The positioner libraries will be generated when the user selects the library from the menu 'ABB Library' gallery of the

'Home' tab of RobotStudio. The imported library will by default be part of the station. A consequence is that part positions can be modified. To prevent the library from being accidentally modified, it should be saved as a library. This can be done using the 'Save As Library' command.

The reason for not distributing the pre-compiled libraries is to reduce maintenance and footprint as the libraries are sharing many components. The function 'System From Layout' supports the new positioner generation and can be used to build a matching system.



NOTE!

The M2001 library generation will still be distributed with RobotStudio 5.13.02 and later in .rslib format and can be imported using the **Browse for Library** command.

1.3 Positioner Mediapools

RobotStudio 5.13.02 and later is distributed with the mediapools for the M2001 generation that are used also for the M2009 series in RobotStudio. In particular, the kinematics of the two positioner generations is identical. However, the true mediapool of a specific system can be used for offline programming using the virtual controller in RobotStudio, if available. A convenient way to get a new mediapool from a physical controller is to use the feature 'Go Offline' that will copy the mediapool off the real controller to the PC and create an identical virtual controller system (including the used mediapool). Alternatively, the additional options mediapool can be manually copied to the PC. A controller system can then be created using the 'System Builder' for use by the virtual controller in RobotStudio.

For each type of positioner there is only one mediapool in RobotStudio (for one payload). Currently, they use the 250 kg variant, which is the fastest one. This means that the cycle time of a program executed in RobotStudio with the standard mediapools may deviate from the true cycle time of a system with higher payload. For accurate cycle times, please use the mediapool that is delivered with the physical controller system of the positioner.

The new drive system (Drive '09) can be used both with the M2001 and the M2009 mediapools.

RAPID programs are compatible between the M2001 and the M2009 mediapools, i.e. they can be moved between any two systems with the same setup, regardless of the mediapool generation.

Current limitations

The M2009 mediapools have new motors and new trimming/tuning data, but for RobotStudio this should not make any difference.

The arc welding power source is not part of the simulation. In particular, the start and stop times for the welds are not part of the simulation. These may be around one second per weld. This will have an impact on the cycle time.

Summary

The purpose of including the mediapools in RobotStudio is for use in virtual controller systems created mainly by the function 'System from Layout'. Robot systems with positioners are very complex and can be defined in many different configurations (type of positioners, payload, size of positioners, MultiMove, several robots, etc.). In RobotStudio we have tried to cover the most common configurations. Users who want

to have more accurate results should use their specific mediapool for the physical systems that is being programmed.

The *RobotStudio Operating Manual* contains more information about the combinations of robots, track motions and positioners supported by the RobotStudio function '*System from Layout*'.

2 What's New in this Release?

Overview

This section provides information about the new features and problems corrected in this release.

2.1 Heat Prediction Tool

The complexity of determine the use of cooling fans for axis 1 or/and axis 2 motor or not depends on several parameters. The limit for how hard the motors can run depends on both torque, revolution, and also the ambient temperature and therefore its not a simple task to put that information in e.g. a table to get reliable facts to make the decision for each and every specific installation.

Therefore has a “Gearbox Heat Prediction Tool” been developed and added to RobotStudio as an Add-In application. The tool does not require a premium license.

2.2 External Axes Wizard

Delivered as a separate Add-In available form the RS Community content sharing website. Premium license required.

<http://www.robotstudio.com/community/>

2.3 New robot models – IRB5320

The IRB5320-1500 and IRB5320-2000 are now supported and included in the installation.

2.4 Network license

RobotStudio 5.14.02 is prepared for network licensing which soon will become available for schools and ABB selected partners. Further information will be communicated on the RS Community website.

<http://www.robotstudio.com/community/>

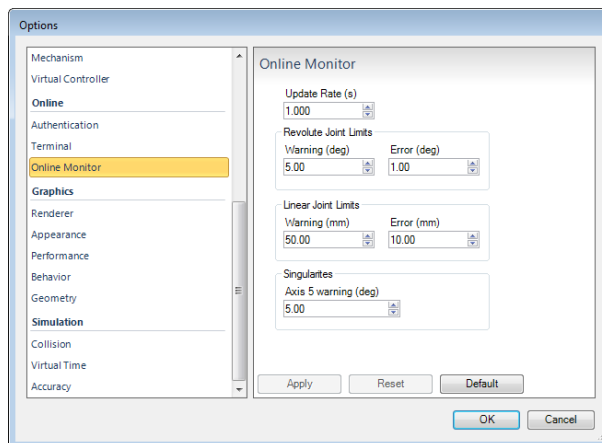
3 What's New in RS5.14.01?

Overview

This section provides information about the new features and problems corrected in this release.

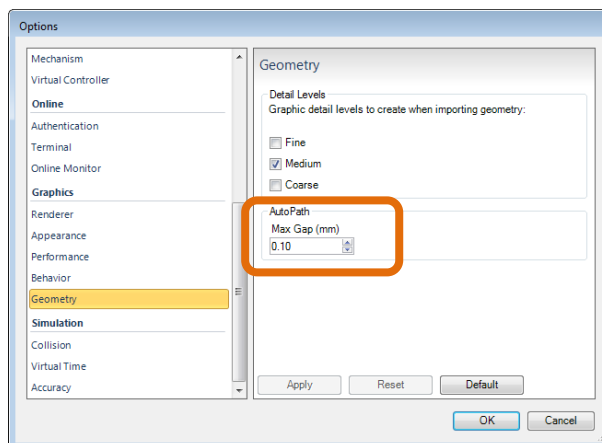
3.1 Online Monitor

The parameters for defining update rate, warning and error levels for joint limits and singularities has been added to the RobotStudio Options pages.



3.2 AutoPath

The AutoPath feature can be used to create a path based on the edges of the surfaces of a part. The function only allows a path to be created along adjacent faces. The parameter that defines the maximum distance between two faces to be considered adjacent has been added to the RobotStudio Options page.

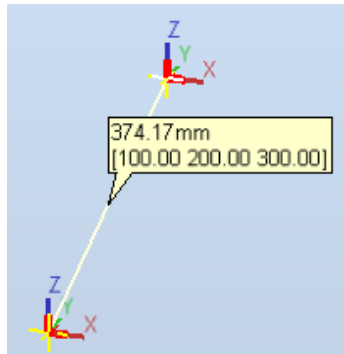


3.3 Collada import and export

RobotStudio can now import files in the format Collada version 1.4.1 (.dae) using the function **Import Geometry**. Objects can be exported in the Collada format using the function **Export Geometry**. The static geometry of an entire station can be exported in the collada format by selecting the station node of the **Layout** browser and selecting **Export Geometry**.

3.4 Measurement markup

The x,y,z values of a measurement are displayed in a markup together with the total distance.

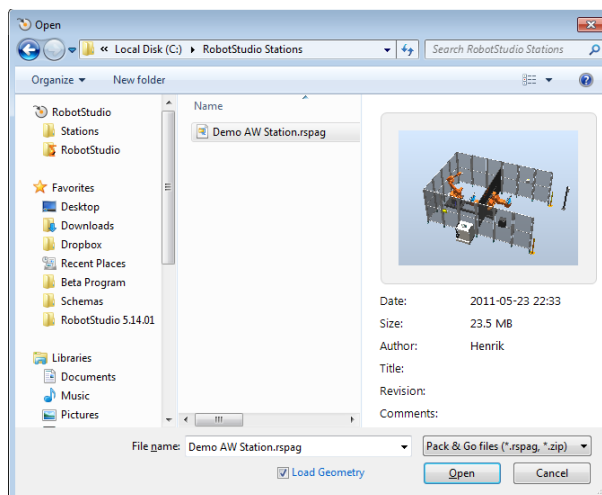


3.5 Access Level ALL no longer needed of input signals

Signals of a VC no longer need to be defined to have **Access Level = ALL** in the I/O Configuration database to change its values from RobotStudio. It is sufficient to have them defined with **Access Level = DEFAULT**.

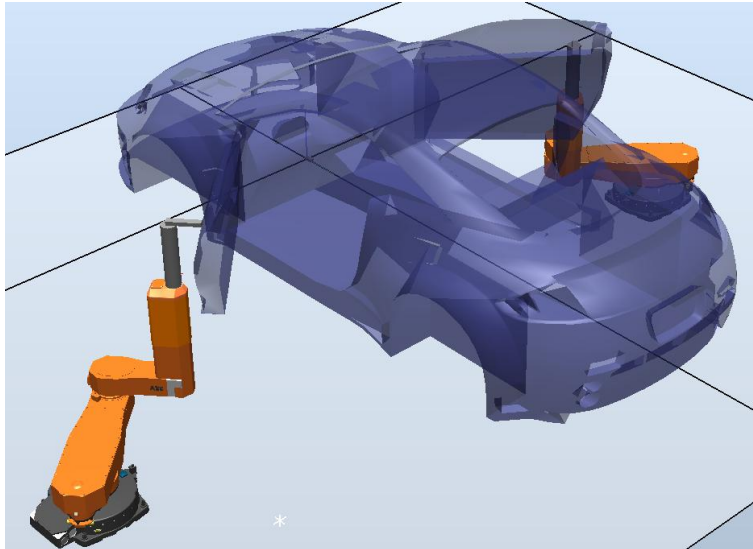
3.6 Preview image of Pack & Go files

A preview image of the station contained in a Pack&Go file will be displayed in the preview pane of Windows Explorer in Windows 7.



3.7 New robot models – IRB5300-12

The IRB5300-12 (the so-called *door opener*) is available in RobotStudio 5.14.01

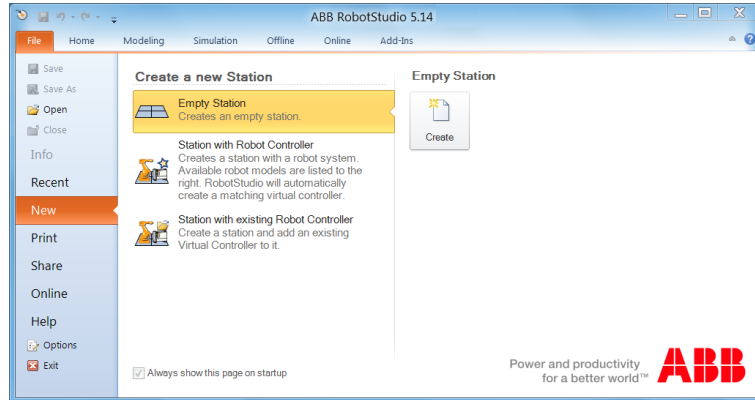


4 What's New in 5.14?

Overview

This section provides information about the new features and problems corrected in RobotStudio 5.14.

4.1 Microsoft Office 2010 Fluent User Interface



Fluent UI

The RobotStudio 5.14 user interface is redesigned and now uses the Microsoft Office Fluent user interface (UI). Introduced in the RobotStudio 5.11, the Fluent UI is designed to make it easier for people to find and use the full range of features that RobotStudio provide, and to preserve an uncluttered workspace.

The ribbon

The ribbon, part of the Fluent UI, was designed to optimize key RobotStudio scenarios to make them easier to use. The ribbon provides quicker access to all the commands in RobotStudio and allows for easier future additions and customizations. You can make your favorite commands available in the quick access toolbar, embedded in the title bar. To help maximize the space of the graphical viewer, the ribbon can be hidden.

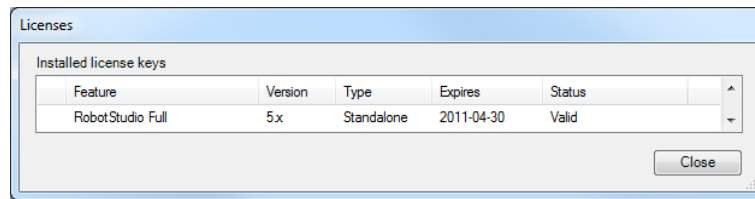
Backstage view

The Microsoft Office Backstage is part of the Fluent UI and a companion feature to the ribbon. The Backstage view, which can be accessed from the **File** menu, helps you find frequently used features for managing RobotStudio files. (The **File** tab replaces the RobotStudio Button and **File** menu that were used in earlier releases of RobotStudio.)

4.2 Activation and Licensing

Version independent activation key: RobotStudio 5.x

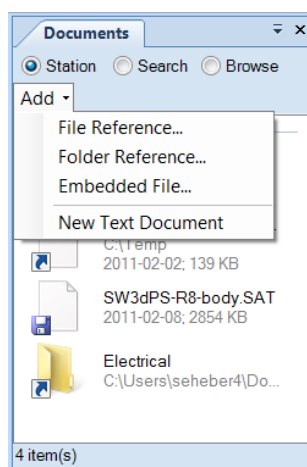
Starting with RobotStudio 5.14, the activation key that activates RobotStudio 5.14 will also activate all future versions (both major and minor) of RobotStudio 5. This is indicated by the version of the installed license key in RobotStudio. The version displayed in the license information dialog is now **5.x**.



4.3 General

Document Manager References

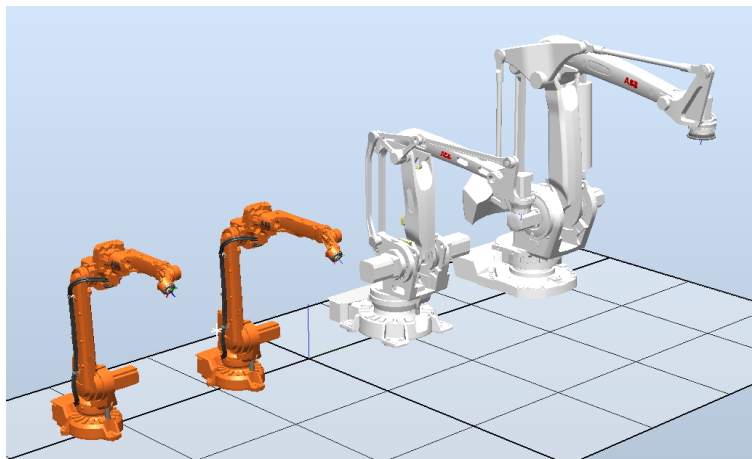
References to files and folders can be added to a station through the document manager. Referenced folders can optionally be included in the Pack and Go file. There is also an option to completely embed a file in the station.



New Robot Models

Simulation models for the following new robots have been added to RobotStudio

- IRB2600ID (15kg/1.85m)
- IRB2600ID (8kg/2.0m)
- IRB460
- IRB760



Station name in title bar

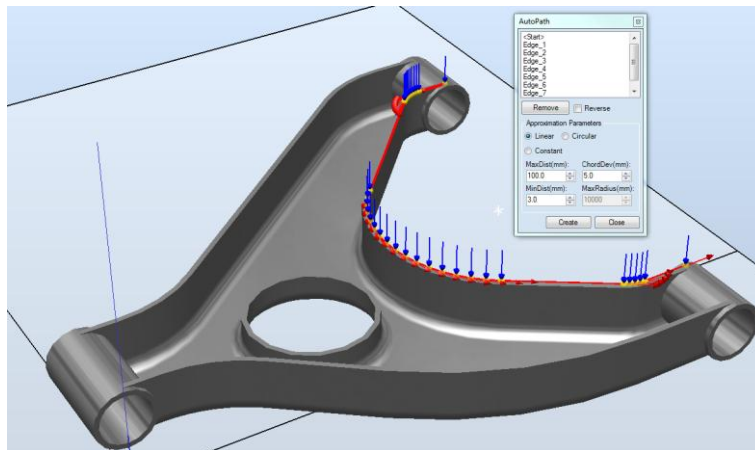
The name of the currently opened station has been added to the title bar.



Improvements of CAD based path generation (AutoPath)

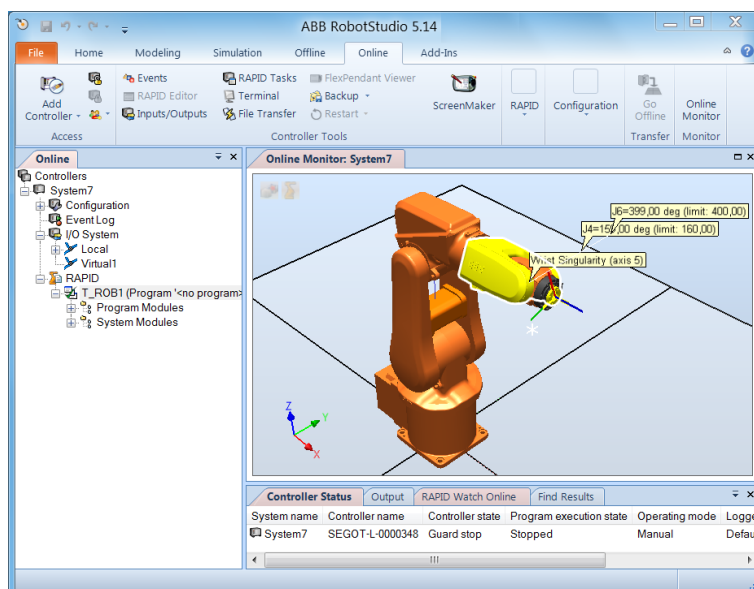
The function 'Path from Curve' for automatic creation of path based on a curve, has been improved. It is not longer required to have a curve prepared as it can work on the edges of a piece of geometry. Of course, if a curve is available, it can be used for the path generation as before. The user interface has been simplified and advanced options for angle tuning, approach and depart targets removed. Also, a preview of the path is available to indicate what the result will be before the command is executed.

Tuning of targets can be done through the new 'Target Reference Frame' available in the SetPosition and Rotate tools. Approach and Depart can be created using the regular copy/paste functions in combination with the tuning feature. The function has been renamed to AutoPath to reflect the re-design.



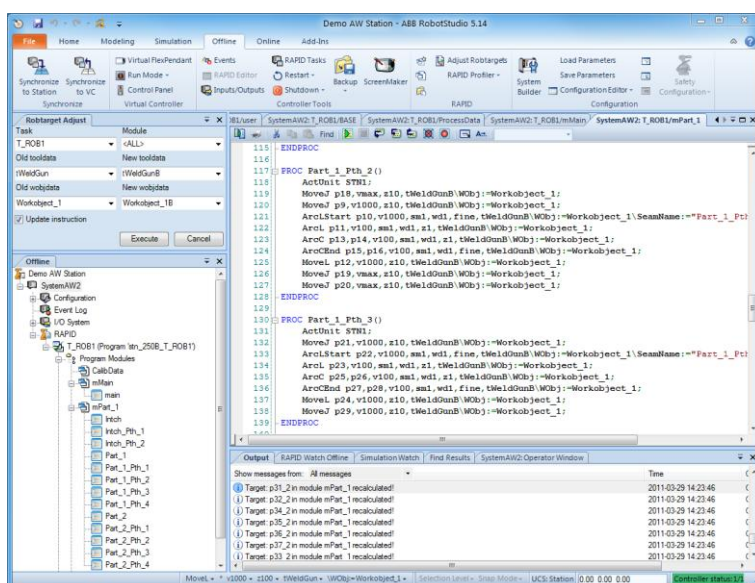
Online Monitor

This feature allows you to remotely monitor the robot connected to a real controller. It displays a 3D layout of the connected robot controller and enhances user's current perception of reality by adding motion visualization augmentation. The view is updated every second. There is an option to see if the robot has reached its joint limits or is in a singular position. Only the TCP robot will be shown as external axes are not supported.



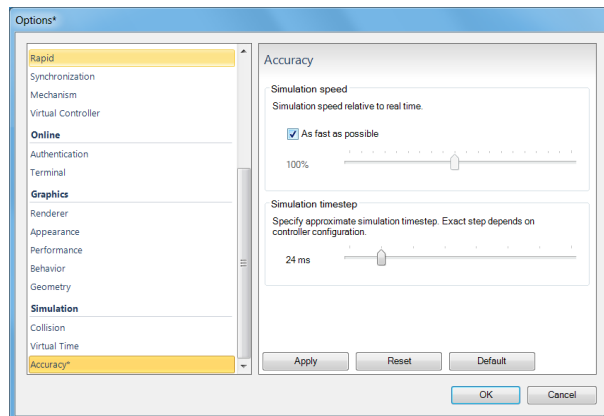
Adjust Robtargets

This feature helps in recalculating and changing the robtarget data (tooldata and workobject data) while maintaining the joint angles of the robot. The robtarget data related to the specified source tooldata and workobject will be adjusted for usage with the new tooldata and workobject. The feature operates on the RAPID code and is available for in Offline and Online.



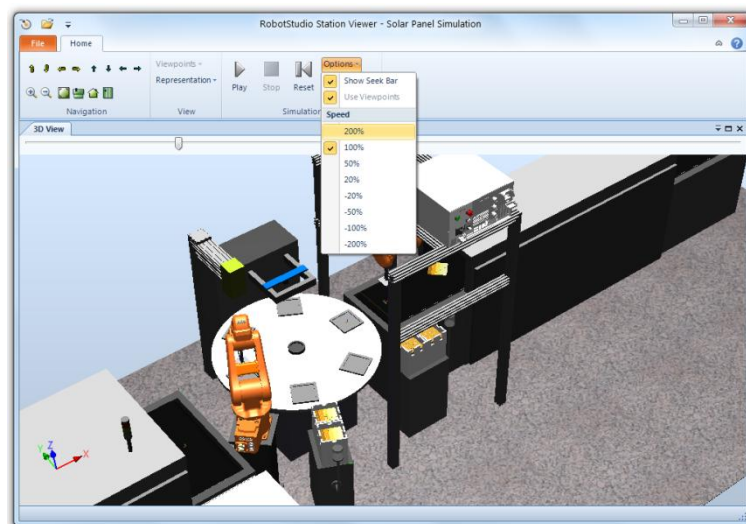
Accelerated simulation

An option to run the simulation as fast as possible has been added to the Simulation Accuracy section of the RobotStudio options. With this option selected, RobotStudio will fire the next time step as soon as the calculation for the previous one is completed. The predicted execution times for the Virtual Controllers will not be affected.



Station Viewer Improvements: Acceleration and Seek Bar

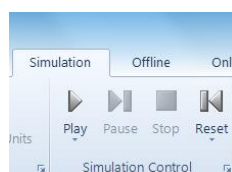
The simulation replay of the Station Viewer can now be accelerated up to 200% of the normal execution speed. It is also possible to reduce the time or even play the simulation backwards. In addition, a seek bar has been added that shows simulation progress and allows the simulation to be started at a particular point.



Simulation Step / Pause / Resume

A simulation can now be stepped forward one tick at the time. First, start the simulation as usual by pressing the Play button. Then, you can pause the simulation by pressing the Pause button. When paused, the Play button will be renamed to Resume, and the Pause button will be renamed into Step. Now, the simulation can be stepped forward one time step (tick) at the time by pressing the Step button.

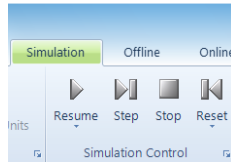
Before starting the simulation the play button is enabled.



When the simulation is running, the Pause button is enabled.

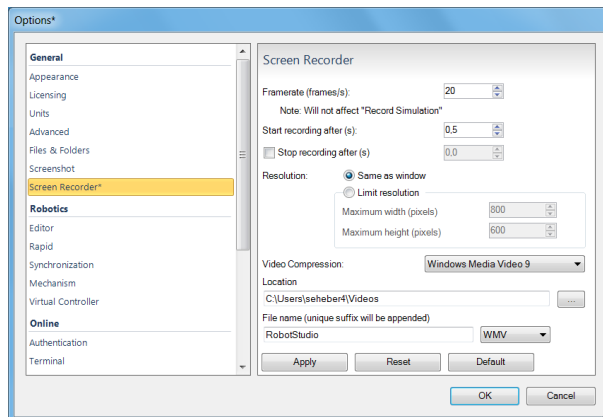


When paused, the Play, and Pause buttons are renamed, Resume and Step, respectively.



ScreenRecorder support for Microsoft Windows Media format

Support for Windows Media version 8 and 9 has been added to the ScreenRecorder. In addition, movies can be recorded using the H.264 / MPEG-4 encoder that creates high-quality recordings with a high compression ratio. The AVI format is still available and allows the selection of any available codec on the computer.

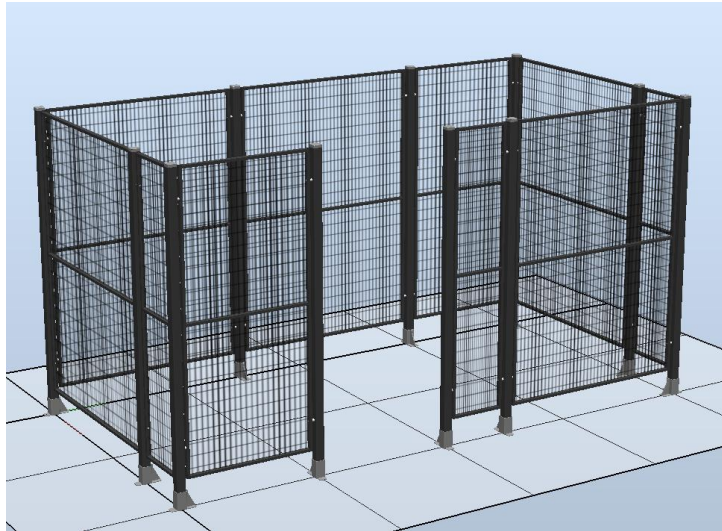


NOTE!

The Microsoft Windows Media and H.264 encoders are only available for Windows 7, not for Windows XP.

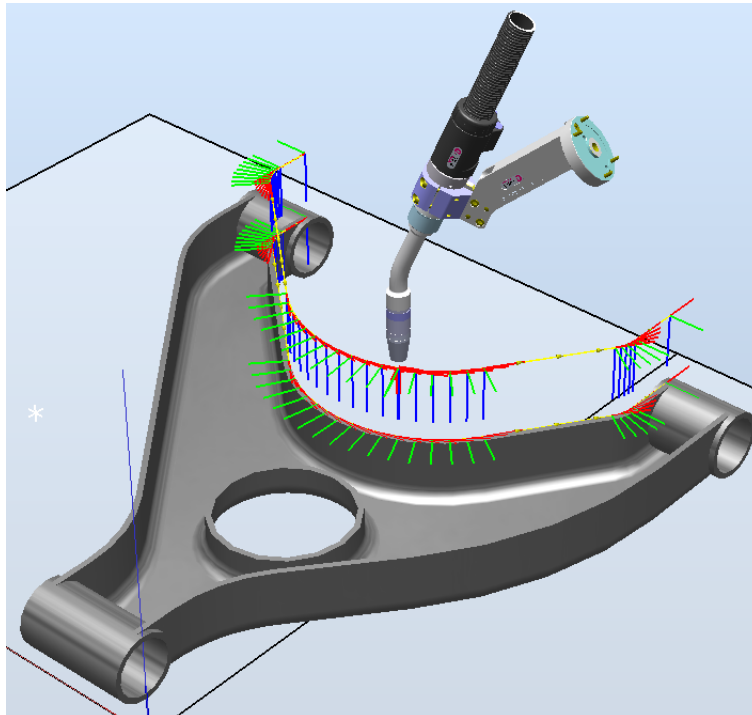
Transparent textures

To simply modeling and increase realism, support for transparent textures has been added to RobotStudio. The textures are applied using the **Graphical Appearance** tool. The feature supports textures in .PNG format.



Target Reference Frame

The reference frame of a target has now been exposed in RobotStudio. Until now, it has only been available in ArcWelding PowerPac. The target reference frame allows a target to be offset relative to the original position. This is useful if the targets have been created using a CAD-model and it is required to offset the target position to compensate for the robot tool. The **Reference Frame** is available in the **Set Position** and **Rotate** tools



Improved performance for Configurations and AutoConfig

The different ways a robot arm can use to reach a certain target is controlled by the `confdata` in RAPID and can be set using the **Configurations** tool in RobotStudio. The performance of the calculation of the available arm configurations are now done directly by the virtual controller, which gives a dramatic increase in performance. The improved performance can be seen when using RobotWare 5.14.

Collision Detection performance improved.

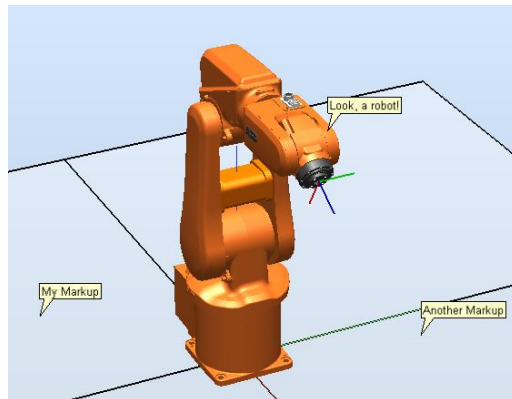
The **Collision Detection** computation has been improved to make use of multiple CPU cores, if available, and uses the SSE (Streaming SIMD Extensions) instruction set for best performance.

Nine decimals in generated RAPID code

The number of decimals used for specifying the position and orientation data of generated `robtargets`, `tooldata`, and `wobjdata` are now limited to nine. This will increase readability of the generated RAPID code. Accuracy is not affected since the data is specified with `num` (single precision) that uses the eight first decimals.

Markups

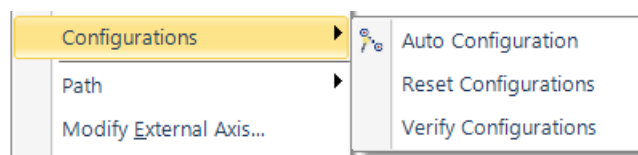
A markup is a text box displayed in the 3D graphics. It can be used to highlight areas of interest. Markups become part of the Station Viewer.



AutoConfig options

New options related to **AutoConfig**

- **Verify.** Verifies existing configuration
- **Reset.** Marks current configuration as unverified to enable for optimization using **AutoConfig**



Signal Analyzer

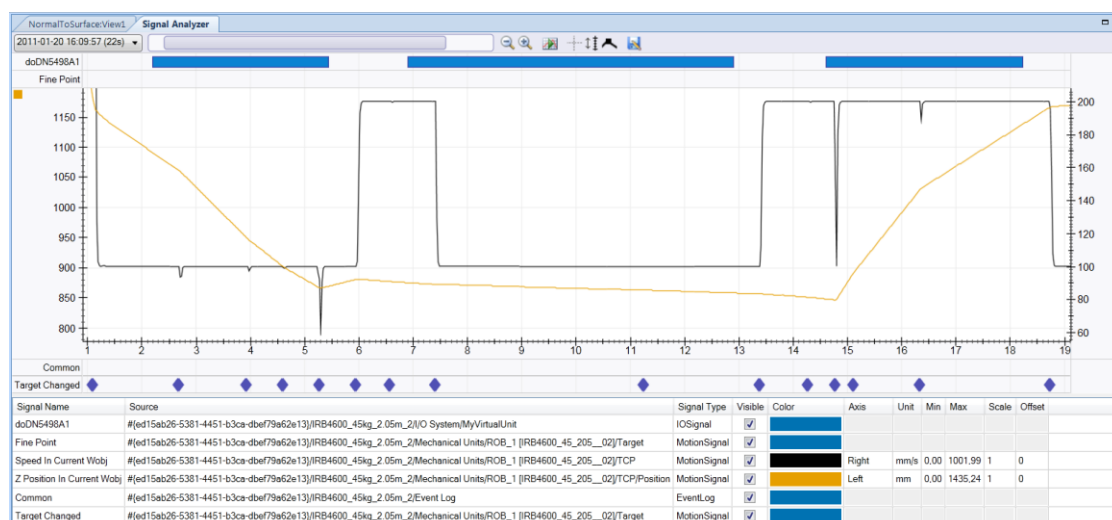
Signals to be analyzed are defined in the **Signal Setup** tool for viewing and analysis in the **Signal Analyzer**. The tool allows robot performance tuning and signal debugging.

The table below lists the signals that can be analyzed and their dependency on RobotWare..

Signal name	RW availability
Controller Signals / <system name> / EventLog	
<domain>	Any RW version
Controller Signals / <system name> / Mechanical Units / I/O System	
<all signals>	Any RW version

<i>Controller Signals / <system name> / Mechanical Units / ROB_x / Joint</i>		
	J1-J6	Any RW version
	Near Limit	Any RW version
<i>Controller Signals / <system name> / Mechanical Units / ROB_x / Target</i>		
	Fine Point	Any RW version
	Target Reached	Any RW version
<i>Controller Signals / <system name> / Mechanical Units / ROB_x / TCP</i>		
	Maximum Linear Acceleration in World ¹	RW version ≥ 5.14
	Orientation Q1-Q4 Current Workobject	RW version ≥ 5.14
	Orientation Speed in Current Workobject	RW version ≥ 5.14
	Pos X, Y, Z in Current Workobject	RW version ≥ 5.14
	Robot Configuration cf1, cf4, cf6, cfx	RW version ≥ 5.14
	Speed in Current Workobject	RW version ≥ 5.14
	Total Motor Power	RW version ≥ 5.14
<i>Smart Components</i>		
	<all signals>	<no RW needed>

The Signals are visualized in the graph below.



Using the Signal History tool, signal recordings can be exported to Excel, renamed, or deleted.



NOTE!

The maximum number of signals that can be exported is limited to 26.

RAPID Profiler

The new RAPID Profiler is a tool for measuring and analyzing procedure execution times of the robot program. It is a Premium feature that can be used to identify the critical procedures that offer great potential for cycle time reduction. Special attention is paid to Wait-instructions and MultiMove synchronization semaphores. Reducing waiting times is the obvious way to reduce the program execution time.

¹ The signal 'Maximum Linear Acceleration in World' provides the maximum acceleration of the current move instruction.

RAPID Profiler:120_ROB2

Procedures WaitTimes

Task	Procedure	Time (incl subs)	Time (excl subs)
T_ROB1	PickPanel	85.2 % [35111 ms]	85.2 % [35111 ms]
T_ROB1	PlacePanelOnOutFeeder	9.1 % [3733 ms]	9.1 % [3733 ms]
T_ROB1	PlacePanelInControlBuffer	5.7 % [2345 ms]	5.7 % [2345 ms]

Show TASK only: <ALL> Export to Excel OK

RAPID Profiler:120_ROB2

Procedures WaitTimes

Task	Procedure	Instruction	Time
T_ROB1	PickPanel	WaitDI diCellInPickPos,1;	27821 ms
T_ROB1	PickPanel	WaitDI diCellInPickPos,1;	3261 ms
T_ROB1	PickPanel	WaitDI diCellInPickPos,1;	1248 ms
T_ROB1	PickPanel	WaitDI diVacuum,1;	44 ms
T_ROB1	PickPanel	WaitDI diVacuum,1;	44 ms
T_ROB1	PlacePanelOnOutFeeder	WaitDI diVacuum,0;	41 ms
T_ROB1	PlacePanelInControlBuffer	WaitDI diVacuum,0;	37 ms
T_ROB1	PickPanel	WaitDI diVacuum,1;	28 ms
T_ROB1	PlacePanelOnOutFeeder	WaitDI diVacuum,0;	28 ms

Show TASK only: <ALL> Export to Excel OK

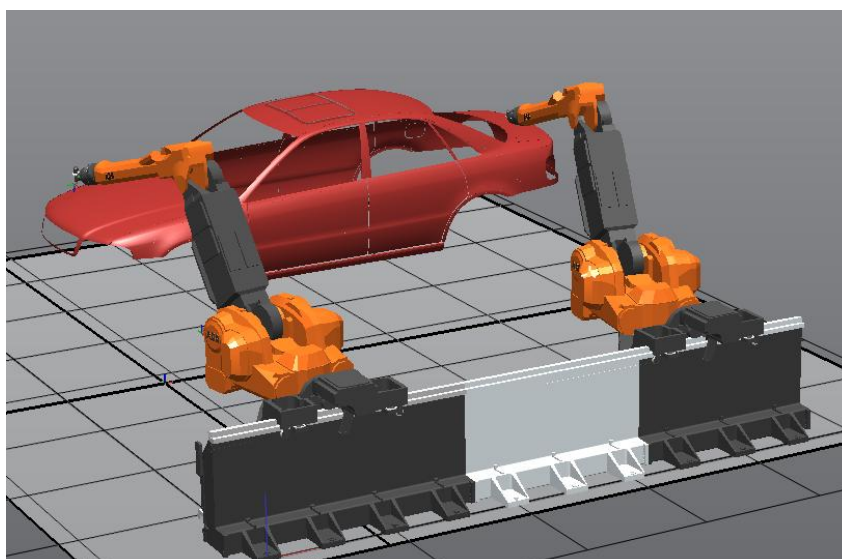


NOTE!

- The Spy function does not produce useful output for systems based on the RobotWare option CAP (Continuous Application Platform). This is the case for e.g. systems with ArcWelding. This affects the RAPID Profiler that analyses the log generated by the Spy function.
- For accurate results, the last move instruction of all procedures should be a fine point. Otherwise the estimated time for that procedure will be underestimated.

External axis interpolation

Defines optimal external axis value with respect to robot TCP



4.4 Smart Component Improvements

Smart Component: LogicExpression

A gate whose output is determined by a logic expression. Supports logic operators AND, OR, NOT and XOR. Advanced gates can be easily created using the LogicExpression gate. The overall complexity of a smart component is reduced since the gate logic can be handled by one base component.

Example: $output = input5 \text{ XOR } (input1 \text{ AND } input2) \text{ OR } (NOT \text{ input3})$

Smart Component Viewer Filter

The objects of the SmartComponent viewer can now be filtered to reduce the complexity.

- signals
- properties
- only connected components

Property *Detectable* added to graphical objects

Allows graphical objects to be made invisible to SmartComponent sensors

4.5 ScreenMaker Improvements

Language Support

ScreenMaker supports the same set of languages that RobotStudio supports. The languages are applicable for the User Interface which includes the ribbon and dialogs and not for the controls and its properties .

ScreenMaker Templates

ScreenMaker supports three different templates : “Basic”, ”Advanced”, ”Extended” which have pre-configured screens and templates.

Launch Virtual Flexpendant after deploying

Additional option in ScreenMaker properties dialog exist, if checked launches Virtual FlexPendant after deploying to virtual controller.

Access of shared data

Shared RAPID data can now be accessed using ScreenMaker

Conditional Trigger Control

A new control for configuring the execution of events based on condition. The following table describes the conditions and datatypes supported

Condition	RAPID	Signals	Application Variables
AND	bool	NA	bool
OR	bool	NA	bool
XOR	bool	NA	bool

NOTEQUAL	Any Type	Any Type	Any Type
EQUAL	Any Type	Any Type	Any Type
GREATER	num, dnum	num, dnum	num, dnum (0/1)
LESSER	num, dnum	num, dnum	num, dnum(0/1)

ScreenMaker Doctor detects missing RAPID and Signal data

ScreenMaker Doctor detects missing RAPID and Signal data that has been bound in ScreenMaker project but does not exist in connected controller. ScreenMaker project should be connected to the controller inorder to detect RAPID and Signal data.

ScreenMaker Doctor does not detect actions that are defined as part of events. For example: If an action has been defined to Read Rapid Data into Application Variable.

Increment / Decrement control

A new control for incrementing and decrementing a NUM/DNUM.

5 Late Breaking Information

Overview

This section contains late-breaking information that will be included in the appropriate documents in the subsequent releases.

5.1 AutoPlace Workobject

The RobotStudio 5.14.02 Operating Manual contains documentation of a feature called '*AutoPlace WorkObject*'. However, the feature is not available in RobotStudio 5.14.02, but will be introduced in a subsequent version of RobotStudio.

5.2 Markup

The **Text Position** field of the **Markup** tool described in the *RobotStudio 5.14.02 Operating Manual* has been removed. The section **Creating Markup** should read

Creating Markup

Use this procedure to create markup to an object

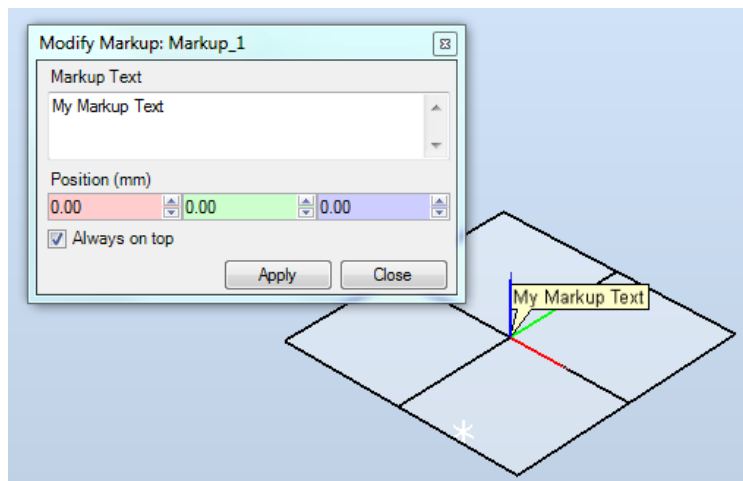
1. In the **Home** tab, click **View** and select **Create Markup**.
The **Create Markup** dialog box appears.



NOTE!

Alternatively, in the Layout browser, right-click the station and select Create Markup for the dialog box to appear.

2. In the **Markup Text** field, enter a name for the markup text.
3. In the **Position**, set the position of the pointer.
4. Click **Create**.



5.3 Online Monitor

Using Online Monitor

Write access is not needed for the Online Monitor. A cone will be created at the robot wrist to indicate the active TCP.

Kinematic Limitations

When the button Kinematic Limitation is enabled, you can see if the robot is at a joint limit or a singularity.

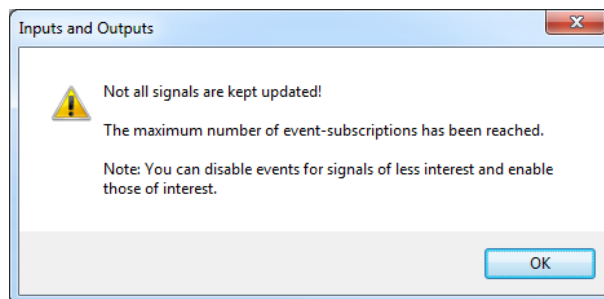
For joint limits, the corresponding link will be highlighted in yellow color to indicate a warning when the joint value is within the tolerance limites as defined in the RobotStudio Options. The singularity level can also be defined in the RobotStudio Options.

Limitations

The Online Monitor will only show TCP robots, and no external axes.

I/O Viewer

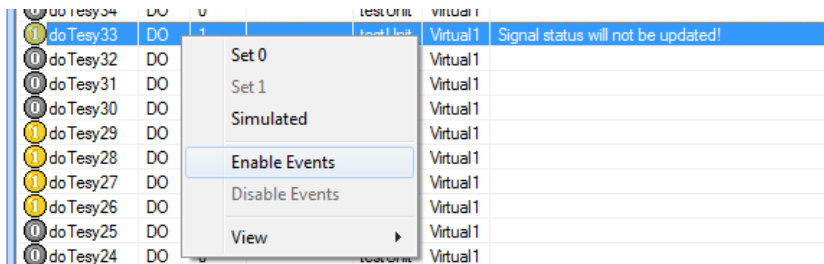
When opening the I/O Viewer and the number of signals exceed the number of allowed subscriptions, a warning message appears.



For every signal that is not part of the subscription an information message is displayed.

doTesy34	DO	0		testUnit	Virtual1	
doTesy33	DO	1		testUnit	Virtual1	Signal status will not be updated!
doTesy32	DO	0		testUnit	Virtual1	

The subscription can be enabled by selecting '**Enable Events**' from the context menu, whereby the message will be removed and the signal value immediately updated.



NOTE!

A signal can only be 'Enabled' if there are subscriptions available, i.e. some other signals must be disabled.

5.4 Adjust Robtargets

Pre-requisite

The **Execute** button of the feature **Adjust Robtargets** will be only enabled if the selected tooldata and/or wobjdata have the same properties (e.g. robhold, ufprog, ufmec, etc).

6 Problems Corrected

Overview

This section describes the problems solved in RobotStudio.

6.1 Solved Product Defect Documents (PDD) since RobotStudio 5.14.01

ID	Title
PDD11	RS5.14: Border from points lasts 3 h or fails
PDD51	Unpack and Work: RobotStudio ignores relative directory of linked library files
PDD70	Simulation is not correct in an external axis system in RobotStudio
PDD96	RobotStudio - Slow performance relative to 5.13 in opening program for editing
PDD112	RS 5.14.01 RC2: E/A simulator not opening after two times
PDD121	RS5.14.01 - Wrong French translation in menu header
PDD188	RobotStudio IRB6640 ID Model wrong
PDD191	Undo doesn't work properly in RS 5.14.01
PDD210	RS5.14.01: not possible to open stations anymore
PDD216	RS5.14.01: Autpath max. distance not working
PDD236	RS5.14.01: IStart stays selected after creating new station with system
PDD252	RS5.14.01: IRBP libraries not correct
DSE10526	RobotStudio, ScreenMaker build error
DSE10535	RobotStudio - ScreenMaker: Access to variables in hidden modules
DSE10724	RS5.14RC3: Interpolate ext. axis values not working for multiple axis positioners

6.2 Solved Product Defect Documents (PDD) since RobotStudio 5.14

ID	Title
PDD00005	Kinematic modeller sets tool frame wrong
PDD00009	Collision detected, where no collision is
PDD00010	Stationviewer size doubled
PDD00015	Saved stations cannot be opened anymore
PDD00020	Create Border from Surface lasts 30 s
PDD00021	AutoPath, Selecting a curve sends RS into dead lock
PDD00022	RS5.14 Center of Circle not correct
PDD08926	The Chinese language support from RS contains translation errors.
PDD09281	Impossible to edit axis 4 of IRB660_RC into Robot Studio
PDD09392	Closing conveyor tracking setup window when not all data are entered

PDD09452	system displayed twice in recent controllers menu
PDD09464	Buttons in graphic view hard to recognize
PDD09677	IRB 660 in robot studio jog past limits axis 1
PDD09806	'Copy data to task' function removes axes config. validation on original task targets
PDD09950	Reorient freehand not working correctly anymore
PDD10178	GetURange and GetVRRange
PDD10256	Multiteach not working with positioner task T_POS
PDD10437	RS Station logic state does not store signals without access level "ALL"
PDD10459	Body.scale method not working
PDD10533	RobotStudio ScreenMaker increment decrement control
PDD10535	ScreenMaker
PDD10552	RobotStudio UI for IO Simulator is still limited to show long signal's whole name
PDD10560	'Save as Viewer' function exception
PDD10579	Fail to subscribe on signal
PDD10604	RobotStudio 5.14 disappears randomly
PDD10618	RAPID Profiler does not handle procedures with parameters
PDD10626	RS List of systems in system pool not updated
PDD10630	System from layout takes up to 50s, when using mediapool on network drive
PDD10636	Error when moving a attached part to a component group [REGRESSION]
PDD10656	RobotStudio 5.14 RC2 fails to open a simulation viewer file created by Palletizing PowerPac
PDD10661	Update rate of OnlineMonitor not configurable
PDD10662	joint limits not configurable
PDD10663	Limits for showing singularity with OnlineMonitor to small
PDD10664	RS 5.14 is much slower than 5.13 when opening a new station
PDD10681	Station Viewer keeps track of items selected during simulation recording
PDD10684	Signalanalyzer user interface issues
PDD10685	RS5.14RC2 Signalanalyzer, exported files corrupt
PDD10707	installation removes 5.13 SDK files
PDD10715	Fine points and Wait instructions cause position errors in the log of the signalanalyzer
PDD10716	Signalanalyzer might fail to subscribe signal
PDD10724	Interpolate ext. axis values not working for multiple axis positioners
PDD10726	Tool coordinate systeem still visible even when set to invisible
PDD10729	Minor leftovers from RobotStudio uninstall
PDD10734	RobotStudio Signal Analyzer UI issues
PDD10737	Configuration calculated related to active tool instead of used tool
PDD10741	Execute button in "Adjust robtargt" window deactivated
PDD10763	Mecanism frames are not displayed anymore in the Layout tree
PDD10764	RS 5.14 crashes when using station with a servo gun
PDD10769	RS5.14 Free hand jogging crashes Robotstudio and destroys model

PDD10770	Library for IRB460 has no flange with hole pattern [REGENERATE LIBRARY]
PDD10777	Incorrect configurations for IRB 120
PDD10778	Error in signal analyzer
PDD10791	RS5.14 license request file extension not licreqx with german language
PDD10798	System from layout not working with IRBP_C positioner
PDD10802	Browser in offline tab doesn't show icons

7 Known Limitations

Overview

This section describes known limitations in RobotStudio.

7.1 General

*Installation 'Visual Jsharp' error message on 32 bit OS

Occasionally during the installation there sometimes pops up an error message "The installation of Visual Jsharp.Net redistributable package 2.0 appears to have failed. Do you want to continue the installation?" Press YES in the message to continue the installation, RobotStudio will not be affected by this error.

Not possible to run RobotStudio installation with Chinese or Japanese language

The workaround is to install RobotStudio with English language and afterwards switch to Chinese/Japanese from the RS interface. This is done from: *File tab > Options > General > Appearance*

Please note that the Japanese online help file for "Operating manual - IRC5 with FlexPendant" (ユーザーマニュアル - FlexPendantを搭載したIRC5) has some messy characters in the index tab.

Incorrect redirection for user folder

On PCs with Windows XP for which the user folder (My Documents) is configured to a different folder (e.g. C:\Data), the shortcut link of the standard Windows File Dialog may incorrectly redirect the default user folder of Windows XP, i.e. C:\Documents and Settings\\My Documents.

File for "Application manual - SafeMove"

Please note that only the English language help file for "Application manual - SafeMove" is updated in this release. All other available languages use the previous revision of the manual. Updated translations will be made available in pdf format on ABB intranet and Partner web.

Only possible to open one SafeMove Configurator at the time

Only one SafeMove Configurator may be open at the time, even though several controllers may be connected. If the SafeMove Configurator is opened for one controller, the icon will become disabled for the other controller. This limitation also includes Offline, i.e. if SafeMove Configurator is opened in Offline, then it cannot be opened in Online for another controller and vice versa.

Compatibility of RobotStudio Library and Stations with older RobotStudio versions

RobotStudio is **not forwards compatible**, i.e. it is not possible to load stations or libraries created in RobotStudio 5.14 into an earlier version of RobotStudio such as e.g. RobotStudio 5.13.03. However, RobotStudio is **backwards compatible**, which means stations and libraries created in version 5.13.03 or earlier can be opened in RobotStudio 5.14.

7.2 Online

Error Message: *Failed to connect to controller. The communication could be lost or the maximum number of clients reached (hr = 0x80040402)*

The error message *Failed to connect to controller. The communication could be lost or the maximum number of clients reached (hr = 0x80040402)* will appear if there are no connections available. (The number of connections are limited to four, i.e. three RobotStudio connections and the FlexPendant.) If connections are made available after this error message has appeared, then RobotStudio must be restarted before it can be connected to the controller in question. Otherwise the same error message will pop up again when trying to connect.

RobotStudio must be closed to release controller connection

If RobotStudio has been connected to a controller, whose connection has been deleted in the Online browser, then RobotStudio will still keep a connection to the controller. The connection will not be released until RobotStudio is closed.

Error message '*You are denied write access. Access is granted to Unknown*'

If the connection to the real controller has been lost for some reason (one reason could be that the PC has awakened again after being in sleep mode) the message *"You are denied write access. Access to <system name> is granted to Unknown (user location unknown)."* may be displayed when trying to get mastership.

Workaround: *The workaround is to log off the controller and then log on the controller again using the UAS system in the Online tab of RobotStudio.*

Switching Network cable

Switching cable from ServicePort to LAN and maintaining an existing connection does not work. It is necessary to close the connection and reconnect.

Workaround: *Restart RobotStudio and reconnect.*

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.

Restart of Controller when connected through the service port

Re-connection of controller may fail when a controller is restarted from a service port connection.

Generating many signals using Add Signals tool may fail.

Adding many signals in one operation (>100) may fail and display the error message *Failed to apply changes to controller*.

Workaround: *After start of RobotStudio, the first thing to do is to launch the Add Signals tool and generate the amount of signals you want. Do **not** expand the Configuration node of the browser and do **not** launch the Configuration Editor until the signals have been generated.*

I/O Viewer is not refreshed after controller restart

When looking at I/O Signals launched for the entire I/O System this works just fine. However, due to a design limitation it is not possible for I/O Windows launched by Bus or Unit to be updated after a controller restart .

Task activation in Offline and Online

When starting program execution from the RAPID Editor, the tasks currently activated in the controller will be started. This applies both to Offline and Online controllers.

For Offline controllers, the active tasks are defined in the *Setup Simulation* dialog. This setting only applies to the Simulation Play button. The task settings of the controller will not be used in the Offline case.

7.2.1 Online - Paint

Backup for Paint systems does not create backup of the PIB board

The Backup function of RobotStudio does not create a backup of the PIB board of the IRC5P system.

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.

7.3 Offline

7.3.1 General

***IO signals configured with access level 'DEFAULT'**

When IO signals are configured with access level 'DEFAULT', only input signals are possible to set/reset.

NOTE: Not possible to set/reset from VFP or IO System window

***The feature *Configurations* may fail in showing valid axes configurations using RW5.14**

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.

Workaround: Upgrade to RW5.14.01

The feature *Configurations* may incorrectly use *Active Tool*

The feature **Configurations** for selecting the robot arm configuration (confdata) of a move instruction uses the **Active Tool** instead of the instruction defined tooldata, if the **Enable Turns** checkbox is checked.

Workaround: Ensure that the Active Tool is set to the tooldata of the move instruction.

Instruction template update

RobotStudio will not automatically update the Instruction template files in the My Documents\RobotStudio\Instruction Templates folder, since these files are considered to be user files.

Workaround: *The user has to manually copy the newest files from %ProgramFiles%\ABB Industrial IT\Robotics IT\RobotStudio 5.xx\Instruction Templates to the data folder.*

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.*

Absolute Accuracy may cause the VC to miss the programmed position

The robot will not go to the programmed location if the controller has the Absolute Accuracy option activated and parameters from a real robot. The virtual robot in RobotStudio will move to fake targets in the same way as the real robot. The reason is that the robot models in RobotStudio are nominal and do not correspond to the real, physical robots calibrated with Absolute Accuracy parameters.

Workaround: *Reset the Absolute Accuracy parameters for the virtual system.*

Information message starting system with IRB260/460/660/760

Starting a system with IRB260/660 gives you an error message: *'The number of joints is different between the library model and the controller configurations'*. The reason is that the IRBx60 is modeled with six joints in RobotStudio of which two are locked, but has four joints in the VC.

Working range of IRB340

In some cases, it may be possible to Jump to Target and get Configurations for targets that are outside the working range of IRB340. This is due to the working range being defined as a cylinder and not only defined by the joint limits. It is however not possible to jog the robot to these targets.

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.

Process time is displayed only for Simulation - Play in Time Slice mode

This is the only combination for which a correct cycle time can be guaranteed when custom mechanisms are involved in the simulation. It is only in Time Slice mode that RobotStudio controls the time and can synchronize the execution of the Virtual Controller with custom mechanisms. For simulations that only involve robot motion, the cycle time is correct for other combinations as well (RAPID Editor – Play and FreeRun). The Process Timer will turn yellow if the process time cannot be guaranteed.

Minor difference in process time of 'Simulation Play' and 'RAPID Editor Play'

The cycle time deviation between "Simulation Play" and "RAPID editor" is 0.05 s (constant). The difference is due to the program execution starting in different ways in the two scenarios. The play button of the RAPID Editor starts program execution in the same way as the FlexPendant, whereas the play button of the Simulation toolbar uses a slightly different mechanism. When executing program from the RAPID editor, it takes a small amount of time for RobotStudio to be aware that the simulation has started, which is why the "RAPID Editor" cycle time is 0.05 s smaller. The process time of the "Simulation" play is more accurate.

Event Manager: Simulation cannot be triggered by analog system signals

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

7.3.2 Station Viewer

***Memory problem when doing Save As Viewer or Record to Viewer with large libraries**

RobotStudio may run out of memory (*OutOfMemory exception*) when doing **Save As Viewer** or **Record To Viewer** if the station contains a very large library that is used in many instances. The reason is the libraries are disconnected (i.e. copied) before saving as viewer. This causes the memory usage to increase and an exception will occur if the memory limit is passed.

Workaround: First, ensure that the computer matches the System Requirements, see Chapter 7: Installation Information. Try and reduce the amount of RAM used by reducing the graphic detail level to **Coarse** (**Options** → **Graphics** → **Geometry** → **Details Levels**) and re-import the used CAD geometry. Additionally, the geometry (i.e. the mathematical CAD data) can be removed to keep only the graphics (the triangles that approximate the underlying CAD-data). Finally, try to reduce the length of the played simulation.

7.3.3 Signal Analyzer

The Position signal is incorrectly recorded for stop points and wait instructions

When recording the Position signal for a robot controller, the value will incorrectly be recorded as zero when reaching a stop point (zonedata fine) or executing a wait instruction (e.g. WaitDI).

***Motion Signals delayed**

There is a delay of approximately 200 – 500 ms before motion signals appear in the Signal Analyzer graph. The reason is two-fold: First, the controller requires a certain time to prepare the motion before the program can start. Second, the motion signal data is processed before it is recorded by RobotStudio. A consequence is that the first samples of a motion signal is used only for internal signal processing and will not be recorded.

Error message: *Failed to subscribe on signal

The error message *Failed to subscribe on signal* may sometimes appear during signal recording.

Workaround: *Restart the VC.*

***Maximum 26 signals can be exported**

The number of signals that can be exported is limited to 26.

7.3.4 MultiMove

Include MultiMove option for system with several TCP robots

When creating a system for several manipulators (up to four) with SystemBuilder, either of the RobotWare options *MultiMove Independent*, or *MultiMove Coordinated* must be included for all of the related motion tasks to start.

Note: *It is recommended to use the function “System From Layout” if applicable when creating robot systems for RobotStudio. Then the MultiMove option will automatically be added whenever required.*

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: *wobj is not set for the current task*

Workaround needed for old stations: *For each task in the station, set as Active. This will automatically “refresh” active tool/workobject/path/process definition for specified task. Save the station to persist the changes.*

7.3.5 Virtual FlexPendant

The FlexPendant Option ‘Non Motion Execution’ is not supported

The FlexPendant has the option ‘*Non-motion Execution*’ that can be set to prevent the real controller from moving even though the program is executing. RobotStudio will ignore this option and move the robot anyhow.

Controller switched to Automatic mode when RAPID instruction UiShow is executed

RobotStudio will automatically request mastership to the controller to update a data value, whenever the RAPID instruction 'UiShow' instruction is used. This will only happen if the Virtual Operator Window is enabled. When starting Virtual Flexpendant with enabled Virtual Operator Window, a message window is launched, explaining that unexpected behaviour may occur.

***Workaround:** Disable the Virtual Operator Window in RobotStudio options.*

Automatic mastership when interaction required in Virtual Operator Window "

RobotStudio will automatically request mastership when committing data to the controller, when actions are taken in Virtual Operator Window. This can cause undesired effect when using the Virtual FlexPendant at the same time.

***Workaround:** Disable the Virtual Operator Window in RobotStudio options.*

Virtual Flex Pendant: Emergency Stop button

When the emergency stop button is pressed on the Virtual FlexPendant, it cannot be reset through the VC Control Panel. The button must be reset on the Virtual FlexPendant.

Virtual FlexPendant impairs performance when on top of graphics viewer

The control panel of the Virtual FlexPendant (VFP) might affect the performance of the graphical window if placed inside it. If this is the case on your computer, make sure to set the display mode of the VFP to simple mode. This is done by clearing the 'Enable transparency' option in the *RobotStudio Option* dialog (a restart of the VFP is required after changing mode). Refreshing the graphical view might however still be somewhat delayed, especially when moving the VFP rapidly over the screen.

7.3.6 External Axis

***The feature *Interpolate External Axis* does not positioners of type D, K and R**

The feature **Interpolate External Axis** does not support mechanisms that correspond to several mechanical units of the controller. The positioners of type D, K and R are examples of such mechanism.

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.*

JointTargets for external axis

JointTargets for external axis are not visualized in the graphical window.

TRACK mediapool only supports T_ROB1

The Track additional options mediapool available on the RobotWare DVD image, only supports one track in the first task (T_ROB1).

7.3.7 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 VirtualFlexpendant

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 Control Panel / **Administrative Tools** / **Microsoft .NET Framework 2.0 Configuration**
2. Open **My Computer** / **Runtime Security Policy** / **Machine** / **Code Groups** / **All_Code**
3. Right-click on **All_Code** and select **New...**
4. Type a name for the code group (for example "RobotWare") and click **Next**
5. In the condition dropdown select **URL**. Type the path to the RobotWare location, for example **Z:\RobotWare*** and click **Next**
6. Select **FullTrust** and click **Next**.
7. Click **Finish**

7.3.8 RAPID

*Difference in execution time for Simulation Play and RAPID Profiler

The execution time (**Process time**) displayed in RobotStudio after **Simulation Play** is less than 0.2 seconds larger than the time measured by the **RAPID Profiler** for any simulation. The reason is that the process time includes controller initialization time, whereas the RAPID Profiler only measures RAPID execution time.

Tip: When measuring very short cycle times of only a few seconds in RobotStudio, execute several cycles and calculate the average.

***Adjust Robtargets does not support Offs or RelTool**

The function **Adjust Robtargets** does not support move instructions with `Offs` or `RelTool`. They will not be adjusted.

***RAPID Profiler limitations**

- The Spy function does not produce useful output for systems based on RobotWare option CAP (Continuous Application Platform). This is the case for e.g. systems with ArcWelding. This affects the RAPID Profiler that analyses the log generated by the Spy function.
- The RAPID Spy function, which produces the input to the RAPID Profiler, measures **RAPID program execution time** as opposed to motion execution time. In many cases, however, it is the motion execution time that is of interest. To make these two times coincide for the RAPID procedures, ensure that the last move instruction of all procedures is a so-called stop point, e.g. programmed with speeddata *fine*. Otherwise, the RAPID instruction execution time will be lower than the motion execution time. The reason is that the program execution runs ahead of the motion execution unless the programmed point is a stop point. Read more about stop points in the *RAPID Reference Manual* included with RobotStudio. In particular, see *zonedata* and *stoppointdata*.

Breakpoints deactivated when running simulation.

When running a simulation (Simulation Play) in time slice mode, all breakpoint set in the RAPID editor window(s) will be deactivated temporarily. This will prevent a situation, which may cause RobotStudio to hang, when a hitting a breakpoint during simulation.

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 mixup 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.

Array of robtargets, tooldata and workobjects are not supported

RAPID programs containing arrays of tooldata, robtargets and workobjects are not supported, i.e. they will not be synchronized to the station.

LOCAL declarations in RAPID are not supported the Paths & Targets browser

RobotStudio does not support LOCAL declarations of data or routines. RobotStudio will show an error message if such declarations are used.

The RAPID functions Offs and RelTool are not fully supported

RobotStudio does not fully support instructions using Offs or RelTool functions. They will be synchronized and will appear in the element browser, but commands such as “View Tool at Target” and “Locate Target” will not work. Targets used in the instructions will not be visible in the graphics. However, instructions can be programmed and edited using the RAPID Editor and successfully simulated using the VC.

7.3.9 Building Controller systems

IRB5320 not supported in ‘Create System From Layout’

In RS5.14.02 the IRB5320 is not supported by ‘Create System From Layout’. A system has to be made using ‘System Builder’ instead. This will be solved in a subsequent version of RobotStudio.

Virtual Controller systems must be I-started after **Modify System**

A virtual controller system that has been modified using the function **Modify System** of the **System Builder** must be I-started for the changes to take effect.

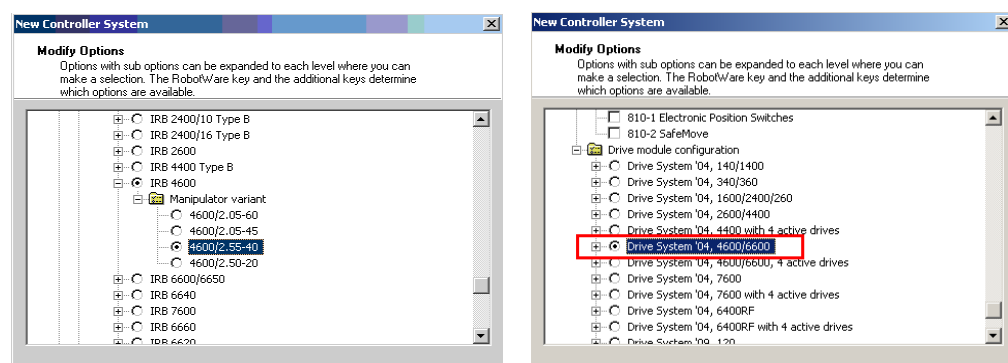
Modify system with additional Mediapool(s) not in default location.

Trying to modify a system, which references one or several additional options mediapools not placed in the same folder as the used RobotWare mediapool, will cause the System Builder to fail to modify the system.

Workaround: Copy the additional options mediapool to the default mediapool location (i.e. %ProgramFiles%\ABB Industrial IT\Robotics IT\Mediapool\)

Mismatching drivesystem for selected manipulators in Systembuilder

Creating a system in System Builder with a virtual key, will result in a default drive system selection for 140/1400 manipulator types. For all manipulators different from these, the appropriate drive system has to be selected manually. See example for an IRB4600 below.



Not possible to Modify System for Pack and Go file.

It is not possible to use the function Modify System of the System Builder for a system that uses a mediapool embedded in a Pack&Work file.

Workaround: Copy the mediapool to the common Mediapool folder, and create the system from the backup.

System From Layout requires custom made track motion to be saved as library

The System From Layout requires that any custom made track motions used to be saved as library.

‘System From Layout’ may fail to create system for previous RobotWare versions

RobotStudio uses a so-called *system key* to create a system using the function ‘System From Layout’. The version of the key is called signature. If the key signature is not supported by the selected RobotWare version, the function will fail.

Workaround: Use RobotWare 5.14 or later.

Move/Copy of Virtual Controller systems

Warm-started systems cannot be moved to another location and/or PC. This will result in a non-working VC.

A typical symptom of the problem is that the Virtual Controller reports *Failed to retrieve procedure*.

Workaround and recommended method of working:

1. Use ‘Pack & Go’ to pack the station and system backups in a zip file.
2. Use ‘Unpack & Work’ to unpack the zip file created by ‘Pack & Go’.

7.3.10 Paint

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.

No Virtual FlexPaint Pendant available

There is no Virtual FlexPaint Pendant available for Virtual Controller systems with paint robots.

Workaround: Use the regular Virtual FlexPendant instead.

Hidden main entry point for Paint systems

Controller systems for Paint robots (IRB5XXX) has a hidden main procedure to handle the so-called *job-queue*. This is why the user must define a new entry point, e.g. *main2*, using the *Setup Simulation* tool to avoid conflicts when working with a paint robot in RobotStudio.

Only single robot setups supported for Paint systems

It is possible to create the system with System builder for both single & multi paint robot systems using Virtual Key & Paint option. But a System failure will occur starting the Multi paint robot system. Only Single paint robot system can be started.

7.3.11 Conveyor Tracking

Circular Conveyor Tracking not supported

RobotStudio does not support tracking of circular conveyors. Only linear conveyors are supported.

Compiling a Conveyor Mechanism does not disable the Compile button

After compiling a conveyor mechanism, using the *Create Mechanism* tool, the *Compile Mechanism* button is not disabled. If the user presses the *Compile* button again, without changing anything, another identical conveyor mechanism will be created .

Conveyor Tracking programs must be started with the *Simulation-Play* button

It is not possible to successfully run a RAPID program with Conveyor Tracking from the Virtual FlexPendant or from the RAPID Editor. The reason is that RobotStudio must simulate the *Conveyor Encoder Unit* in order to provide the required I/O signals to the system. This is only possible when running a simulation.

Workaround: Start the simulation with the *Simulation-Play* button of RobotStudio instead of the Virtual FlexPendant or the RAPID Editor.

The same part can only be attached once on a Conveyor

It is not possible to attach the same part on a conveyor more than once.

Workaround: Import the same part several times, or copy and paste the part in the Layout browser, before attaching them to the conveyor.

Note: The part must not be attached to the conveyor during the copy and paste operations, then the copy will get the wrong transform.

7.3.12 Graphics and Geometry

*Snap Mode Centre of Gravity does not support bodies of type Wire

When Snap Mode **Centre of Gravity** is activated and a body of type **Wire** is selected (i.e. a curve or a line), then an exception will occur. When this happens press **Continue** to resume RobotStudio operation.

*Transparent textures

The feature only supports textures in .PNG format.

Load station without geometry

Opening a station with the option '*Load Geometry*' unchecked, followed by saving the station, will cause the geometry (underlying CAD data) to be permanently removed.

Workaround: None.

Limited support for VRML 1

The VRML 1 import of RobotStudio does not support 2D layouts embedded in the VRML 1 file.

Workaround: Remove the embedded 2D layout before import, or use VRML 2.

The Healing option may increase size of CAD models

The healing option may be used during CAD import to try and heal CAD-models. For some CAD-models the size is increased a factor of ten.

Workaround: Uncheck the Healing option in the Import Geometry dialog or the CAD-converter.

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.

Out of memory

The application might fail when out of memory due to the import of very large ACIS files or load of very large stations. There is no immediate workaround for this problem.

Use CAD Converter when converting CATIA V4 files

It is recommended to use the CAD Converter when converting CATIA V4 files, instead of importing the files directly into RobotStudio using 'Import Geometry'.

Note: The CATIA V4 converter requires a separate license.

7.3.13 AutoPath

Option for Max Distance removed

To keep backwards compatibility with CreatePathFromCurve the 'AutoPath' function has changed geometry tessellation method. Because of this, the parameter 'Max Distance' has been removed.

7.3.14 Heat Predicion Tool

Only support for one robot in each VC

When a virtual controller has more than one robot, only one robot will have predictions calculated. The other robots will only display 0% chance of overheating.

7.3.15 External Axes Wizard

Paint systems not supported

Paint systems are not supported by the wizard in SR5.14.02.

The RobotStudio API is not thread safe

Access to the RobotStudio API is not inherently thread safe. Only access the API from the thread that your Add-In was called from by RobotStudio. If multiple threads manipulate the object model it can be left in an inconsistent state.

Properties and methods that use the type System.Drawing.Color will not work in VSTA.

This is a limitation on the Visual Studio Tools for Applications (VSTA) environment.

Note: There is a new VSTA-class VSTABridge that can be used to work around this problem, see API documentation.

Static events cannot be called from applications developed in VSTA.

This affects for example the Simulation – Tick event.

Workaround: Create a standard add-in if static events are to be used. Alternatively, use the VSTABridge class that can workaround this problem, see API documentation.

Debugging of VSTA Applications

When debugging a VSTA application that adds menu items to the RobotStudio environment, then the menu will not be removed when the program execution stops. This may cause multiple entries of the same menu to be added in RobotStudio. This only affects VSTA add-ins being debugged and not completed VSTA add-ins.

Workaround: Restart RobotStudio to remove the extra menus.

VSTA Library add-ins not available

In the Add-ins browser there is a folder for so-called VSTA Library add-ins. This feature is not available.

Use Visual Studio 2010 Express for advanced add-in

The purpose of VSTA is to write custom actions and minor utilities. For advanced add-in development use Visual Studio 2010 Express that can be downloaded free of charge from <http://www.microsoft.com/express/>

RsLoadData does not work from VSTA

(CQ7935)

VSTA limitation

The 'FindDataDeclarationsByType' method used in VB.net throw an exception
Limitation added to API doc.

7.4 ScreenMaker Limitations

~~*Build error caused when Pulse Signal action is used~~

~~Drag and drop a control (ex : button). Define an action to pulse the digital signal. The time required to pulse the signal can either be entered manually in the listbox or bound to Application Variable. If the entry is made manually then the value is taken as a double instead of integer. This causes build error.~~

~~*Workaround: Bind data to an Application Variable.*~~

***Dynamic update of Rapid Data**

The switch from Manual Mode to Auto Mode causes the RAPID boolean data bound to the enabled property of control change to value TRUE. This behaviour is noticed when

the mode is changed from a different screen and not on the screen where the control is bound to RAPID boolean data.

***Upper limit for VariantControl when bound to dnum variable**

When the **VariantControl** is bound to a variable of type **dnum**, it can only increase its value up to the maximum of a **dnum** (8,388,608). When the value exceeds the limit, an exception will occur.

***Data Binding to an index of array item**

The data can be bound to index of array item, but the binding mechanism does not work at run time for the index. Use Action Trigger as a workaround. Use Application Variable to bind to index of array.

So when index value changes notify Action Trigger control (by triggering signal or RAPID bool), which writes the index value to application variable.

Since, application variable is bound to index property, the array item changes.

Error on FlexPendant when using Turkish Language Settings

When user tries to perform a RAPID read operation, error is thrown from the FlexPendant as shown below.



The error is noticed if system has Turkish or Azerbaijan language settings.

Workaround: If the error as shown in the screenshot is encountered and the language being used is either Turkish or Azerbaijan, change the language settings to English.

Supports only I/O defined signals and not RAPID defined signals

Signals defined by RAPID declarations are not supported. Only signals defined by IO.cfg are supported.

Not possible to add sub menu items on Command Bars

The FlexPendant controls have the ability to have sub menu items when a command bar button is pressed. This is not supported.

Not possible to add signals to ListBox / ComboBox

When adding items to the ListBox/ComboBox control, it is not possible to add I/O signals

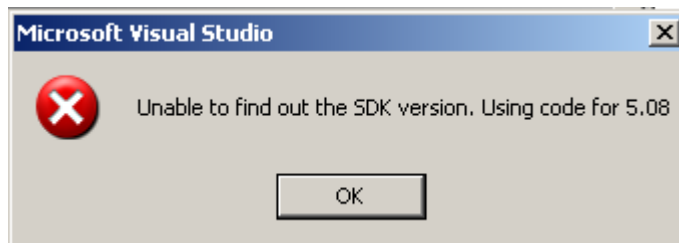
Graph functionality is limited

There is a limitation in Graph functionality in terms of the property values not getting updated once it has been set by the user.

Example: User decides to plot a line graph, sets all the properties and sees it on the FlexPendant. But when he tries to modify the properties previously set, properties don't have the new value and still hold the previous value.

ScreenMaker Project stored as FlexPendant Project throws error

When a ScreenMaker project is saved as a FlexPendant project, an error message may be displayed when the controls are modified in Visual Studio.



Solution: Open the source code whose designer form needs to be modified. Consider for example that we have a screen named Navigate. Start by opening the class definition of Navigate:

Initial State:

```
public class Navigate : ABB.Robotics.ScreenMaker.Windows.Forms.ScreenForm
{ }
```

Instead of Navigate inheriting from

ABB.Robotics.ScreenMaker.Windows.Forms.ScreenForm use
ABB.Robotics.Tps.Windows.Forms.TpsForm, see below

Modified State:

```
public class Navigate : ABB.Robotics.Tps.Windows.Forms.TpsForm
//commented - ABB.Robotics.ScreenMaker.Windows.Forms.ScreenForm
{ }
```

This change will also enable the toolbox with FlexPendant specific GUI controls.

NOTE!

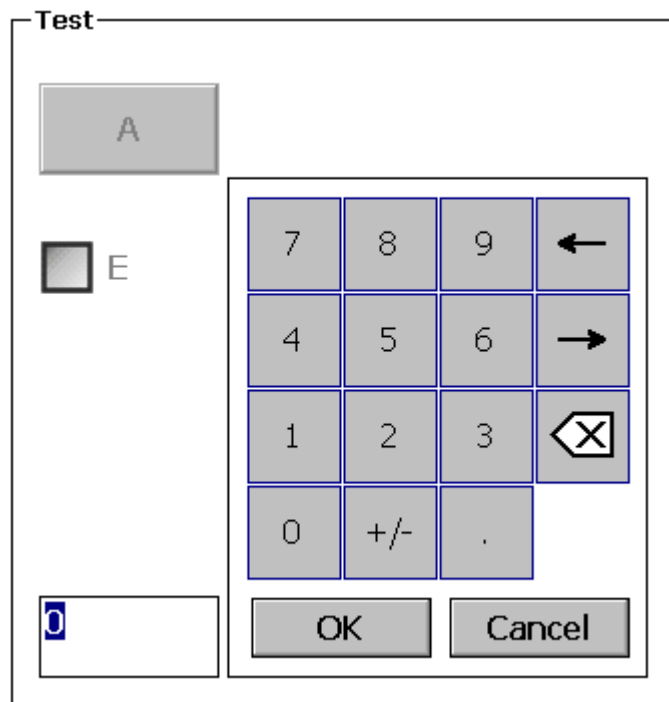
There may be some errors in the output log window. When the form has been designed according to the needs, revert back to the previous state and rebuild the project. The state of the class definition should be:

```
public class Navigate : ABB.Robotics.ScreenMaker.Windows.Forms.ScreenForm
//commented - ABB.Robotics.Tps.Windows.Forms.TpsForm
{ }
```

Group box controls with Numpad

NumEditor control is placed as a sibling of the GroupBox. Numpad control gets opened on clicking the NumEditor. If NumPad does not fit inside the parent of NumEditor, in this case the GroupBox, the controls that were disabled by NumPad are not enabled again.

The workaround is to make sure that the numpad fits inside the parent of the NumEditor,



You must also avoid scenarios where the NumEditor is put outside a GroupBox (or any other control) where the Enabled property of any child control is bound to controller data.

If all controls of a ScreenMaker screen are siblings it should be fine when using the NumEditor while binding Enabled properties of controls.

Unicode characters not supported

When creating a new SM project you are not allowed to use chars like "åäö".

8 RobotWare Compatibility

8.1 General

Supported RobotWare versions

RobotStudio 5.14.01 is distributed with RobotWare 5.14.01 and works with RobotWare 5.05 and later. Please see below for details.

8.2 RobotWare 5.05 and 5.06 Compatibility

RobotWare 5.05 and 5.06 and revisions of those versions are supported with the following limitations:

General

- The RAPID Editor does not support RobotWare 5.05 or 5.06, but requires RobotWare 5.07 or later.
Workaround: Save the RAPID code to a text file and edit the code using any text editor. RAPID code can also be edited using the Virtual FlexPendant.
- The RAPID debugging features that are available in the Premium edition of RobotStudio (Step In, Step Over, Step Out, Breakpoints, Watch Window) are not available for 5.05 or 5.06 systems.
Workaround: None.

Offline

- The function *Sync to VC* may cause corrupt RAPID programs. The problem appears when lines (e.g. targets, paths) are removed from the RAPID program and paths are added to the RAPID program in the same *Sync to VC* operation. As a consequence, the new path may be added after the ENDMODULE statement. This problem does not appear when running RobotWare 5.07 or later.
Workaround: Do not add and remove RAPID paths and targets in the same operation. If the problem has appeared, resolve the syntax error using the Virtual FlexPendant or any text editor.
- The function *System from Layout* does not support RobotWare 5.05 or 5.06, but requires RobotWare 5.07 or later.
Workaround: Use a supported RobotWare version or create the system manually by using *System Builder*.

Online

- *FlexPendant Viewer* does not work RobotWare 5.05 or 5.06
- *Controller and System Properties* does not work for RobotWare 5.05 or 5.06

8.3 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.

Online

- FlexPendant Viewer does not work RobotWare 5.07

8.4 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.

8.5 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.

8.6 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.

8.7 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
```

8.8 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.

8.9 General Compatibility Limitations

RAPID Profiler

The profiler will be able to create a log file for the profiler automatically for RobotWare 5.14 or later. For RobotWare 5.13 or earlier, the log file must be created manually using the RAPID Spy command (SpyStart/SpyStop).

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.

8.10 ScreenMaker Compatibility

RobotWare

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

- ActionTrigger has been redesigned and 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.

Memory Leak issue has been fixed in RunRoutine button.

FlexPendant SDK

ScreenMaker should be used with FlexPendant SDK 5.12.02 or later. There is an option to select which of the versions of FlexPendant SDK versions installed on the computer to use when ScreenMaker is launched.

8.11 Support for future RobotWare versions

RobotStudio 5.14.01 supports all future minor revisions of RobotWare, but no future major releases. For example, RobotStudio 5.14.01 will support RobotWare 5.14.02 (if, and when available) but not RobotWare 5.15.

9 Installation Information

9.1 Prerequisites

Before You Install...

Before you begin installing RobotStudio, you must have Administrator privileges to successfully complete the installation.

Licensing

RobotStudio is categorized into the following two feature levels:

- **Basic** - Offers selected RobotStudio functionality to configure, program, and run a virtual controller. It also includes online features for programming, configuring, and monitoring a real controller connected over Ethernet.
- **Premium** - Offers full RobotStudio functionality for offline programming and simulation of multiple robots. The Premium level includes the features of the Basic level and requires activation.

9.2 System Requirements

Software Requirements

Operating System	
Microsoft Windows XP Service Pack 3	32-bit edition
Microsoft Windows 7	32-bit edition
Microsoft Windows 7 (<i>recommended</i>)	64-bit edition



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>.

Hardware Requirements

CPU	2.0 GHz or faster processor, multiple cores recommended
Memory	3 GB if running Windows 32 bit edition 6 GB if running Windows 64 bit edition.
Free disk space	5+ GB free space
Graphics card	High-performance DirectX 9 or OpenGL-compatible graphics card with the corresponding up-to-date drivers installed
Screen resolution	1920 x 1200 pixels recommended
DPI	Normal size (100% / 96 dpi) up to Medium size (125% / 120 dpi)
Mouse	Three-button mouse
3D Mouse [optional]	Any 3D mouse from 3DConnexion, see http://www.3dconnexion.com .
Disk Drive	DVD-ROM Drive (required only if you receive the RobotStudio installer on a DVD).

9.3 Installing RobotStudio

Installation Instructions

Upon installation of RobotStudio 5.14.01, the user will be asked if any existing installation of RobotStudio 5.13.03 (5.14 will be removed) or earlier should be uninstalled automatically or if the existing installation should remain. Any previous installation of RobotStudio Online will remain untouched.

RobotStudio requires RobotWare to be installed. Optionally, the Track mediapool may also be installed to add support for the track motions IRBTx004.

How to install RobotStudio on a PC

1. Insert the robot software DVD in the PC (or browse to the RobotStudio DVD image if it is saved on your computer).
2. Unless the installation menu appears automatically (which it should if you have inserted a DVD into the PC), then double-click the file **launch.exe** file to it bring up.
3. Select language for the installation menu.
4. On the installation menu, click **Install Products**.
5. On the Install Products menu, click **RobotStudio**. This opens an installation wizard, which will guide you through the rest of the RobotStudio installation.
6. Follow the instructions in the installation wizard.
7. Now, install RobotWare. On the Install Products menu, click **RobotWare**. This opens an installation wizard, which will guide you through the rest of the RobotWare installation.
8. (Optional) Proceed with installing the Track mediapool. On the Install Products menu, click **Additional Options**. This will open a file browser that displays the Track mediapool installation and other available options.
9. Double-click on the **TrackMotion** folder.
10. Double-click on the file **setup.exe** to start the installation wizard. Proceed through the wizard.
11. The next step is to activate RobotStudio, see below.

***Note:** For an immediate trial period of 30 days, RobotStudio will work without activation.*

9.4 Activate RobotStudio

To continue using your product with all of its features after the trial period, you must activate it. RobotStudio Product Activation is based on Microsoft anti-piracy technology and designed to verify that software products are legitimately licensed.

Activation works by verifying that the Activation Key is not in use on more personal computers than are permitted by the software license.

How do I activate RobotStudio?

When you start RobotStudio for the first time after installation, you are prompted to enter your 25-digit Activation Key (xxxxx-xxxxx-xxxxx-xxxxx-xxxxx).

Trial period: Before entering a valid Activation Key, you can run the software, in Premium functionality mode, with all the features enabled (including the CAD converter options), for a trial period of up to 30 days. Please note that the trial period days start immediately after installation. After entering a valid Activation Key, you will see only the features you have purchased (if installed during the trial period you will lose the trial period time).

Basic functionality mode: After the trial period, the software reverts to Basic functionality mode unless you have entered a valid Activation Key. In Basic functionality mode, RobotStudio only allows the use of the Online and basic Virtual Controller features. No existing files or stations are harmed in Basic functionality mode. After activating your software, you will have full functionality for the features you have purchased.

***Note:** Activation is not required for the Online features for programming, configuring and monitoring a real controller connected over Ethernet.*

Activate automatically over the Internet or manually

The Activation Wizard gives you two choices on how to proceed:

Automatic activation by using the Internet (recommended): Once you have selected the option *Activate RobotStudio over the Internet*, and proceeded through the Wizard, the Activation Wizard automatically contacts the ABB licensing servers over your Internet connection. If you are using a valid Activation Key that has not exceeded the number of installations allowed, your product is activated immediately.

When you activate over the Internet, your activation request is sent to ABB. Your license will then be automatically installed and your product ready for use. If you choose to activate over the Internet but are not currently connected, the wizard alerts you that there is no connection.

Manual activation: If the computer does not have an Internet connection, you must create a license request file by selecting the option *Create a license request file*. Proceed through the wizard, enter your Activation Key and save the License Request File to your computer. Use a removable medium, such as a USB stick or floppy disk, to transfer the file to a computer with an Internet connection. Open a web browser and go to <http://www101.abb.com/manualactivation/> and follow the instructions. The result will be a License File that should be saved and transferred back to the computer holding your product. Relaunch the Activation Wizard and select the option *Install a license file*. Proceed through the wizard, selecting the License File when requested. Upon completion, RobotStudio is activated and ready for use.

How do I activate later?

If you do not want to activate your copy of the software at installation, you can do so later. The following steps will launch the Activation Wizard:

1. Go to the **File** tab, and then click on the **Options** button, and select the **Licensing** section.
2. Click **Activation Wizard** to launch the activation wizard.
3. If your RobotStudio installation has been activated, you will have valid licenses for the features covered by your subscription.

Which RobotStudio version are you using?

The version number of RobotStudio is displayed on the start page that appears when RobotStudio is started.

How can I tell whether my RobotStudio installation has already been activated?

1. Go to the **File** tab, and then click on the **Options** button, and select the **Licensing** section.
2. Click **View Installed License Keys** to see the status of your current license.
3. If your RobotStudio installation is activated, you will have valid licenses for the features covered by your subscription.

Network licenses

Network licenses are now available in RobotStudio 5.14.02 for schools and ABB certified partners.

10 Technical Support

10.1 Overview

Contacting ABB

If you have any questions or problems with your RobotStudio installation, please get in touch with your local ABB Robotics Service representative, see <http://www.abb.com/contacts>.

Have the following in mind

1. Running the latest version of RobotStudio help ensure that it works properly and includes improvements and new product functionality. ABB recommends that you update to the latest version of RobotStudio whenever a new version is available and before contacting ABB for support.
2. Give a brief description of how to reproduce your problem.
3. Create screenshots if applicable. (Use ALT + PRINT SCREEN to get an image of the active window instead of the entire screen.)
4. Generate a Full Scan with the RobotStudio Support Tool available next to RobotStudio in the Start menu, save the report and attach it with your problem description. (Click *Start* → *Programs* → *ABB Industrial IT* → *Robotics IT* → *RobotStudio* → *RobotStudio Support Tool*, click on *Run Full Scan* and then *Save Report*.)
5. We also need the following user information:
 - i. name
 - ii. company
 - iii. contact information
 - iv. what operating system you are running (incl. language)
 - v. subscription ID for your purchased license.

Note: When sending large (> 1 Mb) files, please compress them with WinZip® or WinRAR.

License support

For license-related questions, please contact the team responsible for license support directly at softwarefactory_support@se.abb.com