Release Notes

RobotStudio

5.15.01

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.
- **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.



Note

RobotStudio 5.15.01 64-bit edition is installed for the *Complete* installation option on computers with a 64-bit operating system. The 64-bit edition allows large CAD-models to be imported as more memory can be addressed. However, the 64-bit edition has the following limitations:

- PowerPacs, Visual Studio Tools for Applications, and add-ins that use PC-SDK are not supported
- Integrated Vision is not supported
- SaveMove Configurator is not supported
- EPS Wizard is not supported
- ScreenMaker is not supported
- Jupiter import is not supported
- Import of stations and libraries from RobotStudio 4.0 (for S4) is not supported
- Add-ins will be loaded from the following folder
- `C:\Program Files (x86)\ABB Industrial IT\Robotics IT \RobotStudio 5.15\Bin64\Addins`

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1 Release Information

1.1 General

Release Name

The release name is RobotStudio 5.15.01 and the build number is 5.15.5335.1091.

Release Date

The release date is April 19th , 2013.

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 five demo stations included in this version.

- Demo AW Station
- Demo Two Robots and Conveyor
- Demo FlexLoader
- Demo Exhaust Pipe 2
- 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 product pages at
http://www.abb.com/roboticssoftware

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.

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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

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1.2 Simulation Models

Robot Libraries

Variant	Library name
120 3kg/0.58m	IRB120_3_58__01.rslib
120T 3kg/0.58m	IRB120T_3_58__01.rslib
140 5kg/0.8m Type A/B	IRB140_5_81__01.rslib
140 5kg/0.8m Type C	IRB140_5_81_C_01.rslib
140 6kg/0.8m Type C	IRB140_6_81_C_01.rslib
140T 5kg/0.8m Type C	IRB140T_6_81_C_01.rslib
1400 Type A/B	IRB1400_5_144__01.rslib
1400H Type A/B	IRB1400H_5_128__01.rslib
1410	IRB1410_5_144__01.rslib
1520ID	IRB1520ID_4_150__01.rslib
1600 5kg/1.2m	IRB1600_5_120__01.rslib
1600 5kg/1.2m Type A	IRB1600_5_120_A_01.rslib
1600 5kg/1.45m	IRB1600_5_145__01.rslib
1600 5kg/1.45m Type A	IRB1600_5_145_A_01.rslib
1600 6kg/1.2m	IRB1600_6_120__02.rslib
1600 6kg/1.45m	IRB1600_6_145__02.rslib
1600 7kg/1.2m	IRB1600_7_120__01.rslib
1600 7kg/1.2m Type A	IRB1600_7_120_A_01.rslib
1600 7kg/1.45m	IRB1600_7_145__01.rslib
1600 7kg/1.45m Type A	IRB1600_7_145_A_01.rslib
1600 8kg/1.2m	IRB1600_8_120__02.rslib
1600 8kg/1.45m	IRB1600_8_145__02.rslib
*1600 10kg/1.2m	IRB1600_10_120__01.rslib
*1600 10kg/1.45m	IRB1600_10_145__01.rslib
1600ID 4kg/1.5m	IRB1600ID_4_150__03.rslib
2400 10kg	IRB2400_10_150__02.rslib
2400 16kg	IRB2400_16_150__02.rslib
2400L	IRB2400L_7_180__03.rslib
2600 12kg/1.65m	IRB2600_12_165__01.rslib
2600 20kg/1.65m	IRB2600_20_165__01.rslib
2600 12kg/1.85m	IRB2600_12_185__01.rslib
2600ID 8kg/2.0m	IRB2600ID_8_200__01.rslib
2600ID 15kg/1.85m	IRB2600ID_15_185__01.rslib
260	IRB260_30_150__02.rslib
340	IRB340__01.rslib
360 1kg/1130 Std No axis 4	IRB360_1_1130_3D_STD_03.rslib
360 1kg/1130 Wash-down No axis 4	IRB360_1_1130_3D_WD_03.rslib
360 1kg/1130 Standard	IRB360_1_1130_4D_STD_03.rslib
360 1kg/1130 Wash-down	IRB360_1_1130_4D_WD_04.rslib
360 1kg/1130 Stainless	IRB360_1_1130_4D_WDS_03.rslib
360 1kg/800 Std No axis 4	IRB360_1_800_3D_STD_03.rslib
360 1kg/800 Wash-down No axis 4	IRB360_1_800_3D_WD_03.rslib
360 1kg/800 Std	IRB360_1_800_4D_STD_03.rslib
360 1kg/800Wash-down	IRB360_1_800_4D_WD_04.rslib
360 3kg/1130 Std No axis 4	IRB360_3_1130_3D_STD_03.rslib
360 3kg/1130 Wash-down No axis 4	IRB360_3_1130_3D_WD_03.rslib
360 3kg/1130 Standard	IRB360_3_1130_4D_STD_03.rslib
360 3kg/1130 Wash-down	IRB360_3_1130_4D_WD_04.rslib
360 3kg/1130 Stainless	IRB360_3_1130_4D_WDS_03.rslib
360 1kg/1600 Standard	IRB360_1_1600_4D_STD_02.rslib
*360 8kg/1130 Standard	IRB360_8_1130_4D_STD_01.rslib
4400 45kg	IRB4400_45_196__01.rslib
4400 60kg	IRB4400_60_196__01.rslib
4400L 10kg	IRB4400L_10_255__01.rslib
4400L 30kg	IRB4400L_30_243__01.rslib

Variant	Library name
4400S 30kg	IRB4400S_30_243__01.rslib
4450S 30kg	IRB4450S_30_240__01.rslib
4600 20kg/2.5m	IRB4600_20_250__02.rslib
4600 20kg/2.5m Type C	IRB4600_20_250_C_01.rslib
4600 40kg/2.55m	IRB4600_40_255__02.rslib
4600 40kg/2.55m Type C	IRB4600_40_255_C_01.rslib
4600 45kg/2.05m	IRB4600_45_205__02.rslib
4600 45kg/2.05m Type C	IRB4600_45_205__02.rslib
4600 60kg/2.05m	IRB4600_60_205__02.rslib
4600 60kg/2.05m Type C	IRB4600_60_205_C_01.rslib
460	IRB460_110_240__02.rslib
6400R 200kg/2.5m	IRB6400R_200_250__01.rslib
6400R 200kg/2.8m	IRB6400R_200_280__01.rslib
6400R 120kg/2.5m	IRB6400R_25_120_M2000.rslib
6400R 150kg/2.8m	IRB6400R_25_150_M2000.rslib
6400R 150kg/2.8m	IRB6400R_28_150_M2000.rslib
6400R 100kg/3.0m	IRB6400R_30_100_M2000.rslib
640	IRB640_M2000.rslib
660 180kg/3.15m	IRB660_180_315__01.rslib
660 250kg/3.15m	IRB660_250_315__01.rslib
6600 175kg/2.55m	IRB6600_175_255__01.rslib
6600 175kg/2.80m	IRB6600_175_280__01.rslib
6600 225kg/2.55m	IRB6600_225_255__01.rslib
6600ID 185kg/2.55m	IRB6600ID_185_255__01.rslib
6620 150kg/2.2m	IRB6620_150_220__01.rslib
6620LX-150/1.9m	Wizard
6640 130kg/3.2m	IRB6640_130_320__04.rslib
6640 180kg/2.55m	IRB6640_180_255__04.rslib
6640 185kg/2.8m	IRB6640_185_280__04.rslib
6640 205kg/2.75m	IRB6640_205_275__04.rslib
6640 235kg/2.55m	IRB6640_235_255__04.rslib
6640ID 170kg/2.75m	IRB6640ID_170_275__04.rslib
6640ID 200kg/2.55m	IRB6640ID_200_255__04.rslib
*6640 150kg/2.55m DP6	IRB6640_150_255_DP6__01.rslib
*6640 165kg/2.8m DP6	IRB6640_165_280_DP6__01.rslib
*6640 185kg/2.75m DP6	IRB6640_185_275_DP6__01.rslib
*6640 200kg/2.55m DP6	IRB6640_200_255_DP6__01.rslib
6650 125kg/3.2m	IRB6650_125_320__01.rslib
6650 200kg/2.75m	IRB6650_200_275__01.rslib
6650ID 170kg/2.75m	IRB6650ID_170_275__01.rslib
6650S 125kg/3.5m	IRB6650S_125_350__01.rslib
6650S 200kg/3.0m	IRB6650S_200_300__01.rslib
6650S 90kg/3.9m	IRB6650S_90_390__01.rslib
*6600 100kg/3.35m	IRB6660_100_335__01.rslib
6660 130kg/3.1m	IRB6660_130_310__02.rslib
6660 205kg/1.9m	IRB6660_205_190__01.rslib
7600 150kg/3.5m	IRB7600_150_350__01.rslib
7600 325kg/3.1m	IRB7600_325_310__01.rslib
7600 340kg/2.8m	IRB7600_340_280__01.rslib
7600 400kg/2.55m	IRB7600_400_255__01.rslib
7600 500kg/2.3m	IRB7600_500_230__01.rslib
7600 500kg/2.55m	IRB7600_500_255__01.rslib
760	IRB760_450_318__01.rslib
**940	IRB940__01.rslib

* new for 5.15.01.
** requires the StandAlone Controller mediapool that is available on the RobotWare 5.15.01 DVD.

Note

All simulation models in the table are installed with RobotStudio, but only the robots in the current product range are displayed in the ABB Library gallery. To import any other robot you need to browse to the file on disk.

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Robot Libraries Paint

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
5350/01 Type Left Side Left	IRB5350_02L_804_547_L_01.rslib
5350/01 Type Left Side Right	IRB5350_02L_804_547_R_01.rslib
5350/02 Type Right Side Left	IRB5350_02R_804_547_L_01.rslib
5350/02 Type Right Side Right	IRB5350_02R_804_547_R_01.rslib
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__02.rslib
5500 35B b_00 / b_80	IRB5500_35B_1300_1720__02.rslib
5500 ProArm 35A b_00 / b_80	IRB5500_ProArm_A_1300_1720__03.rslib
5500 ProArm 35B b_00 / b_80	IRB5500_ProArm_B_1300_1720__03.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 left and right versions	2 m to 20 m
IRB5350 Rail left and right versions	3 m to 10 m

Note

To use the IRBTX004 tracks the user must install the Track mediapool from the RobotStudio/RobotWare distribution.

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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 by 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.

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

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2 What's New in 5.15.01

Overview

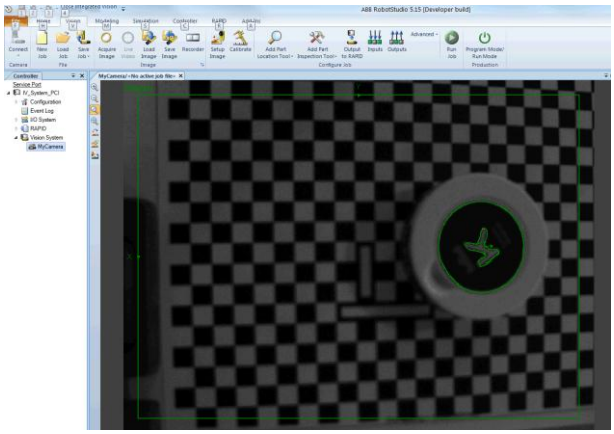
This section contains information on the new features of RobotStudio 5.15.01

2.1 Integrated vision

Overview

The Integrated Vision system add-in provides a robust and easy-to-use vision system for general purpose Vision Guided Robotics (VGR) applications. The system features a complete software and hardware solution that is fully integrated with the IRC5 robot controller and the RobotStudio programming environment. The vision capability leverages on the Cognex InSight® smart camera family, with embedded image processing and an Ethernet communication interface.

RobotStudio has been equipped with a vision programming environment that exposes the full palette of Cognex EasyBuilder® functionality with robust tools for part location, part inspection and identification. The RAPID programming language has been extended with dedicated instructions and error tracing for camera operation and vision guidance.

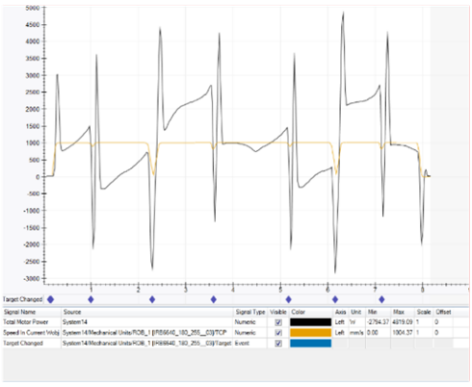


2.2 Signal Analyzer for real robots

Overview

The Signal Analyzer functionality helps in displaying and analyzing signals from a robot controller. Using the Signal Analyzer, you can optimize the robot program.





The Signal Analyzer has been available for virtual robots since RobotStudio 5.14, and starting with RobotStudio 5.15.01 it is enabled also for real robots.

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Note

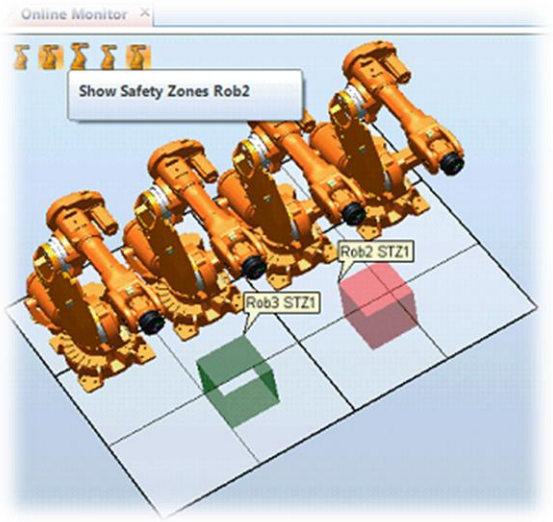
Signal Analyzer Online requires RobotWare 5.15.01 or later.

2.3 SafeMove – tool zone visualization in Online Monitor

Overview

The ‘Online Monitor’ is used to visualize the current pose of the manipulators in a robot system. The Online Monitor has been extended to show the tool zones of a SafeMove system. The idea is to give the user an augmented reality of the robot cell, i.e. give the user more information than could be retrieved by watching the real physical robot.

A typical scenario is to use the ‘Online Monitor’ during failure, i.e. when the robot has made an unplanned stop. In this case the stop could be due to that the robot has entered (or left) a restricted zone and therefore stopped by the SafeMove supervision. To give the user an idea of the physical layout and which safety zone that has caused the stop, the zones can be visualized.



Note

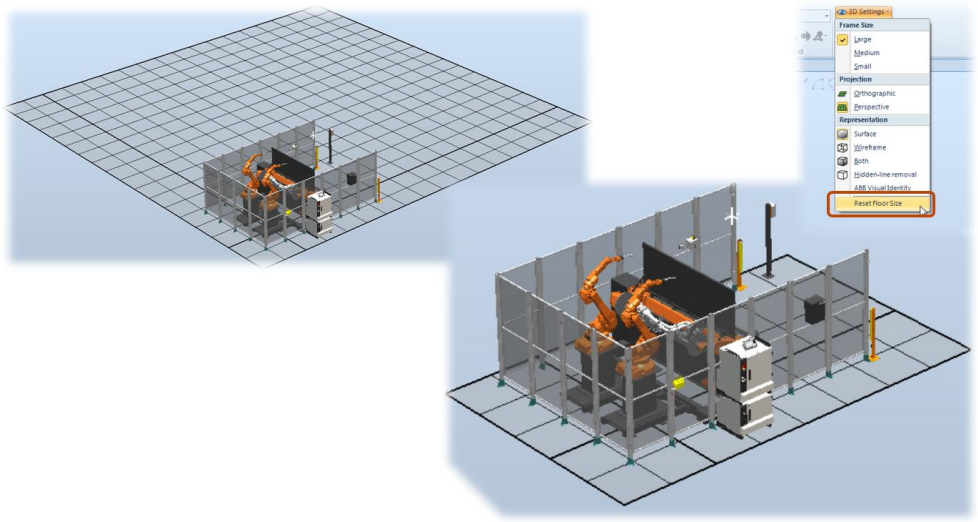
Only TCP robots will be visualized in the Online Monitor and no external axes, track motions or positioners. Track mounted robots will always be shown in the base frame position regardless of the current position of the real robot. As a consequence, the Online Monitor may show the robot in a non-violating position, even though the safety controller has detected a safety violation and stopped the robot.

2.4 Other features

Refresh button for floor size

The station floor is automatically increased in size to match the current layout. RobotStudio now offers the possibility to let the user impose a manual refresh of the floor size. It may be useful to reset the floor size when the final layout is settled and you want to prepare the station for visualization.

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Additional RobotWare manuals in RobotStudio

The most commonly used RobotWare manuals are made available in RobotStudio.

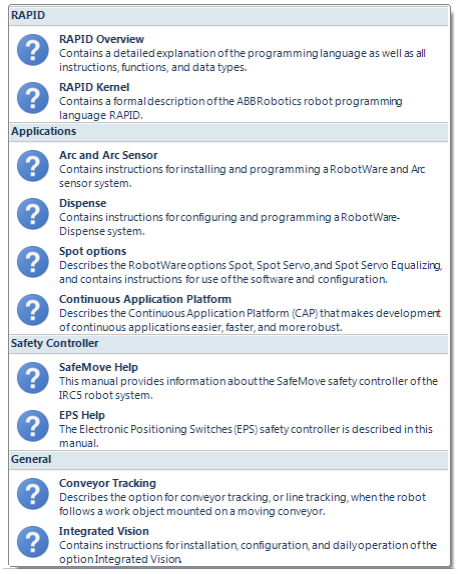
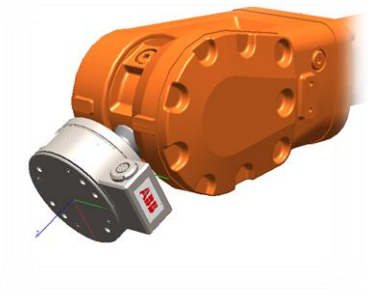


ABB Force Sensor 165

The robot option *ABB Force Control Package 165* is delivered with a force sensor that is available in RobotStudio 5.15.01. The force sensor is a graphical 3D representation of the true sensor and requires no configuration. The library does not simulate the real sensor.



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Note

When attaching a tool to the force sensor, you need to manually create a tooldata at the TCP of the tool.

Alternatively, you can attach the tool directly to the robot as usual. However, in this case you need to take the space for the force sensor into account when modeling the tool using **Create Tool**.

Current range of robots displayed in ABB Library gallery

ABB Robotics has supplied a large variety of robots for the IRC5 controller. RobotStudio supports the vast majority of the IRC5 robots ever delivered. The complete list of robot models supported is listed in section 1.2.

To clarify the current product range, the *ABB Library* gallery of robots has been limited to show only the robots currently available for order. Other robots can be imported using *Import Library* command.



2.5 New robot models

IRB 360 8 kg 1.13m

A FlexPicker in the medium size (1.13m) has been enhanced to allow for 8 kg payload and larger working range.



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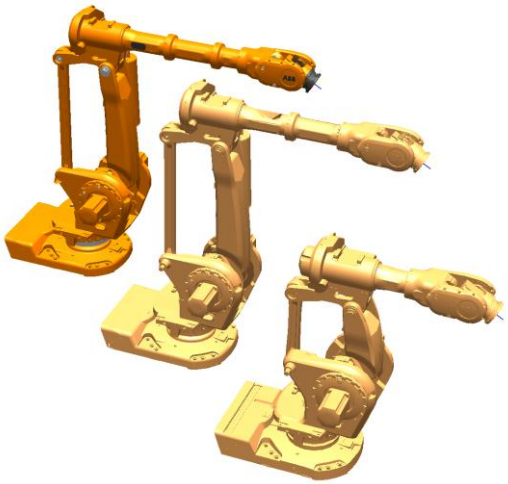
New payload for IRB 1600: 10kg

The IRB 1600 family of robots has been extended with 10 kg versions in addition to the previously available 6 and 8 kg versions. There is no mechanical change to the design of the robot compared to the previous versions.



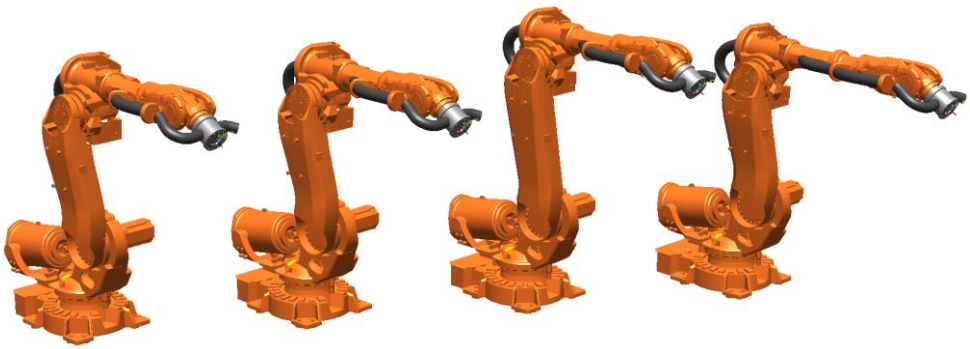
IRB6660 long upper arm

The IRB 6660 family has been enlarged with a robot that is larger but takes less payload. The new version has a reach of 3.35 m and can take 100 kg payload.



IRB 6640 Lean ID

The IRB 6640 Lean ID was introduced with RobotWare 5.15 and is now also available in RobotStudio.

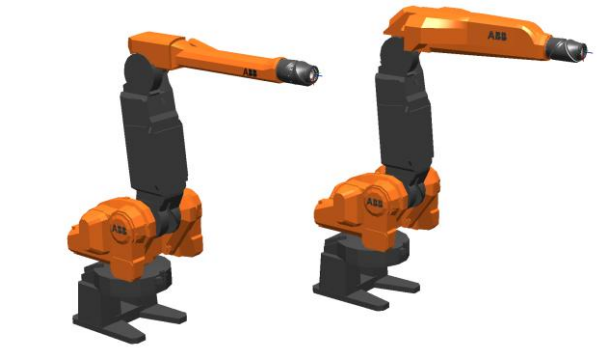


The IRB 6640 Lean ID robot is called IRB 6640 **DP6** in RobotStudio and RobotWare.

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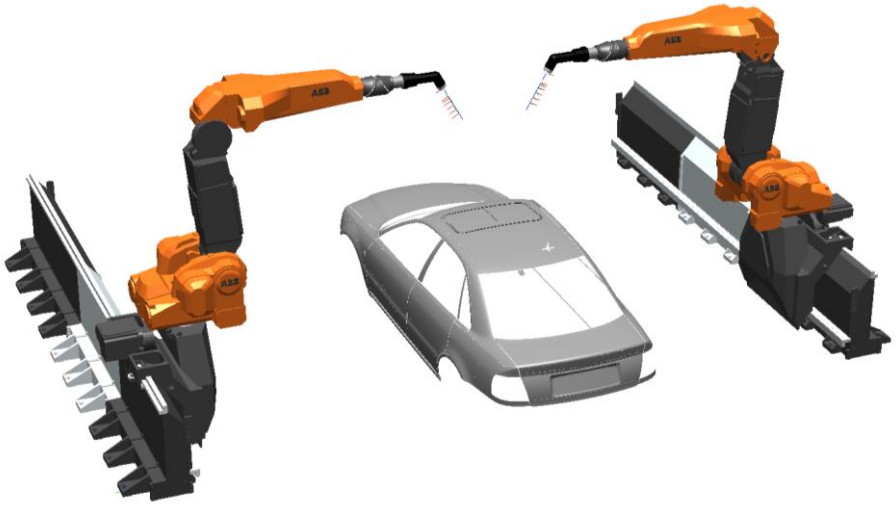
Add IRB5400 with riser foot

The riser foot that is optionally available for the IRB 5400 is now also available in RobotStudio.



Integrate new paint rails (with left and right versions)

Both left and right side versions of the paint rails are available in RobotStudio 5.15.01. Previously only the right-hand side version was available.



Note

The calibration position of the rail can be adjusted by re-positioning the geometry of the rail in relation to the trolley according to the following procedure.

1. Import the paint rail library
2. Disconnect from library
3. Expand the rail in the Layout browser and select BasePart of link Base
4. Open the Set Position tool
5. Reposition the geometry of the BasePart in the x-direction to meet the desired calibration position
6. Save As library

2.6 ScreenMaker Usability

Overview

Several usability improvements have been made to ScreenMaker. In particular, the error handling has been improved to provide better user feedback.

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Information and error messages displayed in Output window

Information and error messages related to the current ScreenMaker project will be displayed in the regular RobotStudio output window instead of in separate dialogs.

Nofity user if referenced custom assemblies are not found

If a ScreenMaker project has refererences to custom assemblies (.dlls) that are not found, then you will be notified by a message in the output window. To resolve the problem, you need restore the file or remove the reference.

RobotWare versioning

When creating a ScreenMaker project, you can select the target RobotWare version. If the selected version does not match the target controller, you will get a warning when deploying your project.

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3 What's New in 5.15?

Overview

This section provides information about the new features in 5.15.

3.1 Usability features

Overview

The usability of RobotStudio has been improved in several ways.

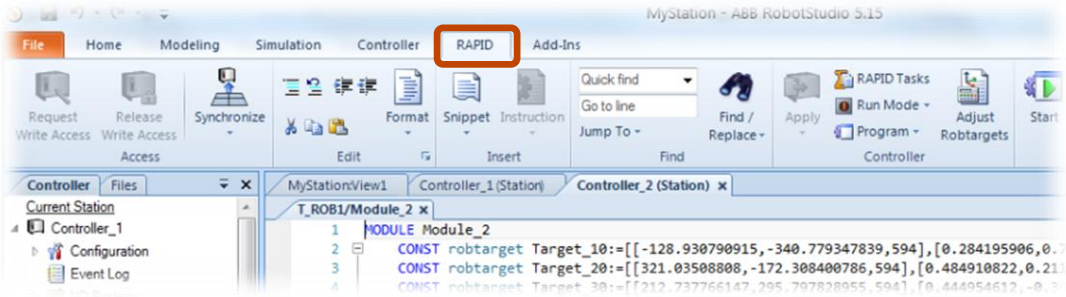
Controller tab

The Online and Offline tabs has been merged into the Controller tab. It contains the controls for managing the real controller and also the controls for synchronization, configuration and tasks assigned to the virtual controller. The merged tab creates a better workflow for the new Transfer function, see below.



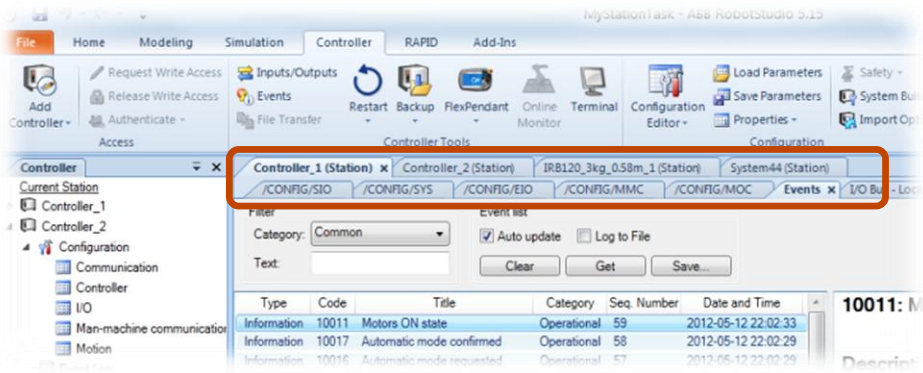
RAPID tab

RAPID Editor functions are available in a separate tab. The RAPID tab provides tools and functionalities for creating, editing, and managing RAPID programs. You can manage RAPID programs which are online on a real controller, offline on a virtual controller, or standalone programs which are not part of a system.



Document organization

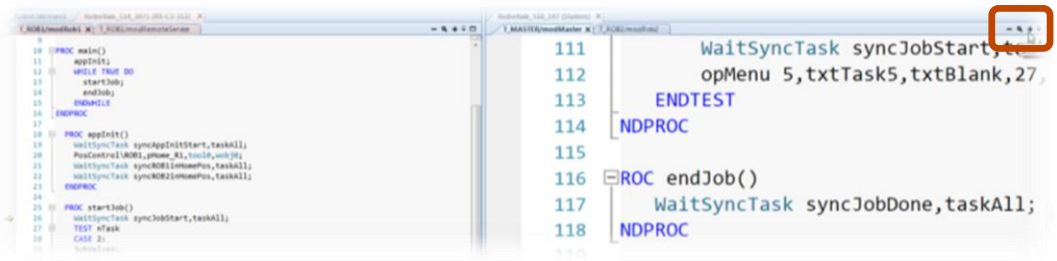
Controller system documents are now organized in two tab rows. The top row contains the controller tabs, the the bottom row contains the document tabs of the selected controller.



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Zooming in and out

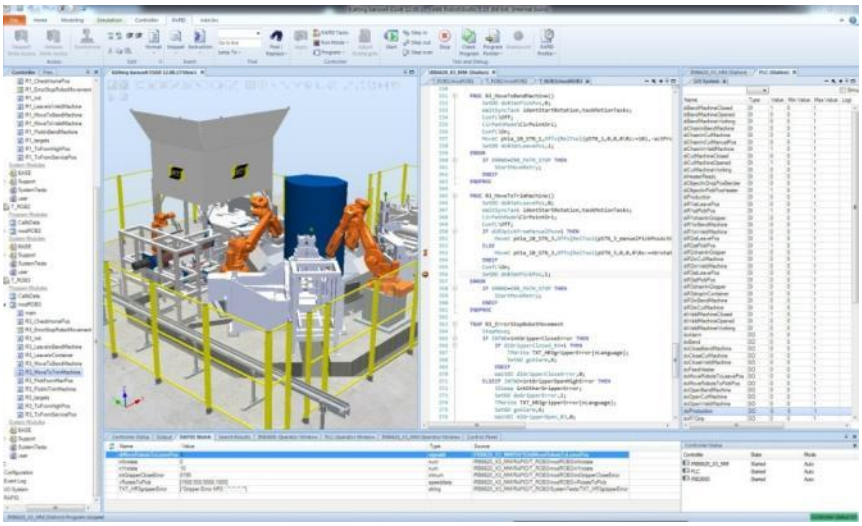
Using the zoom function, you can zoom in and zoom out of the document windows. The zoom feature is present in the RAPID Tasks, Rapid Editor, Configuration Editor, Event viewer, and I/O Windows.



3.2 RAPID Editor

Overview

The integrated RAPID Editor has been enhanced compared to RobotStudio 5.14. The Editor has been equipped with knowledge about RAPID languages, which has made it possible to improve the editor in several aspects.



3.2.1 RAPID Intellisense features

Error highlighting

Red squiggly lines appear under errors in the code. All syntax errors and a subset of semantic errors are indicated in this manner. You get instant feedback on the correctness of the RAPID code as the check is run in continuously in the background.

```
MoveL p1_missing\ID:=10,vmin,z10,tWeldGun\WObj:=r2_s1;
```

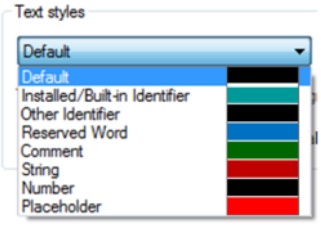
Syntax highlightning

Text is highlighted in different colors depending on their token classification (such as keyword, identifier and so on). In addition to token classification, the editor also shows different colors for built-in and installed identifiers (such as MoveL) and also for identifiers declared in user code.

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```
51    CONST robtarget p13_2:=[[201.267971442242,65.40181490742,762.7451171875],[0.727
52    CONST robtarget p14_2:=[[174.897907687664,148.303964661147,741.139404296875],[0
53    CONST robtarget p15_2:=[[222.597893596245,161.749182667592,734.510870742583],[0
54
55  PROC Part_1_Pth_1()
56      ! RAPID program for Part 1, path 1
57      MoveAbsJ jt_1,v1000,fine,tool0\WObj:=wobj0;
58      SyncMoveOn s1,r1r2p1;
59      MoveJ p1\ID:=10,vmax,z10,tWeldGun\WObj:=r1_s1;
60      ArcLStart p2\ID:=20,v1000,sm1,wd1,fine,tWeldGun\WObj:=r1_s1;
61      ArcC p4,p3\ID:=30,v100,sm1,wd1,z1,tWeldGun\WObj:=r1_s1;
```

The colors can be customized in the *RobotStudio Options*.



3.2.2 Code insertion functions

Auto-completion

After typing or completing a procedure call (such as `MoveJ`), pressing the TAB button will fill in all required parameters using similar rules as the FlexPendant; the last used argument of each type is inserted. Placeholders (`<ID>`) will be inserted for arguments for which default argument are not relevant (such as `robtargets`).

```
MoveL <ID>,vmax,fine,tWeldGun\WObj:=wobj0;
```

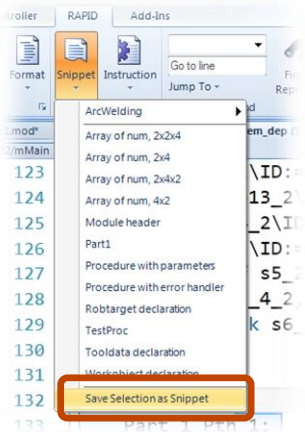
The argument list is also filled in when an instruction is selected from the *Insert Instruction* list.

Note

Auto-completion is only supported when RAPID modules in controller memory, not when editing RAPID files.

Snippets

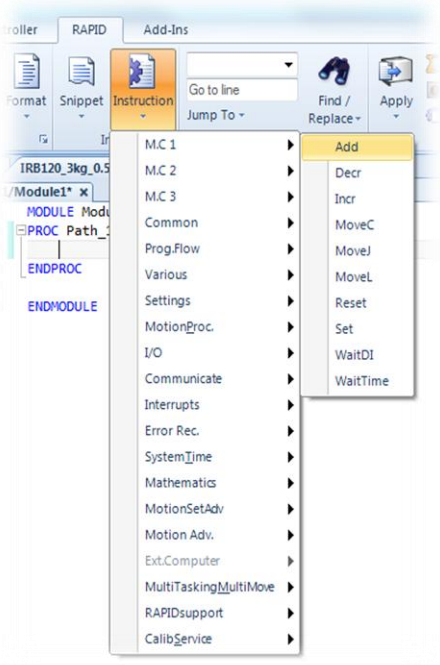
Code Snippets are pieces of code which you can insert into the RAPID Editor.You can also create your own code snippets or save a section of existing code from the RAPID editor as a code snippet. The snippet feature has been extended the new feasture **Save Selection as Snippet** that makes your selected code available in the snippet menu.



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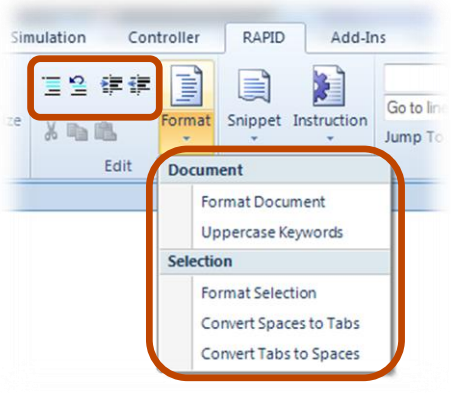
Insert instruction

You can insert a predefined instruction into the code where the cursor is placed. RobotStudio generates and inserts default arguments to the instruction, using similar rules as the FlexPendant.



3.2.3 Supporting functions

Format



Format Document and **Format Selection** - Auto-formats the document by arranging the spaces and tabs in the RAPID code.

Uppercase Keywords - To change RAPID keywords from lowercase to uppercase.

Convert Spaces to Tabs - Converts consecutive spaces to the corresponding number of tabs. This function operates on the current selection.

Convert Tabs to Spaces - Does the opposite of function above.

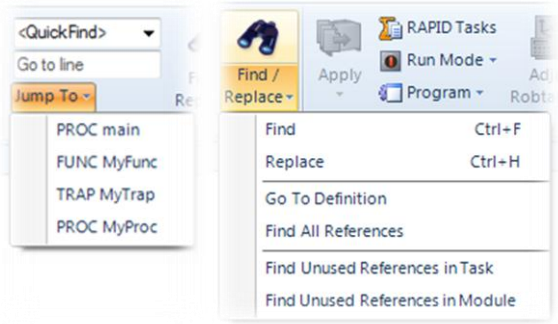
Comment and Uncomment – To comment out or uncomment selected lines

Indent and Unindent – To increase or decrease the indent of selected lines.

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Find functions

The Find group, on the RAPID tab contains commands for performing Find and Replace actions on the code in the RAPID editor.



QuickFind - Finds next occurance after current cursor position. Press <F3> to continue searching

Go to line – Moves the cursor to the corresponding line in the RAPID editor.

Jump to - The Jump To list has an item for each routine in the current program module. Click an item to move to its location in the code.

Find / Replace – Standard functionality for finding and replacing text. You can choose to search in the Current Document, Current System or in a folder on your PC (you can browse to a folder to specify it).

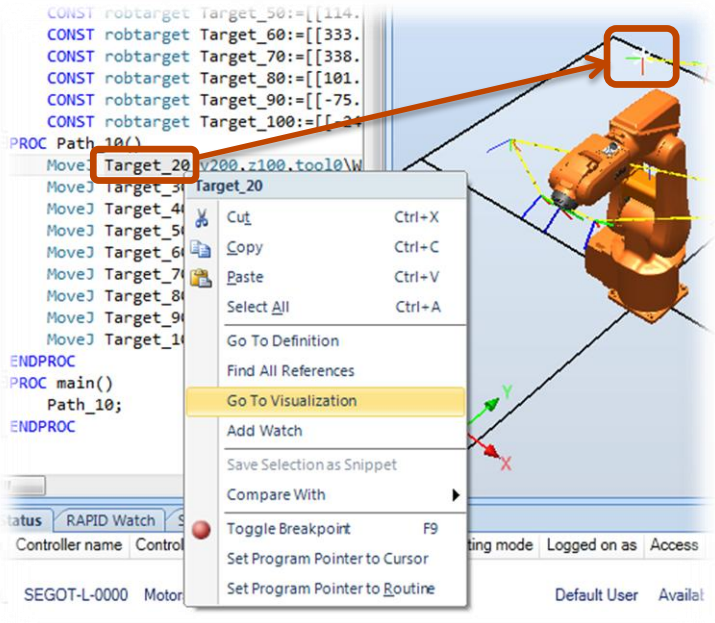
Go To Definition - Moves the cursor to the definition of the selected symbol.

Find All References - Searches through the entire task for uses of the same identifier.

Find Unused References in Task / Module – Lists all data declarations that are not used in the current task or module, respectively.

Go to Visualization in 3D

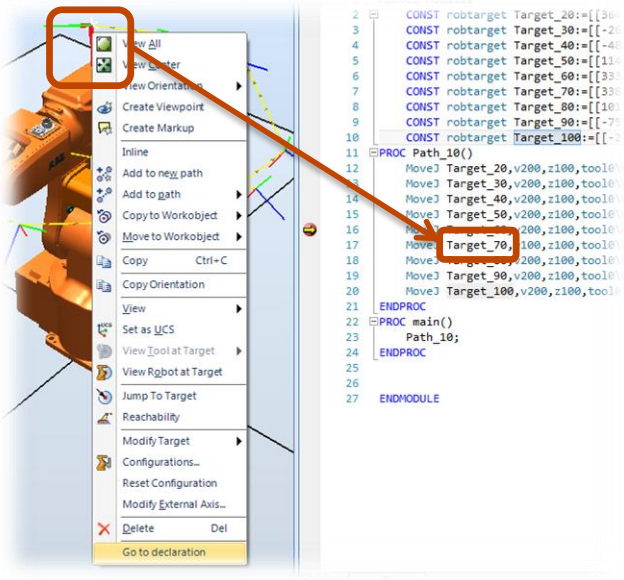
The **Go to Visualization** command is available for targets in the RAPID editor. It takes you to the 3D graphical widow to show you where the target is found.



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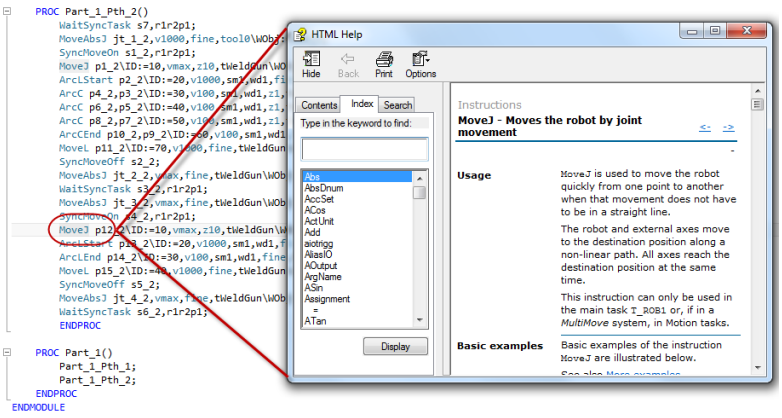
Go to Declaration

The **Go to Visualization** command is available for targets in the RAPID editor. It takes you to the 3D graphical widow to show you where the target is found.



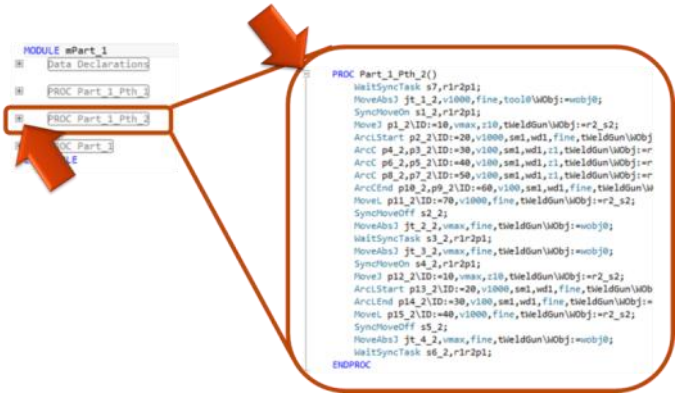
Context sensitive help

Press F1 to open RAPID manual for current identifier



Collapse regions

- Certain regions of the code can be collapsed. For example, Data declarations area, routines, IF/WHILE/FOR statements and so on.Groups created for

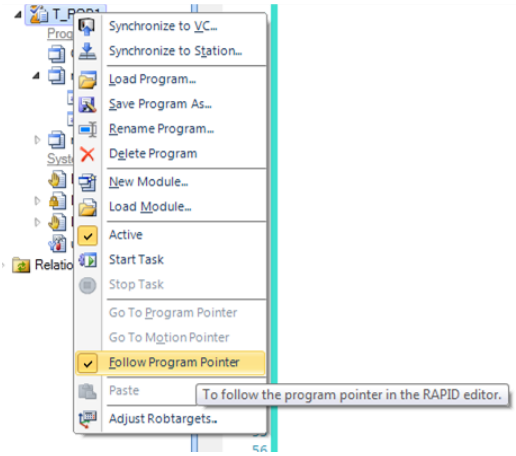


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3.2.4 Program Pointer features

Follow Program Pointer

The function Follow Program Pointer keeps the program pointer visible during program execution by automatically scrolling the RAPID editor window according to the movements of the program pointer.



Edit RAPID and keep the program pointer position

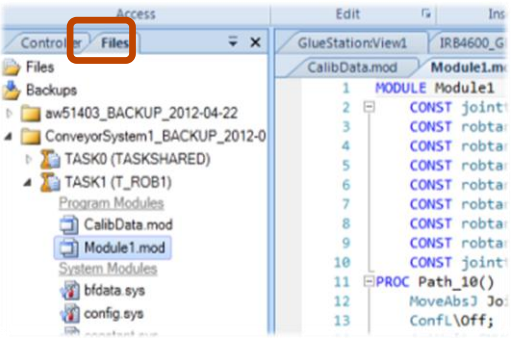
For limited changes to the RAPID code of a controller in Stopped state, the current location of the program pointer can be maintained. After such an edit you can resume program execution from where it was without having to reset the program pointer.



3.2.5 File based RAPID editing

Single modules or complete backups

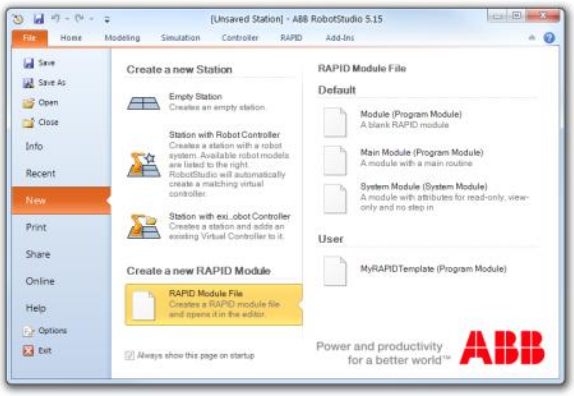
RAPID modules can edited in the RAPID editor without connection to a real of virtual controller. You can edit standalone modules or modules that are part of a backup. Configuration files can be edited with limited support for syntax and error highlightning.



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New RAPID file

You can create a new RAPID file from the File page. The new module is based on pre-defined templates (*Default*).



You can make your favourite templates available in the *User* section by copying them to the following folder

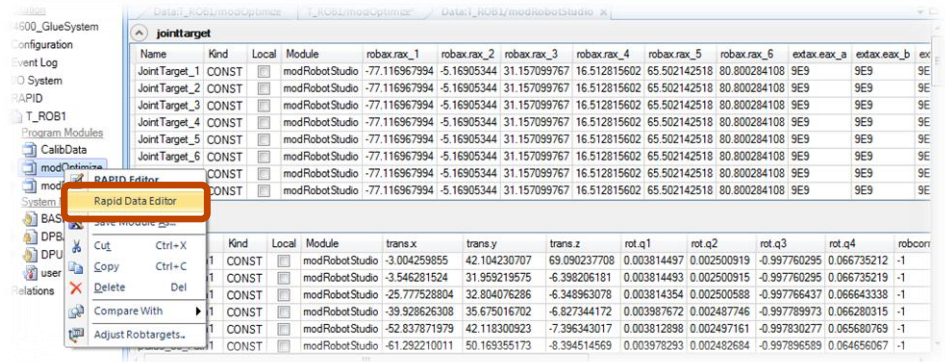
`…\My Documents\RobotStudio\RapidModule Templates`

Replace the module file name with the text `%ModuleName%` to make RobotStudio give it a unique name

```
MODULE %ModuleName%
    !***********************************************************
    !
    ! Module:  %ModuleName%
    !
    …
```

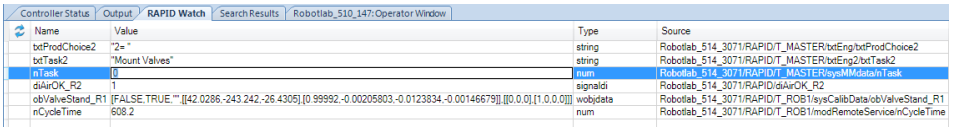
3.3 RAPID Data Editor

The RAPID Data Editor allows you direct access to RAPID data values, which you can view and edit.



3.4 RAPID Watch Window

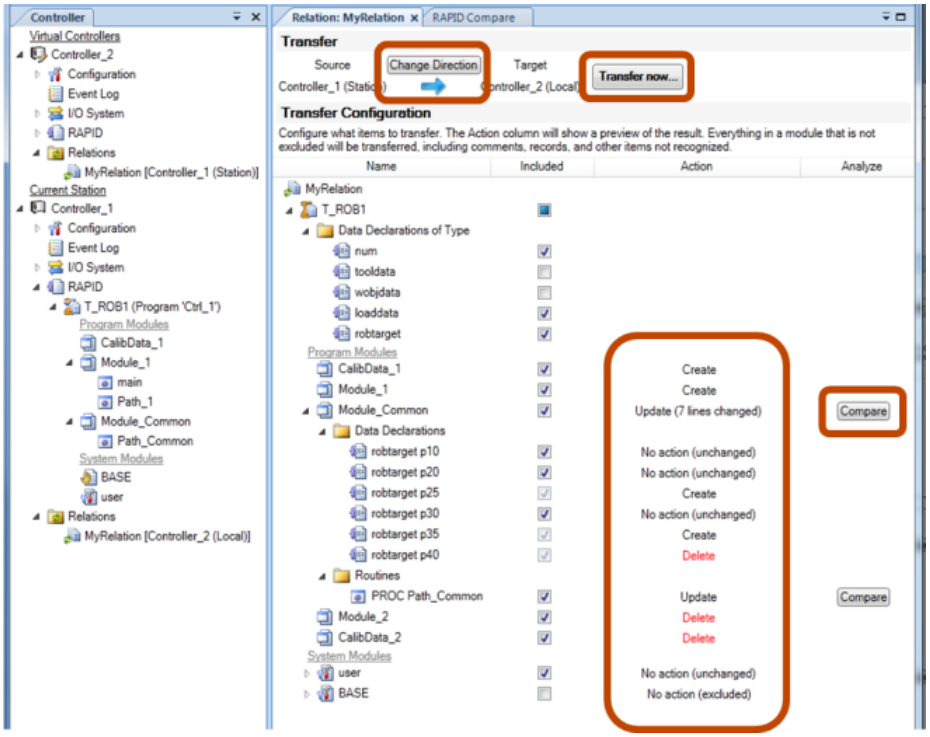
You can view and edit the RAPID data of the variables in the RAPID watch window, both during program execution and when the controller is stopped. However, you can only view, but not edit, I/O signals in the watch window.



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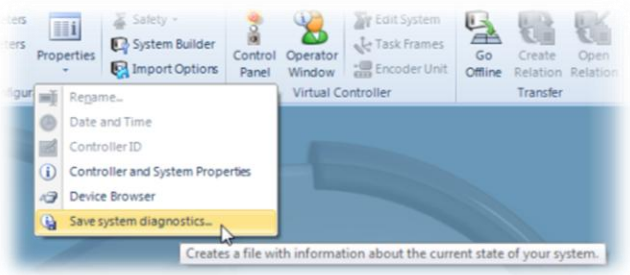
3.5 Transfer

The transfer function allows easy transfer of offline-created RAPID programs to the real robot on the shop floor. This means that you can transfer data from a virtual controller (which is offline) to a real controller (which is online). As part of the transfer function you can also compare the data present in the virtual controller with that present in the real controller and then select which data to transfer.



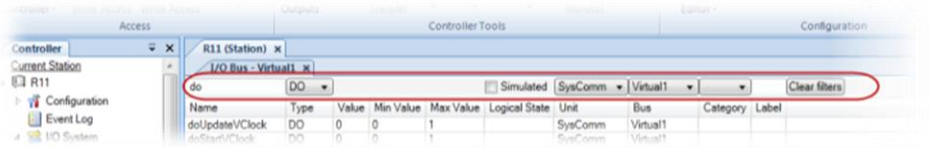
3.6 System Diagnostics

You can create a System Diagnostics data file from RobotStudio.



3.7 Filter in I/O Window

A filter has been added to the I/O Window to make it easier to the signals you are interested in.

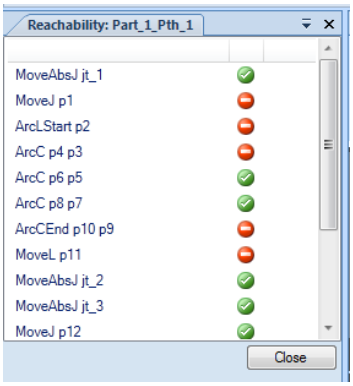


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3.8 Features for Offline programmers

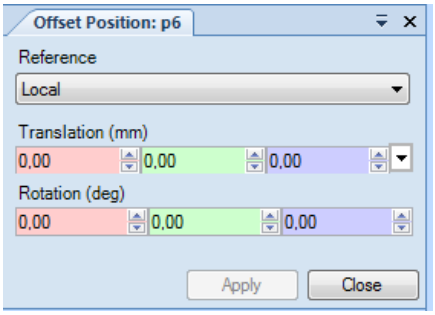
Check Reachability improvement

The function Check Reachability has been improved. You can use the it to check whether targets are reachable or not. If you select a path for the check, then the reachability of all move instructions in the path is checked. This function provides an easy reachability check which you can use for initial positioning of the robot, its workobject, paths and targets.



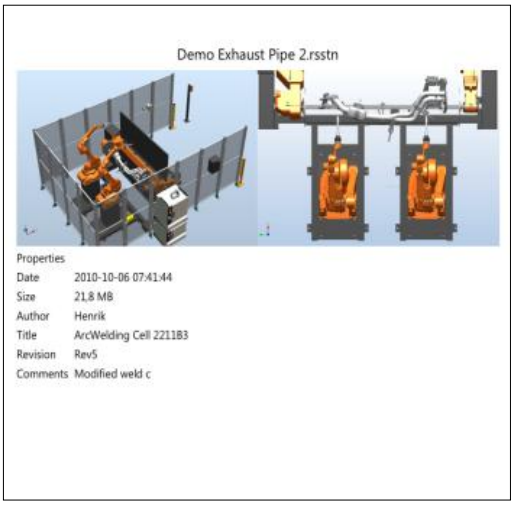
Offset position

The new Offset position tool offers a convenient way to position objects by specifying an offset to its current position using the selected reference frame.



Print 3D

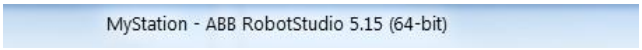
You can now make a print out of the station view together with the station properties such as station name, author, size, date, revision and comments.



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3.9 RobotStudio 64-bit edition

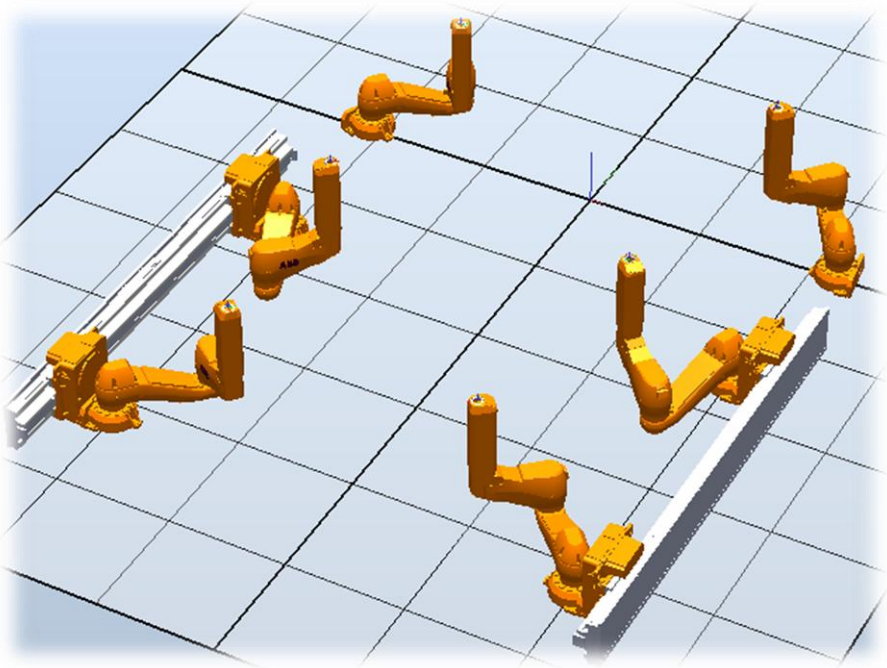
RobotStudio 5.15 is available in a 64-bit edition. The 64-bit edition will be automatically installed on a PC that runs a 64-bit version of a Windows. The 64-bit edition allows larger CAD-models to be imported as it can address more memory than the 32-bit version. For limitations, see section 7 Installation information.



3.10 New robot models

The new door opener - IRB5350

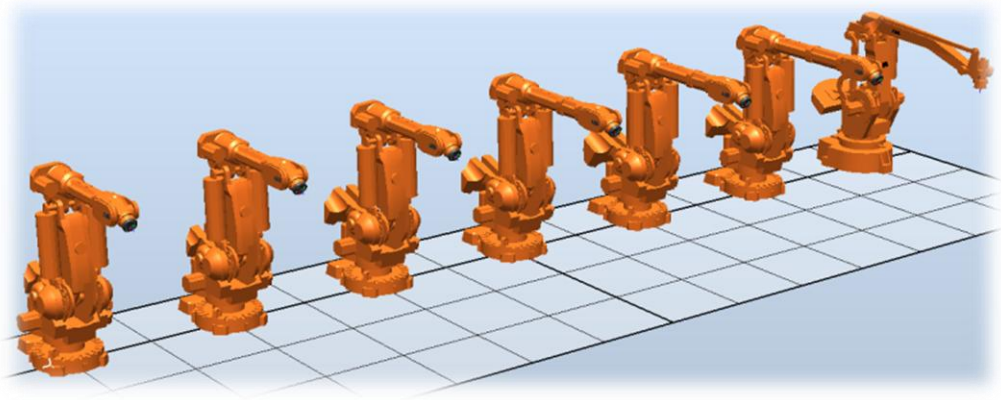
The IRB 5350 door opener robot is a compact and precise robot assistant for automotive interior painting, both for stop-and-go and moving-line solutions. It is available in RobotStudio 5.15.



S4 manipulators – IRB6400R and IRB640

The S4 manipulators, IRB640 and the IRB6400R are supported by the Stand Alone Controller in RobotWare 5.15 and are now available in RobotStudio.

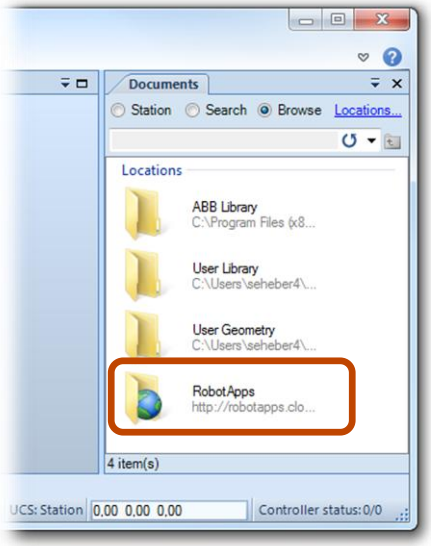
The corresponding controller systems can be created using the System Builder as System From Layout is not supported.



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3.11 RobotApps integrated in Document Manager

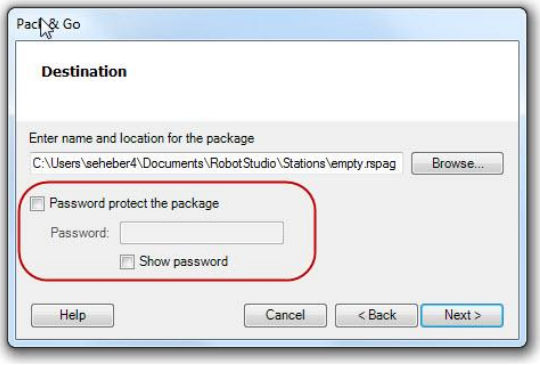
You can search and browse for libraries located at the RobotApps website from the Document Manager. The web site is also accessible from http://www.abb.com/roboticssoftware.



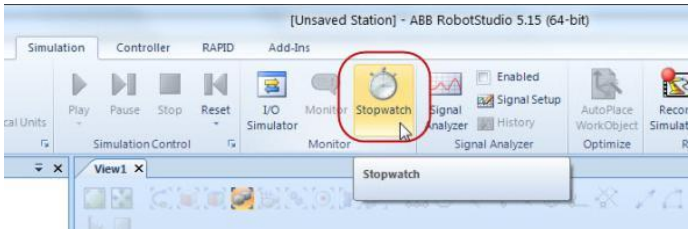
3.12 Station compatibility between 5.14 and 5.15

RobotStudio 5.14.03 is forwards compatible with RobotStudio 5.15 under certain circumstances. This means that stations and Pack&Go files created with RobotStudio 5.15 can be opened with RobotStudio 5.14.03 if the following three conditions are met.

1) ... if the Pack&Go file has not been password protected,



2) ... if there is no StopWatch added to the station. (If that is the case, it can be deleted to regain compatibility),



3) ... if RobotStudio has been instructed to save CAD geometry of the station using ACIS version R22 (R22 is that is version used by RS 5.14.03. RobotStudio 5.15 RC1 has a later version of the CAD engine than RS 5.14.03). Add the following line to the file `RobotStudio.exe.config` to let RS save using the old ACIS format.

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File `RobotStudio.exe.config`:

```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>
  <startup useLegacyV2RuntimeActivationPolicy="true">
    <supportedRuntime version="v4.0" sku=".NETFramework,Version=v4.0"/>
  </startup>
  <appSettings file="LicenseServer.config">
    <add key="AcisSaveVersion" value="22"/>         <----- THIS IS THE NEW LINE!!!
    <add key="RssNewsUrl" value="http://www.abb.com/blog/gad00540/1DDE6.rss"/>
    <add key="SendKeys" value="SendInput"/>
    <add key="OPCServer" value="ABB.IRC5.OPC.Server.DA"/>
    <add key="BuildTag" value="Production"/>
    …
```

The file is located in the folder

`C:\Program Files (x86)\ABB Industrial IT\Robotics IT\RobotStudio 5.15\Bin`

on a PC running English version of Windows 7 with a Complete installation of RobotStudio. For the 64-bit version of RS, the `Bin` folder is called `Bin64`.

3.13 ScreenMaker

Launch Virtual FlexPendant from ScreenMaker

Virtual FlexPendant can be launched from the ScreenMaker Tab.

Open standard FlexPendant Screens

It is possible to define an action which will help the user launch standard flexpendant screens like Program Editor, Program Data, etc.

Read and Write to application variables

It is possible to read an application variable value and write back to an application variable and vice-versa.

Copy Screen

Copies of exisiting screens can be made.

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4 Late Breaking Information

Overview

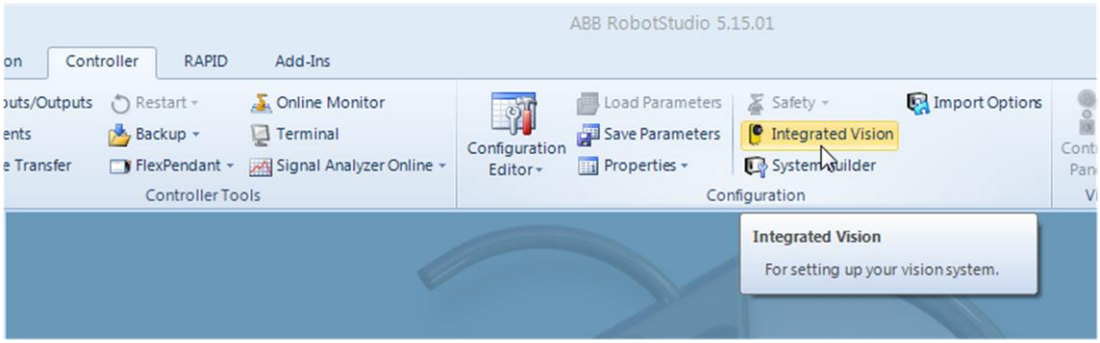
This section contains information about late changes that were done after the RobotStudio 5.15.01 Operating Manual was finalized.

4.1 Integrated Vision

4.1.1 Integrated Vision tool is started from the Controller ribbon

Description

The Integrated Vision configuration tool is completely integrated into RobotStudio and is launched by a button in the Controller ribbon. The button is enabled if the connected controller system has the RobotWare option Integrated Vision.



4.1.2 Firmware update function not available

Description

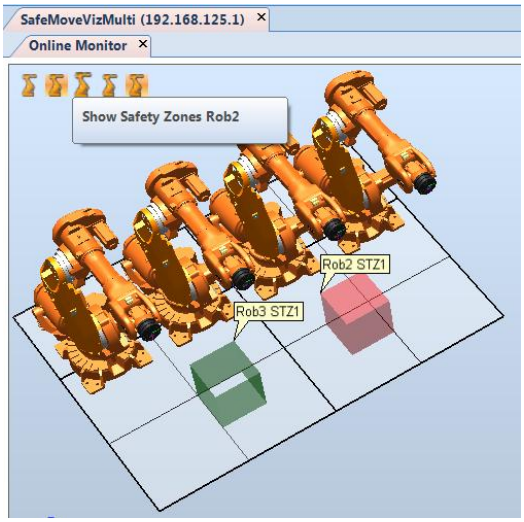
The function **Update Firmware** as described in the Integrated Vision application manual is not available. Use *Cognex InSight Explorer* to upgrade the camera firmware. It can be downloaded from http://www.cognex.com/Support/InSight/Software.aspx.

4.2 Visualize Safety Zones in Online Monitor

Overview

The **Online Monitor** is used to visualize the current status of the manipulators in a robot system. The idea is to give the user an augmented reality of the robot cell, i.e. give the user more information then could be retrieved by watching the real physical robot. A typical scenario is to use the ‘Online Monitor’ during failure, i.e. when the robot has made an unplanned stop. In this case the stop could depend on that the robot has entered a restricted zone and therefore stopped by the SafeMove supervision. To give the user an idea of the physical layout and which safety zone that has caused the stop, the zones should be visualized.

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Features

- There is one ‘Show Safety Zones’ button in the Online Monitor for each manipulator in the system (e.g. four buttons in a MultiMove system with four manipulators).
- The name of each tool zone and the corresponding manipulator is shown as a markup (e.g. Rob1 STZ1, …, Rob4 STZ8, Rob1 MTZ1, …, Rob4 MTZ8).
- Zones that are defined as **Allow inside** in the definition of the zone are visualized as a green semitransparent hollow shape.
- Zones that are defined as **Allow outside** in the definition of the zone should be visualized as a red semitransparent solid shape.
- A message is shown in the output window if no STZ or MTZ is defined for the manipulator.
- The controller event log message “**20468 SC STZ violation**” is shown in the output window if it is present in the controller event log.

Limitations

The Online Monitor does not support robots mounted on a track motion. Such configurations will not be correctly visualized. When enabling the safety zones, they will be correctly visualized in relation to the controller world. The robot, however, will always be statically shown as being located in the track base frame position, regardless of its actual position.

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5 Corrections

Overview

This section describes the defects solved in RobotStudio.

5.1 Corrections in RobotStudio 5.15.01

Overview

This section describes the corrections made in 5.15.01. In addition to the Product Defect Documents (PDD) listed below several other enhancements has been made. One area that deserves mentioning is the Smart Component feature that has been improved in several ways.

Product Defect Documents

ID	Title
61	Not all mechanical units displayed in jogging window
62	Joint jog slider not working correctly for external axes
63	Problems with the Reachability function
79	Cannot activate/deactivate I/O unit
406	Hidden modules and data not recognized by ScreenMaker Doctor
409	ExtAxisWizard does not create configuration with error model
451	RobotStudio does not support System From Layout for two robots on track motions
452	RobotStudio does not update VC configuration, if robot on track is rotated 180°
790	Template system for new IRB120T is missing
1262	ScreenMaker appearance issue
1263	ScreenMaker RAPID array index issue
1308	Reorientation with linear jog window and fix TCP not working correctly
1319	Unwanted error while setting program pointer
1321	‘Find All’ output window is not opened if it was closed before
1326	RAPID Editor remains open after controller has been shutdown.
1329	SafeMove Configurator - Some buttons are not properly aligned
1360	Context sensitive help in RAPID not working
1370	RAPID Editor AutoCompletion needs documentation
1387	Issue regarding ‘Adjust Robtargets’ in RobotStudio
1407	Syntax error when creating a new module with both VIEWONLY & READONLY attributes
1414	‘Set Program Pointer to Main in All Tasks’ fails when background tasks are present
1427	RobotStudio asks for library location when unpacking .rspag
1466	Regression with conveyor tracking compare to 5.14.03
1469	Exception when exiting RobotStudio
1473	Problem with IRB 5350 on track with locked TCP
1474	Possible to open several instances of the RAPID Data editor
1495	Warning message for memory being filled needed in RAPID Profiler
1530	System From Layout not supported for robot with two L-positioners
1531	Not possible to copy or move a multiple selection of paths to another task
1533	Difference in backups between FlexPendant and RobotStudio

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1534	RS selecting bodies in graphic view does not select all bodies
1537	Exception when connecting to real controller
1558	Exception: Object reference not set to an instance of an object
1574	Go Offline fails for system including an external option mediapool
1588	ScreenMaker 5.15 vs RobotWare 5.14
1611	VC will not start
1622	Robotstudio with multiple 6620LX systems
1651	Smart Component problem
1653	Different data view within Proc.cfg using RS5.14 and 5.15
1664	Unhandled expection error RS5.15 64 bit
1672	AutoConfiguration not working for IRB360
1681	ScreenMaker: Deployment does not work correct against different RW version
1689	Configuraiton Editor opens with missing value
1699	RobotStudio not refreshing program editor
1712	German help opens at wrong chapter
1716	Editing RAPID data – RAPID module in text editor not changed
1723	IRBT libraries not correct
1728	Pack&Go modifies Smart Componenten library
1735	Exception during simulation
1746	‘Move along path’ and ‘Play Simulation’ not working properly
1748	Crash during free hand positioning while reachability check is active
1754	Screenmaker: Compiling fails in 5.15
1760	Config editor not working correctly with german regional settings
1763	Save program does not overwrite existing program (64 bit only)
1776	RobotStudio does not unpack into folder a second time
1777	IRB 6640 Lean ID missing
1778	Wrong error message if mediapool is missing
1787	IRBT4004 libraries not correct
1797	Spanish translation not fitting in dialog
1824	RobotStudio problem
1827	Base of Robotstudio model of IRB940 wrong (rotated 180°)
1829	TopView causes Robotstudio crash
1836	Adjust robtargets not working
1840	CATIA V5 installs even if unchecked in setup
1860	Gearbox heat prediction without premium license not possible
1892	IRB360 3-axis system, freehand jog will crash RS
1897	Creating a robot with conveyor tracking

5.2 Corrections in RobotStudio 5.15.00.01

Overview

This section describes the defects solved in RobotStudio 5.15.00.01 since the release of RobotStudio 5.15. Most of the defects are so-called Product Defect Documents (PDD), that is the name of the customer defect reports handled by ABB Robotics.

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Product Defect Documents

ID	Title
1286	The ‘Locate target’ function fails to select all targets in the Paths&Targets browser
1381	Failure when re-connecting to real controller via service port after restart
1589	Cannot open several instances of the I/O Simulator
1593	Unable to synchronize user defined RAPID instructions
1604	Open editors for RAPID modules are not updated after load of RAPID program (.pgf)
1722	Opened RAPID modules not updated after restore of controller backup

Bug fixes

WI ID	Title
8588	Exception when opening an .rslib file by double clicking it in Windows Explorer
8556	Searching in Document window fails when disconnected from Internet
8397	Cannot open stations containing virtual controller systems with common drive
8108	RAPID Editor IntelliSense not provided for RAPID symbols declared as hidden in MMC
8107	RAPID Symbols that are hidden in MMC are duplicated during RAPID Sync

5.3 Corrections in RobotStudio 5.15

Overview

This section describes the defects solved in RobotStudio 5.15 since the release of RobotStudio 5.14.03. Most of the defects are so-called Product Defect Documents (PDD), that is the name of the customer defect reports handled by ABB Robotics.

Product Defect Documents

ID	Title
7	Tool/Wobj do not keep Position if robhold is changed
32	Max no. of I/O subscriptions reached strange string
46	Measurement Markup display issue in RobotStudio 5.14.01 RC
67	Inconsistency of IOConnection between SmartComponent and VC
68	Usability issue of RAPID Profiler
94	ScreenMaker User Doc: ToolBox / Properties arrow is pointing to the wrong location
105	Unpack and work fails to find linked library, even though it is included in the P&G file
107	Collada import after export fails
110	Translation missing for Online Monitor options
195	Browser doesn't show selected frame
203	RS modify curve display issue
208	Possible to create bindings and connections for smart components by mistake
211	RS does not handle write protected station files correctly
220	Virtual Controller RobVC not closed when closing RobotStudio (without premium license)
226	IO access on signals with AccessLevel DEFAULT not consistent
227	Track position is not stable
239	Freehand jogging during simulation not possible anymore
290	Expired license info persists
294	RS Event Log generates strange characters

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297	Import stations: Folders not accessible
303	RS text editor inserts tabs in RAPID files
307	Strange screen flashes when changing parameters
310	Issue in simplified chinese of RobotStudio (Part 2): Wrong term for "key"
310	Issue in simplified chinese of RobotStudio (Part 1): Default system name shall not be translated
332	Robot Studio Online throws exception when closing
376	System from layout not working for IRB5320
377	Not possible to program movements for IRB5320 plate
386	RS RAPID editor routine dropdown list loses pointer focus when scroll bar is used
387	RobotStudio Online: Slow performance relative to 5.13 in opening program for editing
390	RS System name is replaced by some long string after C start
406	Hidden modules and data not recognized by ScreenMaker Doctor
412	Editor does not highlight Reserved Word UNDO
413	ScreenMaker: some system colors are not supported
473	Screenmaker bugs/improvement ideas
474	Unknown error while starting VC = 1 robot on a track
488	RobotStudio ScreenMaker RAPID data array bug
494	Robot Studio throws exception restoring backup
524	No scroll bar in Layout window
591	Error while importing SAT file
606	Place by 2 frames not working as expected
612	Regressions with collision detection function
624	Error in mirroring jointtargets
630	RS5.14.02.01 TCP trace not shown anymore after simulation stop
642	Using states in RobotStudio with visible and invisible objects
672	SAT File Import results in huge scale problem
744	Cannot create a new signal in the VC
745	Graphic view not updated after renaming frame
747	Icons disappearing in VC tree view
752	FP dll deploy fails in ScreenMaker
757	Incorrect Smart Component Behavior in RobotStudio
775	Pbls with check reachability function
778	Unexpected base frame definition warning with ext. axes
788	Display problem with HMI for most common I/O signals
791	Template system and library for new IRB5350_01 and IRB5350_02 missing
793	VC switches to manual mode when clicking the robot in the graphic
794	Event logs saved from RS does not match controller
797	Robot Studio does not allow Deactivation of I/O unit
799	File Transer deletes file/folder even if it is being used by another client
822	Instance Editor for System Input Backup works only 2nd time
842	Build error after creating project regarding signal write in ScreenMaker
877	System Builder: Bad German Translations
881	Invisible bodies shown in Station Viewer and reopened station
890	Robot Configuration

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950	Small corrections for german user interface for Autopath
952	Problems with external axes
953	Wrong error msg while trying to open a station that as been deleted
987	Flange of RS model for all IRB6640 wrong
989	Working range for axis 4/6 of 4 axis robots not updated
1075	RobotStudio doesn't print the contents of the active window (station view).
1099	6620LX mot moving in RobotStudio 5.14.03
1165	Update Instruction Templates to match RW 5.15
1182	Unpack&Work fails
8764	Simulation time not correct in station viewer
8956	Not possible to mirror parts, bodies or curves
9039	No visual cue during large file transfers
9041	File transfer window "Modified" sorting is incorrect
9252	Station file 'date modified' attribute changed even if no modif done in station
9267	New folder in file manager from RS has wrong name
9402	Not able to add param in manual mode
9459	Signals not visible in I/O system window
9787	Step forward in automatic mode causes VC to manual mode temporarily
9800	RS application locked when C-Start a RC
10040	RAPID Editor: Problem with page scroll and cursor location when applying changes
10145	Problems of mastership control of the VC (error 20051)
10161	ScreenMaker: Binding array index to a RAPID object does not work
10176	RAPID Watch does not show system data
10327	Robotstudio doesn't release connection to deleted controller
10494	RS states error after restart due to param changes
10537	RS cant establish connection to controller after restart
10541	Cycle time not updated during simulation with 'run as fast as possible' option
10545	File Transfer fails
10553	RS refuses to show and refresh all signals defined
10583	File Transfer: Can send files to contoller even if disconnected
10594	RobotStudio failed to set position of a robot
10660	Documentation of "Online Monitor" incomplete
10668	Transparent texture not working
10709	problem with write access
10711	Add Controller pops strange errors and fails to connect
10713	Controller name does not allow blank
10719	RAPID profiler fails to log
10722	Errors in help for RS Markups
10730	RobotStudio Adjust Robtargets does not adjust Offs instructions (DOC ONLY)
10731	RobotStudio Rapid Profiler UI issues
10732	Adjust Robtargets: problem with changing workobject
10743	User Doc: Smartcomponent "LogicExpression" not added
10795	User Doc: No info about new location for ScreenShot

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6 Known Limitations

Overview

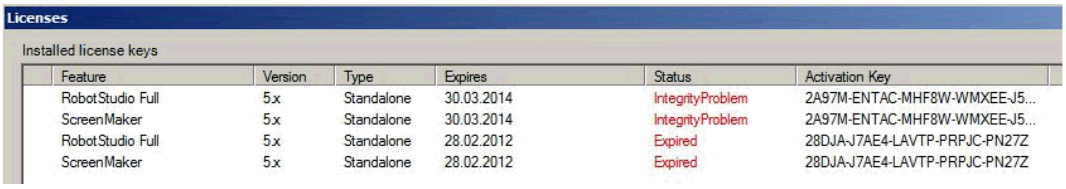
This section describes known limitations in RobotStudio.

6.1 General

***Note on licensing for RobotStudio 5.14 users**

This applies to users who run RobotStudio 5.14.xx in parallel with RobotStudio 5.15 or later.

When you receive a new activation key, it *must* be activated from RobotStudio 5.14.xx. If it is activated from RobotStudio 5.15 or later, the license will not work with RobotStudio 5.14. In this case, the license status that is shown if you select 'View Installed Licenses' in RobotStudio Options, will be *IntegrityProblem*.


Licenses

Installed license keys

Feature	Version	Type	Expires	Status	Activation Key
RobotStudio Full	5.x	Standalone	30.03.2014	IntegrityProblem	2A97M-ENTAC-MHF8W-WMXEE-J5...
ScreenMaker	5.x	Standalone	30.03.2014	IntegrityProblem	2A97M-ENTAC-MHF8W-WMXEE-J5...
RobotStudio Full	5.x	Standalone	28.02.2012	Expired	28DJA-J7AE4-LAVTP-PRPJC-PN27Z
ScreenMaker	5.x	Standalone	28.02.2012	Expired	28DJA-J7AE4-LAVTP-PRPJC-PN27Z

Workaround: *Activate the same key also for RobotStudio 5.14. Please contact softwarefactory_support@se.abb.com to get an additional activation for your key if you have been affected by this problem.*

***Warning about duplicate files appear when multiple versions of same PowerPac is installed**

When two or more versions of the same PowerPac is installed, warning messages appear in the Output window when RobotStudio is started. The warning messages inform that duplicate files are installed. The message can be ignored since the PowerPac files are installed in separate folders and will not cause any mismatch. The function of the PowerPacs will not be affected.

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*

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\<user name\My Documents.

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

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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 generally **not forwards compatible**, i.e. it is not possible to load stations or libraries created in RobotStudio 5.15 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.

6.2 Online

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

Only TCP robots will be visualized in the Online Monitor, no external axes, track motions or positioners. Track mounted robots will always be shown in the base frame position regardless of the current position of the real robot.

As a consequence, the Online Monitor may show the robot in a non-violating position, even though the safety controller has detected a safety violation and stopped the robot.

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.

6.2.1 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.

6.2.2 Online – Integrated Vision

Information – Integrated Vision only works on 32-bit installations

It is not possible to use Integrated Vision in the 64-bit version of RobotStudio.

Information – Camera firmware version and update

The minimum firmware version to be used with Integrated Vision is 4.08. If this version is not available for a specific camera model, then the newest version available shall be used.

There two things important things to know before upgrading a sensor

- The user must make sure to first backup the files on the camera. This can be done using the Rapid snippets for camera backup/restore, or the FlexPendant Explorer.

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- The latest available firmware version may vary across sensor types. However, when the firmware update utility presents the latest available version it shows the firmware with the highest version number which may not apply to the sensor to be updated. However, the appropriate firmware will be applied.

Remaining error - Connect button greyed out for no reason

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

Workaround*: Restart RobotStudio.*

Remaining error - Output to RAPID lost after saving job

It has been observed that the configuration for output to RAPID may be lost.

Workaround*: Make sure that the camera firmware is up to date. Create a new job.*

Remaining error - Exception when giving two cameras the same name

If two cameras are assigned the same name RobotStudio will display an exception.

Remaining error – Unhandled exception when connecting to camera

If RobotStudio is in the “Filmstrip” settings application step when disconnecting from a camera, a message about an unhandled exception is displayed when connecting to the camera the next time. If additional problems appear, restart RobotStudio.

Remaining error – Button greyed out for no reason

A general tip is to restart Robotstudio if it is found that buttons are greyed out without a good reason.

Remaining error – Run / Program Mode not updating in RobotStudio

Switching via RAPID from Program mode to Run mode will immediately affect also RobotStudio showing Run mode in the Vision tab, but not when switchting back to the program mode via RAPID. RS will still show the camera is in Run mode.

Workaround: *Click the RunMode button in RobotStudio to enable vision programming.*

User tip - Removing cameras from configuration

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

User tip - Use default camera settings

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

Telnet port: 23

User: “admin”

Password: “”

User tip – Viewing all cameras present on the network

Connect->Add Sensor is normally used for setting the IP addresses of sensors that are not currently on the correct subnet (192.168.125.X). By default the dialog only shows sensors that are not already on the correct subnet, but by right-clicking on the list area and selecting

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"Show all sensors" the list will be populated all sensors visble from the PC network. This may be useful when error tracing network problems.

User tip – Warm start the controller after changing network settings

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

User tip – Camera does not appear on network

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

6.3 Offline

6.3.1 General

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

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

Workaround: *Remove the write protection manually using Windows Explorer.*

Updates of instruction template and code snippets

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

`…\My Documents\RobotStudio\Instruction Templates`

`…\My Documents\RobotStudio\Code snippets`

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

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

and

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

to the data folder.

IO signals configured with access level 'DEFAULT'

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

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*

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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

Path handling of instructions with multiple joint targets

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

Event Manager: Simulation cannot be triggered by analog system signals

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

6.3.2 Station Viewer

***The command *Record to Viewer* is only enabled in *Time Slice* mode**

The command **Record to Viewer** requires the **Virtual Time** mode of the RobotStudio Options to be set to **Time Slice**. Otherwise, i.e. if the Virtual Time mode is set to **Free Run**, the button will be disabled.

Workaround: *Enable Record to Viewer by setting the Virtual Time mode to Time Slice.*

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

RobotStudio may run out of memory (*OutOfMemory exception*) when doing **Save As Viewer** or **Record To Viewer** if the station is very large.

Workaround: *Use the 64-bit version of RobotStudio and create a 64-bit viewer by ticking the checkbox in the Save As Viewer file dialog.*

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6.3.3 Signal Analyzer

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 to Excel is limited to 26.

6.3.4 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.*

6.3.5 Virtual FlexPendant

The Virtual FlexPendant is blank

For RobotWare 5.15 and earlier the Virtual FlexPendant may become blank. Another symptom of this problem is that the controller browser is not expandable.

The problem is due to in incomplete startup of the virtual controller and may be caused by a virus scanner that interferes with file creation during controller startup.

Workaround: *I-start the virtual controller or use RobotWare 5.15.01 or later.*

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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 Pendent: 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

6.3.6 External Axis

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

When restarting a system with activated mechanical units the activation state is lost. Then the program can no longer be started from the Virtual FlexPendant, the RAPID Editor or the RAPID Tasks window.

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

JointTargets for external axis

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

6.3.7 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

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- 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 the file `Virtual FlexPendant.exe.config` *located in*

`C:\Program Files (x86)\ABB Industrial IT\Robotics IT\RobotStudio 5.15\Bin`

`2.` *Add the following lines*

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

The Virtual FlexPendant must be restarted for the changes to take effect.

For further information, see

http://msdn.microsoft.com/en-us/library/dd409252(v=vs.100).aspx

Note

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

6.3.8 RAPID

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 the RobotWare options Arc and RW Cutting. 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 speedata *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.

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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.

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 programmed and edited using the RAPID Editor and successfully simulated using the VC.

6.3.9 Building Controller systems

***Configuring a controller system for a robot on track motion with a K-positioner**

When system from layout finished button is pressed a dialogue to manually map the mechanisms to the controller system is opened.

The reason is that the K-positioner has been split to INTERCHANGE, STN1 and STN2

When being asked to manually map the mechanisms, please proceed as follows:

1. INTERCHANGE -> Select from station -> Change
2. (Update baseframe dialogue) -> Yes
3. (Select Library dialogue) Existing library from station -> Select IRB_K(xxxxxxx) -> Ok
4. (Not found dialogue) -> Ok
5. (Select Library dialogue) -> Select any library ->Open
6. (Not found dialogue) -> Ok
7. (Select Library dialogue) -> Select any library -> Open
8. (Detach dialogue) -> Yes
9. (Update position dialogue) -> Yes
10. STN1 -> Select from station -> Change
11. (Select Library dialogue) Existing library from station -> Select IRB_K(xxxxxxx) .-> Ok
12. STN2 -> Select from station -> Change
13. (Select Library dialogue) Existing library from station -> Select IRB_K(xxxxxxx) -> Ok
14. TRACK -> Select from station -> Change
15. (Select Library dialogue) Existing library from station -> Select RTT_Bobin(xxxxxxx) -> Ok
16. Set joints for IRB_K (INTERCHANGE: 1, STN1: 2 and STN2: 3) -> Ok
17. Remove the unused libraries that were imported in step 5 and 7.

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

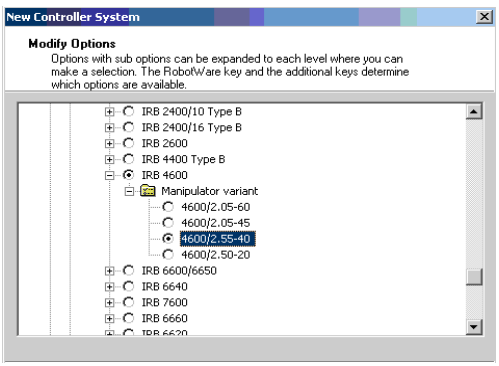
A virtual controller system that has been modified using the function **Modify System** of the **System Builder** must be I-started for the changes to take effect.

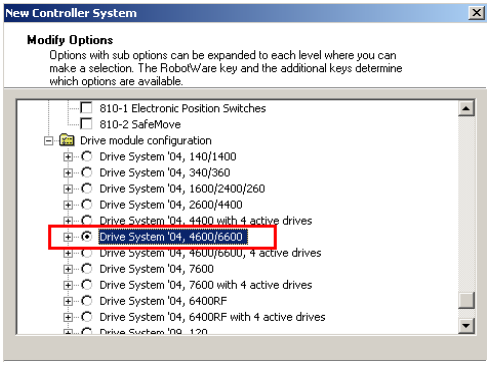
Modify system with additional Mediapool(s) not in default location.

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 5.15 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'*.

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6.3.10 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.

6.3.11 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 then 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.

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6.3.12 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.

***Workaround:** Use the 64-bit version that can handle more memory. Ensure that you have enough memory installed on the PC, see System Requirements.*

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.

6.3.13 AutoPath

Option for Max Distance removed

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

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6.3.14 Gearbox 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.

6.3.15 External Axis Wizard

Paint systems not supported

Paint systems are not supported by the External Axis Wizard

6.4 ScreenMaker Limitations

***Synchronization broken with Real Controller**

Online controllers added from RobotStudio can be connected from ScreenMaker. If the controller is removed or shutdown from RobotStudio, the same state is not reflected in ScreenMaker.

***Undo Redo support**

Undo and Redo operations in ScreenMaker is not supported.

***Persist Docking positions of Windows**

ScreenMaker does not persist the docking positions of its windows. Its always added in the default location when launch irrespective of its previous state.

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. An additional side effect is that the enabled property of RunRoutine button has been disabled as similar behavior was seen.

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

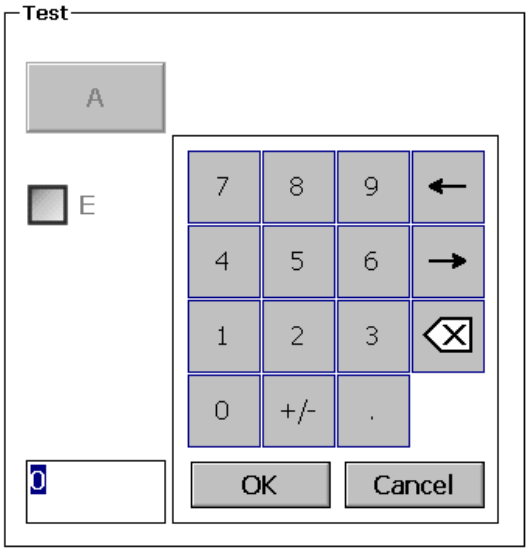
When adding items to the ListBox/ComboBox control, it is not possible to add I/O signals

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,

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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".

Adding ScreenMaker.sys file

The following error occurs if ScreenMaker.sys entry is not available in SYS.CFG file of robot system.



To overcome this copy the following entry shown below

```
- File "RELEASE:/options/gtpusdk/ScreenMaker.sys" -ModName "ScreenMaker"\
-AllTask  -Hidden
```

And paste it under CAB_TASKS_MODULES in the file SYS.CFG

Save and Load the modified SYS.CFG file back into the robot system. Warmstart the robot system.

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Running Routine with Movement

RunRoutine Button control does not always work correct when a routine with movements is called.

As a workaround use instructions like StopMove, StorePath, RestorePath and StartMove to control the movements of the robot.

A Trap routine could be called with a normal button control and in the Trap the above instructions can be used to control the movements of the robot.

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7 RobotWare Compatibility

7.1 General

Supported RobotWare versions

RobotStudio 5.15 is distributed with RobotWare 5.15 and works with RobotWare 5.05 and later. Please see below for details.

7.2 RobotWare 5.05 and 5.06 Compatibility

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

7.3 RobotWare 5.07 Compatibility

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

General

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

Offline

A limitation in the versions 5.07.02, 5.07.03, and, 5.07.04 of RobotWare may cause the Virtual Controller to System Failure state during I-start on certain computers. The problem is due to the ctrl.bin-file not being correctly created.

***Workaround**: Create an empty ctrl.bin file in the INTERNAL folder of the controller system, and then perform a warm start.*



Note

The problem will reappear if the system is I-started.

Online

FlexPendant Viewer does not work RobotWare 5.07

7.4 RobotWare 5.08 Compatibility

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

Offline

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

7.5 RobotWare 5.10 Compatibility

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

Offline

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

7.6 RobotWare 5.11 Compatibility

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

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Offline

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

7.7 RobotWare 5.12 Compatibility

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

Paint backups from RW 5.12.01 not compatible with RW 5.12.02 or later

Restoring a paint system backup from RobotWare 5.12.01 will cause SysFail for RobotWare 5.12.02 or later

Workaround: Add the following parameters to the configuration files

EIO.CFG:

```
EIO_SIGNAL:
      -Name "doMainInMC" -SignalType "DO" -Unit "SysComm" -UnitMap "44"
      -Name "A1HVErrNo" -SignalType "GO" -Unit "SysComm" -UnitMap "150-151"\
      -Access "ALL"
      -Name "A1HVEn" -SignalType "DO" -Unit "SysComm" -UnitMap "155"\
      -Access "ALL"
EIO_CROSS:
      -Res "A1HVEn" -Act1 "HVEnabled"
```

SYS.CFG:

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

7.8 RobotWare 5.13 Compatibility

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

Paint backups from RW 5.12.02, 5.12.03 or RW 5.13 or 5.13.01 not compatible with RW 5.13.02 or RW 5.13.03

There are several changes in the configuration database for I/O (EIO.CFG) and Controller (SYS.CFG) that will cause System Failure if an old backup is loaded. There are also changed in installed RAPID modules. To create a compatible configuration, proceed as follows:

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

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7.9 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.

Signal Analyzer Online

Signal Analyzer Online requires RobotWare 5.15.01 or later.

7.10 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.

FlexPendant SDK

ScreenMaker should be used with FlexPendant SDK 5.12.02 or later. By default ScreenMaker selects the version of FlexPendant SDK corresponding to ScreenMaker version. If the appropriate version is not found then an option is provided to the user to select a FlexPendant SDK version when ScreenMaker is launched.

7.11 Support for future RobotWare versions

RobotStudio 5.15.01 supports all future minor revisions of RobotWare, but no future major releases. For example, RobotStudio 5.15.01 will support RobotWare 5.15.02 (if, and when available) but not RobotWare 5.16, 5.50, or 6.x..

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8 Installation information

8.1 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.

RobotStudio 64 bit

RobotStudio 5.15 64-bit edition is installed for the *Complete* installation option on computers that have a 64-bit operating system. The 64-bit edition allows larger CAD-models to be imported as it can address more memory than the 32-bit version. However, the 64-bit edition has the following limitations:

- PowerPacs, Visual Studio Tools for Applications, and add-ins that use PC-SDK are not supported
- Integrated Vision is not supported
- SaveMove Configurator is not supported
- EPS Wizard is not supported
- ScreenMaker is not supported
- Jupiter import is not supported
- Import of stations and libraries from RobotStudio 4.0 (for S4) is not supported
- Add-ins will be loaded from the following folder

  ```
  C:\Program Files (x86)\ABB Industrial IT\Robotics IT
  \RobotStudio 5.15\Bin64\Addins
  ```

8.2 System requirements

Software requirements

Operating System	
Microsoft Windows XP Service Pack 3	32-bit edition
Microsoft Windows 7 SP1	32-bit edition
Microsoft Windows 7 SP1 (recommended)	64-bit edition
Microsoft Windows 8 (recommended)	64-bit edition

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Note

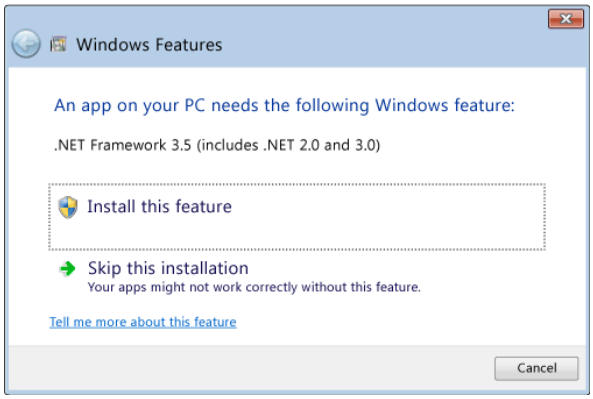
The Windows Firewall will try to block features necessary to run RobotStudio. Make sure to unblock these features when asked (Industrial Robot Discovery Server, RobotStudio StudioAppFramework module, Virtual RobotController (all published by ABB)). The blocking state of a certain program can be viewed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

Prerequisites for Windows 8

VSTA and other features in RobotStudio Free/Premium requre .NET Framework 2.0 which is not installed by default in Windows 8. It is not possible to include .NET 2.0 in the installation media; either an internet connection or a Windows 8 media is required.

Therefore, RobotStudio on Windows 8 requires either of the following:

- NET 3.5/2.0 already installed (see http://msdn.microsoft.com/en-us/library/hh506443.aspx), or
- An active internet connection. When you install RS the following dialog will appear:



Click "Install this feature".

Hardware Requirements

CPU	2.0 GHz or faster processor, multiple cores recommended
Memory	3 GB if running Windows 32 bit edition 8 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).

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8.3 Installing RobotStudio

Installation Instructions

RobotStudio 5.15.01 will upgrade any existing installation of RobotStudio 5.15 or 5.15.00.01 regardless of its type (Minimal, Complete or Custom).

Any previous RobotStudio installation of 5.14.0x will remain installed when installing RobotStudio 5.15.01. Both versions use the same activation and can be used side-by-side.

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

	Action
1	Insert the robot software DVD in the PC. • If a menu for the DVD is opened automatically, continue with step 5. • If no menu for the DVD is opened, continue with step 2.
2	On the **Start** menu, click **Run**.
3	In the **Open** box, type the drive letter for your DVD drive followed by: `:\launch.exe` If your DVD drive has the letter D, then type: `D:\launch.exe`
4	Click **OK**.
5	Select the language for the DVD menu.
6	On the DVD menu, click **Install**.
7	On the installation menu, click RobotStudio. This opens the installation wizard, which guides you through the rest of the software installation.
8	After installing **Robotstudio**, you can proceed with installing **RobotWare**. Go to the installation menu, and click **RobotWare**. This opens this installation wizard, which guides you through the rest of the RobotWare installation.
9	This step is optional, and is for installing the Track mediapool. On the **Install products** menu, click **Additional Options**. This opens a file browser that displays the Track mediapool installation and other available options. Double-click the **TrackMotion** folder and then the file setup.exe to start the installation wizard and proceed



Note

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

Knowing which RobotStudio version is installed

The version number of your RobotStudio installation is displayed on the RobotStudio title bar

Activation of RobotStudio license

Activation of your RobotStudio installation is a procedure for validating your RobotStudio license. To continue using this with all of its features, you must activate it. RobotStudio Product Activation is based on Microsoft anti-piracy technology and is 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.

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). The software performs in the Basic Functionality mode if you do not use a valid Activation Key.

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After the installation is activated, you will have valid licenses for the features covered by your subscription.

Note

Activation is not required for Minimal installation, or for Basic Functionality mode of the Complete or Custom installation.

What is Basic Functionality mode

In Basic Functionality mode, which is a reduced functionality mode, RobotStudio allows only the use of the basic features for the real and the virtual controller. No existing files or stations are harmed in this mode. After activating your software, you will have full functionality for the features you have purchased.

A real controller can be programmed, configured and monitored over Ethernet without activating your installation of RobotStudio. Activation, however, will provide access to the Premium productivity features that will make your engineering work more efficient.

How to activate RobotStudio

Use the Activation Wizard to activate your RobotStudio installation. When you start RobotStudio for the first time after installation, the wizard starts automatically and prompts you for the Activation Key. If you do not want to activate your copy of RobotStudio at installation, you can do so later using the Activation Wizard.

Note

If you have a problem with your activation, contact your local ABB customer support representative at the e-mail address or telephone number provided at http://www.abb.com/contacts.

For using the Activation Wizard, follow this procedure.

	Action
1	On the **File** tab, click **Options** and go to **General:Licensing**.
2	On the Licensing page to the right, click **Activation wizard** to launch the Activation Wizard.
	In the Activation Wizard, on the *Activate RobotStudio* page, indicate whether you have a **Standalone License** or a **Network License**, and then click **Next**. If you have chosen **Standalone License**, you will proceed to *the Activate a Standalone License* page. See *Activate automatically over the Internet or manually* below for further steps. If you have chosen **Network License**, you will proceed to the Network License page. See the *RobotStudio Operating manual* for further steps.

Activate automatically over the Internet or manually

The Activation Wizard gives you two choices on how to proceed. You can choose either automatic activation over the Internet or manual activation. These are explained in the following section.

Automatic Activation (recommended)

In Automatic Activation, the Activation Wizard automatically contacts and sends your activation request to the ABB licensing servers over your Internet connection. Your license will then be automatically installed and your product will be ready for use.

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For Automatic Activation you need a working Internet connections and also a valid Activation Key that has not exceeded the number of installations allowed.

RobotStudio must be restarted after the activation has been successfully completed.



Note

If you choose to activate over the Internet but are not currently connected to the Internet, then the wizard alerts you that there is no connection.

Manual Activation

1. If the computer does not have a working Internet connection, you must proceed with Manual Activation:
2. Create a license file by selecting the option **Step 1:Create a license request file.** Proceed through the wizard, enter your Activation Key and save the License Request File to your computer.
3. Use a removable storage medium, such as a USB stick or floppy disk, to transfer the file to a computer with an Internet connection. In that computer, open a web browser, go to http://www101.abb.com/manualactivation/ and follow the instructions given.

   The result will be a License File that should be saved and transferred back to the computer having the installation awaiting activation.
4. Relaunch the Activation Wizard and go through the steps until you reach the *Activate a Standalone License page*.
5. Under *Manual Activation*, select the option **Step 3:Install a license file**.

   Proceed through the wizard, selecting the License File when requested. Upon completion, RobotStudio is activated and ready for use.

RobotStudio must be restarted after the activation has been successfully completed.

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 available for schools and ABB certified partners.

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9 Technical support

9.1 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*

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