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## General

### Introduction

**NOTE!** You should have administrator privileges on the PC before installing RobotStudio.

RobotStudio is categorized into the following two feature levels:

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

RobotStudio offers the following installation options:

- **Minimal** - Installs only the features required to program, configure, and monitor a real controller connected over Ethernet. If installed with this option, only the Online tab is available.
- **Full** - 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.

### Installation

Upon installation of RobotStudio 5.13, the user will be asked if any existing installation of RobotStudio 5.XX should be uninstalled automatically or the existing installation should remain untouched. Any previous installation of RobotStudio Online will remain untouched.

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

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## How to install RobotStudio on a PC

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

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

## Activate RobotStudio

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

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

### How do I activate RobotStudio?

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

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

**Basic functionality mode:** After the trial period, the software reverts to Basic functionality mode unless you have entered a valid Activation Key. In Basic functionality

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mode, RobotStudio only allows the use of the Online and basic Virtual Controller features. No existing files or stations are harmed in Basic functionality mode. After activating your software, you will have full functionality for the features you have purchased.

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

## Activate automatically over the Internet or manually

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


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

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

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

## How do I activate later?


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

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

## Which RobotStudio version are you using?

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

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

1. Click the **RobotStudio button** , and then click on the **RobotStudio options** button beside **Exit**, and select the **Licensing** section.
2. Click **View Installed License Keys** to see the status of your current license.

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

## Network licenses

Network licenses are not available for RobotStudio 5.13.

## *How to proceed when contacting ABB*

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

## 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](mailto:softwarefactory_support@se.abb.com)

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## Release Information

### *Release Name*

The release name is RobotStudio 5.13

The release contains the following products:

- RobotStudio 5.13 build 3722.0225  
(built with RobotWare 5.13 build 0225)

### *Release Information*

The information should be considered as last-minute and most up-to-date.

For more information, please visit the support web site at <http://www.robotstudio.com/community>. There you can find a discussion forum dedicated to RobotStudio.

### *Release Date*

Release date **2010-April-16**

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## RobotStudio 5.13

### Supported Operating Systems

Microsoft Windows XP Professional Service Pack 3  
 Microsoft Windows Vista Service Pack 1 Business or Enterprise

- Windows Media Encoder Hotfix KB929182

Microsoft Windows 7  
 Microsoft Windows 7 – 64 bit edition

#### Additional components

Microsoft .NET Framework 3.5 SP1 is optional but required for the Smart Component Viewer. It can be downloaded from <http://www.microsoft.com/net> if needed.

**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 [www.microsoft.com](http://www.microsoft.com).

### Recommended Hardware

High-performance desktop or laptop workstation:

**CPU:** 2.0 GHz or faster processor

**Memory:** 1 GB system memory at minimum, 2 GB if running Windows Vista, Windows 7, stations with several robot systems, or large CAD-models.

**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:** 1280 x 1024 pixels or higher

**DPI:** Normal size (96 dpi)

**Mouse:** Three-button mouse

**3D Mouse** Any 3D mouse from 3DConnexion, see <http://www.3dconnexion.com>.

**DVD-ROM Drive**

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## Supported RobotWare Versions

RobotStudio 5.13 is distributed with RobotWare 5.13 and works with RobotWare 5.05 up to 5.13. Please see below for details.

## Compatibility Limitations

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### RobotWare 5.05 and 5.06 Compatibility

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

#### General

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

#### Offline

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

#### Online

- FlexPendant Viewer* does not work RobotWare 5.05 or 5.06

### 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

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- 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.

## RobotWare 5.08 Compatibility

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

### Offline

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

## RobotWare 5.10 Compatibility

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

### Offline

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

## RobotWare 5.11 Compatibility

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

### Offline

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

## 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 RobotStudio 5.11.01 or later and RobotWare 5.11.01 or later. Encrypted parameters needed by the safety controller will be automatically read by EPS Wizard and SafeMove Configurator, respectively.

## Support for future RobotWare versions

RobotStudio 5.13 supports all future minor revisions of RobotWare, but no future major releases. For example, RobotStudio 5.13 will support RobotWare 5.13.01 (if, and when available) but not RobotWare 5.14.

## 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.

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## *Demo stations*

There are six demo stations included in this version.

- Demo Two Robots and Conveyor
- Demo FlexLoader
- Demo Exhaust Pipe
- Demo Palletizer
- \*Smart Component Solar Simulation
- \*SCM\_ExampleProject & SCM\_ExampleStation  
(see Section **ScreenMaker Information** for information on where to find it)

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.

## *Tutorials*

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

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## Robot Libraries

The folder *ABB Library* contains libraries of robots, tools, external axes, positioners and equipment.

### ABB Robot Libraries supported by RobotStudio 5.13

Variant	Library name
120 3kg/0.58m	IRB120_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
1400 Type A/B	IRB1400_5_144_01.rslib
1400H Type A/B	IRB1400H_5_128_01.rslib
140T 5kg/0.8m Type C	IRB140T_6_81_C_01.rslib
1410	IRB1410_5_144_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
1600ID 4kg/1.5m	IRB1600ID_4_150_02.rslib
2400 10kg	IRB2400_10_150_01.rslib
2400 16kg	IRB2400_16_150_01.rslib
2400L	IRB2400L_7_180_02.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
260	IRB260_30_150_01.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_01.rslib

Variant	Library name
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
4400S 30kg	IRB4400S_30_243_01.rslib
4450S 30kg	IRB4450S_30_240_01.rslib
4600 20kg/2.5m	IRB4600_20_250_02.rslib
4600 40kg/2.55m	IRB4600_40_255_02.rslib
4600 45kg/2.05m	IRB4600_45_205_02.rslib
4600 60kg/2.05m	IRB4600_60_205_02.rslib
6400R 200kg/2.5m	IRB6400R_200_250_01.rslib
6400R 200kg/2.8m	IRB6400R_200_280_01.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_03.rslib
6640 180kg/2.55m	IRB6640_180_255_03.rslib
6640 185kg/2.8m	IRB6640_185_280_03.rslib
6640 205kg/2.75m	IRB6640_205_275_03.rslib
6640 235kg/2.55m	IRB6640_235_255_03.rslib
6640ID 170kg/2.75m	IRB6640ID_170_275_04.rslib
6640ID 200kg/2.55m	IRB6640ID_200_255_04.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
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
940	IRB940_01.rslib

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## Robot Libraries Paint

RobotStudio is distributed with the following Paint robot types that are available in the Robots folder of the ABB Library.

### ABB Paint Robot Libraries supported by RobotStudio 5.13

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
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_80	IRB5500_35A_1300_1720_01.rslib
5500 35B b_80	IRB5500_35B_1300_1720_01.rslib

## Track Libraries

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

**Note:** in order to use the IRBTX004 tracks the user must install the appropriate Trackmediapool from the RobotWare DVD.

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

## Positioner Libraries

RobotStudio is distributed with the standard positioners of type IRBP A, B, C, D, K, L and R. The section **Error! Reference source not found.** contains more information about the combinations of robots, track motions and positioners that RobotStudio supports.

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## Language Support

RobotStudio 5.13 is available in the following seven languages:

- English
- French
- German
- Spanish
- Italian
- Japanese
- Chinese - simplified

## 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

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## *New Functionality in RobotStudio 5.13*

### **ScreenMaker**

Easy creation of FlexPendant operator panels

### **Smart Components**

- A new way of creating simulations
- New kind of library component that combines geometry and behaviour.
- It replaces the EventManager. (EventManager still available for backwards compatibility)
- Complex behaviour can be modeled with SmartComponents
- Large set of base components available.
- Composite components created from base components (e.g. Grippers, conveyors, etc.)
- Advanced users can design their own Smart base Components using Visual Studio.

### **Document Manager**

- Easy document retrieval
- The Document Manager helps you search for RobotStudio data.
- Commonly used folders can be added to a gallery
- Two modes supported: Searching and Browsing

### **PC-SDK and FlexPendant SDK integrated in RobotStudio installer**

Installed with Complete or Custom option

### **Targets on Edge**

Support for target creation using geometry. Aids the user in creating targets based on the geometry.

### **Start and Stop of Tasks in Offline browser**

Tasks (both motion tasks and background tasks) can be selectively started and stopped from the Offline browser.

### **Improved support for task frame alignment**

- Task frame by default aligned with robot base frame in "Create System From Layout". (base frame = 0 in MOC.CFG)
- Added options for keeping or moving robot base frame when moving task frame.
- Added options for keeping or moving task frame when moving robot base frame.

**Motivation:** Single robot cells rarely have non-zero base frame. Most cells have zero base frame in practice

### **Place by Two Frames**

New place option

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## Support for LOCAL procedures in RAPID

RobotStudio now supports RAPID procedures declared as LOCAL.

## Mirror function

Geometric entities such as parts, bodies, and curves can now be mirrored around the station world coordinate system.

## Changes in RobotStudio 5.13

### Track mediapool not preinstalled anymore

If stations are created using any of the mediapools Track 5.10.0003, 5.10.0004, 5.10.0005, 5.11.0001, then RobotStudio 5.12 should not be uninstalled when installing RobotStudio 5.13. Otherwise, the mediapools will be uninstalled.

#### **Workaround:**

*Alt 1: Install the missing mediapool separately. They are available on the RobotStudio forum.*

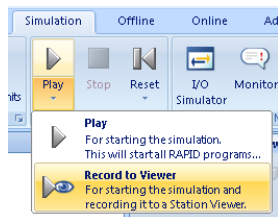
*Alt 2: Install the Track mediapool of the RobotStudio DVD image and edit the file program.id of the system to point to the installed Track mediapool. The system must be cold-started for the changes to take effect.*

### RAPID Modules can be edited regardless of attribute

All modules, except for encoded ones, are always editable in RobotStudio, no matter if it is on an Offline or Online controller.

### Use Record to Viewer when playing simulation to include in Station Viewer

The new Simulation Play option 'Record to Viewer' has been introduced in RobotStudio 5.13, see picture below. The reason for the introduction of this option is the need for a special recording mode to allow simulations created with the SmartComponent Source to be shown in the Station Viewer.



## Solved Limitations in RobotStudio 5.13

### AutoConfig performance improvement for MoveJ instructions

The performance for the **AutoConfiguration** function, which can be used to set robot configurations (confdata) automatically, has been improved for MoveJ instructions (WorkItem2552)

### AutoConfiguration does not select optimal configuration for MoveJ

The **AutoConfiguration** function did not select the optimal configuration (from the robot point of view) for MoveJ instructions (WorkItem2556).

### Configurations returned invalid configuration in certain cases

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The **Configuration** functions returned invalid configurations for robots with parallel beams as it failed to take the dynamic joint limits of axis 2 and 3 into account for certain special cases (WorkItem2317).

## WorkEnvelope improvements

The function **Show Workenvelope** has been improved in two aspects, (i) it showed too large work envelope when mounted on a track, and, (ii) it assumes that axis one for the robot was zero when activated.

## Error message '*Position out of Reach*' when simulating with Conveyor Tracking

The error message '**Position out of Reach**' sometimes appeared when working with conveyor tracking. The reason was that the value of the parameter c1Position changed value. This has been fixed in RobotWare 5.13.

## Multimove: Unhandled exception while playing station

### Controllers in the Online browser can now be collapsed

The controllers in Online browser can now be collapsed. This will enable more space when working with several controllers

### The error message '**Could not change motor state**' will no longer appear

The error message '**Could not change motor state**' that occurred during start of a virtual controller will no longer appear

### Service routines previously installed in each task are now installed as SHARED

This means that the program pointer cannot be shown while the service routine is executed

### Hard to distinguish highlighted curves

When the RobotStudio Option **Graphics** → **Behaviour** → **Selection** → **Outline** was active and a curve was selected, a wire frame box surrounding the curve was displayed in the graphics view. This has been changed to use the same outline technique for curves as for solids

### RobotStudio treated tooldata names as case sensitive

RobotStudio treated tooldata names as case sensitive whereas they are in fact case insensitive in RAPID. This could give rise to unexpected behavior for **Configurations**, **AutoConfiguration**, and **Jump to Target/MoveInstruction**

### Incorrect dialog box in SafeMove Configurator

A dialog box saying '**Failed download**' sometimes appeared after download of a safety configuration from SafeMove Configurator to a controller, even though the download succeeded. The dialog message will not be shown if the download succeeds

### Workobject wobj0 incorrectly placed at wrong mechanical unit

For stations with external axis, the workobject wobj0 was incorrectly located under certain circumstances. This has been fixed

### LinearJog error for RobotWare 5.11 when passing a 90 degree limit with axis 1

When jogging a robot linearly connected to a RobotWare system of version 5.11.00 an error could occur, causing the robot to stop at +/- 90 degrees for axis one. This limitation has been removed in RobotStudio 5.13. The problem has never occurred for controller systems of RobotWare version 5.11.01 or later.

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## Unpack of station with multiple conveyors not well supported

Running Unpack&Work on a Pack&Go file (.rspag) containing a station with several conveyors was not working as expected. This has been fixed

## Error when synchronizing two LOCAL RAPID procedures with the same name

Synchronizing two RAPID procedures declared as LOCAL caused an error in RobotStudio. This has been changed. Now, RobotStudio will only synchronize the first procedure and ignore the second one

## Robot Configuration for IRB5500

RobotStudio now calculates the robot configuration (confdata) for the IRB5500 correctly.

## RAPID Procedures not sorted in the synchronization dialogs

The RAPID procedures was not sorted in the synchronization dialogs in previous versions of RobotStudio. This has been changed. Procedures are now sorted in alphabetic order by default. In addition, the user has the possibility to sort the modules according to which module they are defined in.

## Graphics Clipping in Station Viewer

When having a large station in terms of length, the graphics viewer of the Station Viewer could cause the graphics to be clipped when zooming in on objects far from 'View Center'

## Typical use of PC-SDK events in a VSTA-AddIn causes callback on random thread

When subscribing to a PC-SDK event, the event handler was called from a thread pool thread. Typically VSTA-AddIns that subscribed to PC-SDK events called the RS-API from the event handler. Just doing that will call into the RobotStudio API from another call than the RobotStudio main STA thread. This is not supported and may cause unexpected behaviour. Now, a new method has been added to solve this problem: `RobotStudioAPI.SynchronizeInvoke`

## Problem using PC-SDK event handlers from VSTA

The PC-SDK events were raised on a separate thread. When running a VSTA Add-In from RobotStudio it was not possible to call back to the RobotStudio API from a PC-SDK event handler directly as the call was then made from another thread.

To solve this problem a new method has been added to the RobotStudio API: `RobotStudioAPI.SynchronizeInvoke`

## Baseframe coordination Robot with Mechunit

RobotStudio did not handle baseframe coordination correctly, if the robot's "Baseframe moved by" MechUnit name differed from the single/robot name in that MechUnit. I.e.:

MOC.CFG:

...

MECHANICAL\_UNIT:

```
-name "TRACK" -use_run_enable "" -use_activation_relay ""\
-use_brake_relay "rob1_brake" -use_single_0 "M7DM1" -stand_by_state \
-activate_at_start_up
```

A configuration like this caused RobotStudio to miss the target positions by the amount of the external axis motion This is now fixed .

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## Reachability check for Jointtarget with less than 6 joints not useful

Trying to check reachability for jointtargets created for robot models with less than 6 axis does return a 'question mark' result instead of reachable/unreachable.

## Baseframe incorrect for robot with pedestal on track motion

Having a robot on track with a pedestal causes a wrong baseframe written into the controller configuration database (MOC). The track must be rebuilt with Mechanism Modeler if a pedestal not part of the distributed track motion libraries is to be used.

**Workaround:** Adjust the track position manually in RobotStudio and answer No to the baseframe update question that appears when restarting a VC.

## Solved PDDs in RobotStudio 5.13

PDD Nr	Description
PDD8094	RAPID Sync does not sync tooldata and workobject not used in path
PDD8159	Baseframe incorrect for track mounted robot on a pedestal
PDD8354	Contextual tab for Modify Part not working as expected
PDD8382	Cannot modify RAPID modules with NOVIEW, READONLY, VIEWONLY attributes
PDD8428	Not possible to use keyboard in some RS windows
PDD8513	No response when requesting C-Start
PDD8522	RS cannot find 'My Documents' on computer with non-standard setup
PDD8583	AutoConfiguration tool does not support ActUnit instructions (solution improved since 5.12)
PDD8659	Create Path from Curve function not available if instruction template set to 'MoveAbsJ' or 'MoveJ'
PDD8694	Cannot create attachment to Part that is member of Component Group
PDD8708	Event Manager action 'Attach Object - <find closest object>' does not select the correct object
PDD8768	Default PointType should be set automatically in Instruction Template Manager when creating a new template
PDD8773	Bad performance in I/O Viewer for systems with many signals
PDD8775	Value of group signal not shown
PDD8818	Context lost in tab windows after switching full screen
PDD8839	No meaningful error when max number of client connections reached
PDD8847	Refresh function of RAPID Watch Window is not documented
PDD8864	QuickSet button is the same regardless of the version of the Virtual FlexPendant
PDD8889	Description for Fence library of length 2500 is incorrect
PDD8895	Spotwelding gun results in ACIS warning
PDD8926	Errors in Chinese translation
PDD8959	Pose reached signal for Event Manager action MoveMechansimToPose not always set
PDD9046	UCS grid not displayed correctly if 'Show Floor' enabled
PDD9047	Reachability check not working for joint targets with 4 axes robots (IRB260/660)
PDD9050	Virtual controller not starting after Unpack&work
PDD9109	Error message at startup if more than one Powerpac is installed

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PDD9177	Error message appears when trying to add controller without PC Interface
PDD9214	MechUnit name displayed instead of Single name in SysConfig dialog for system with Track Motions
PDD9239	Add firewall configuration information in Operating Manual
PDD9249	Internal EventLog not correctly updated
PDD9271	Safety Controller configuration grant should be sufficient for SafeMove configuration
PDD9276	Name missing for EventLog tab in French
PDD9280	IRB660_RC not correctly located according to motion configuration
PDD9285	Robot jumps when using Freehand Jog Reorient
PDD9305	Operating Manual not updated after ConnectionType column removed from Controller Status Window
PDD9335	Not able to cancel modification of Conveyor Mechanism
PDD9336	AutoConfiguration failed for certain path
PDD9340	Unable to find configurations for paint robots
PDD9370	Floating browser window not updated after restart of RS
PDD9374	Grid lines disappear when zooming in
PDD9375	Browsing for stations or UAS editing generates exception
PDD9405	RobotStudio installs multiple old versions if TrackMediaPools
PDD9411	Virtual FlexPendant not properly shutdown
PDD9416	No default name when saving named RAPID program
PDD9417	Joint Targets not correctly handled when translating path with non-zero task frame
PDD9418	Curve created with 'Border from Points' incorrectly located
PDD9419	Incomprehensive message when restoring backup after system is upgraded
PDD9449	Crash on controller restart
PDD9462	Not possible to distinguish for which mechanical unit RobotStudio is requesting a library
PDD9471	Deleting a Component Group that is connected to a library hangs RS.
PDD9528	Application error when importing a VRML2 geometry file
PDD9550	Only ProgramPointer of first task set when pressing Play in RAPID Editor
PDD9555	Semi-transparent library becomes invisible depending on view angle
PDD9556	RobotStudio creates corrupt Station viewer file
PDD9607	Error in French warning message for Load Module
PDD9625	System From Layout fails for Custom installation without Track libraries.
PDD9634	.NET Framework 3.5 not distributed with RobotStudio
PDD9638	Failed to connect to controller
PDD9642	Failed to connect after a warm start of controller
PDD9652	Unpack&Work fails when unpacking to folder with "(" or ")" in path
PDD9660	Unexpected behavior after RC restart
PDD9669	ScreenMaker demo project needs improvement
PDD9690	No DNUM type available for ScreenMaker variables
PDD9719	Numerical problem in 3D view
PDD9732	Point list of "Create Target" will be incorrectly deleted if invalid Target name entered

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PDD9734	Missing configuration data of target instruction for IRB1600ID
PDD9740	Incorrect behavior of RS after undoing deletion of a body
PDD9742	No visible / invisible indication in the modeling browser
PDD9815	Incorrect behavior when unchecking Gradient for background color.
PDD9816	Not possible to install on Windows XP 64 bit edition
PDD9840/41	AddTrack function must be removed

## Known Limitations

An asterix (\*) indicates new information for Release Notes 5.13.

### General

#### \*Only possible to open one SafeMove Configurator at the time

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

#### Installing a license for RobotStudio Premium removes trial licenses for PowerPacs

When installing a RobotStudio license for the Premium functionality, the trial licenses are removed. This means that possible remaining trial time for features not part of the installed license, e.g. PowerPacs, will no longer be available. The current behaviour implies that in order to test a PowerPac for free you must do it within the trial time of RobotStudio (30days).

#### Compatibility of RobotStudio Library and Stations with older RobotStudio versions

RobotStudio is not upward compatible, i.e. it is not possible to load RobotStudio 5.13 into an earlier version of RobotStudio such as e.g. RobotStudio 5.11.

### Online

#### \*Error message 'You are denied write access. Access is granted to Unkown'

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

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

#### Switching Network cable

Switching cable from ServicePort to LAN and maintaining an existing connection does not work. It is necessary to close the connection and reconnect. In case this fails, it is necessary to restart RobotStudio and reconnect.

#### FlexPendant Viewer running with automatic reloading

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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.

## **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.

## **Restart of Controller when connected through the service port**

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

## **Generating many signals using Add Signals tool may fail.**

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

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

## **I/O Viewer is not refreshed after controller restart**

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

## **Task activation in Offline and Online**

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

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

## **Offline**

---

### **\*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.*

### **\*No 'save needed' detection when modifying Graphics Appearance properties**

RobotStudio does not recognize that the station needs to be saved after modifying graphics appearance properties such as color, texture and rendering

***Workaround:** Save the station manually before closing.*

### **\*Set ACCESS LEVEL to ALL for VC signals to be modified from RobotStudio**

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The **Access Level** for a signal defined the configuration database (EIO.CFG) of the controller must be set to **ALL** to allow signal values to be modified from RobotStudio during e.g. a simulation.

### \*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.*

### \*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.

### \*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.*

### Virtual Controller does not support UNC paths

UNC paths cannot be used to locate Virtual Controller systems. Using UNC paths for VC systems will cause the log message '**Failed to initialize FW upgrade framework**' to appear when the system starts. Subsequent attempts to work with the VC such as synchronizing RAPID data will fail.

### Creating and starting systems located on a network drive

When using a network drive to store RobotStudio data such as RobotWare systems or the RobotWare mediapool, the following problems may occur

- Virtual controller does not start
- Not possible to open VirtualFlexpendant

**Cause:** *By default, the .NET Framework 2.0 does **not** allow execution of code from a remote file system. This means the application may behave unexpectedly if the media used by the system or the system itself resides on a network share.*

**Workaround:** *To resolve this, the user must explicitly grant the required permissions:*

1. Open Control Panel / **Administrative Tools** / **Microsoft .NET Framework 2.0 Configuration**
2. Open **My Computer** / **Runtime Security Policy** / **Machine** / **Code Groups** / **All\_Code**

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3. Right-click on **All\_Code** and select **New...**
4. Type a name for the code group (for example "RobotWare") and click **Next**
5. In the condition dropdown select **URL**. Type the path to the RobotWare location, for example Z:\RobotWare\\* and click **Next**
6. Select **FullTrust** and click **Next**.
7. Click **Finish**

## Instruction template update

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

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

## UiShow switches to Automatic mode

RobotStudio will automatically request mastership to the controller to update a data value, whenever "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.

## Unexpected behavior with 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.

## 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

**Workaround:** Add the following parameters to the configuration files

### EIO.CFG:

```
EIO_SIGNAL:
    -Name "doMainInMC" -SignalType "DO" -Unit "SysComm" -UnitMap "44"
    -Name "AlHVErrNo" -SignalType "GO" -Unit "SysComm" -UnitMap "150-151" \
    -Access "ALL"
    -Name "AlHVEr" -SignalType "DO" -Unit "SysComm" -UnitMap "155" \
    -Access "ALL"
```

### EIO\_CROSS:

```
-Res "AlHVEr" -Act1 "HVErEnabled"
```

### 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
```

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## 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, that will cause RobotStudio to hang, when a hitting a breakpoint during simulation.

## VC does not start with RRI option and GSI folder structure missing.

Starting a VC with RRI (Robot Reference Interface) Option enabled and missing GSI folder structure in the HOME directory, will cause the VC to hang.

**Workaround:** create GSI Folder before starting the VC inside the HOME directory of the system.

## Load station without geometry

Loading a station without geometry and save that station subsequently will permanently remove the geometry.

**Workaround:** none.

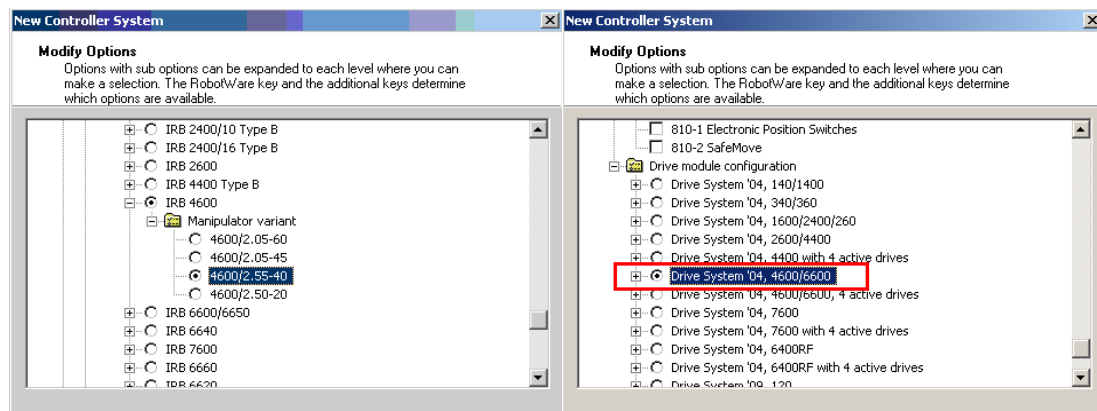
## Modify system with additional Mediapool(s) not in default location.

Trying to modify a system which references additional Mediapool(s) not placed in the same folder as the RobotWare Mediapool will cause the Systembuilder to fail modifying the system.

**Workaround:** copy Mediapool to default RobotWare Mediapool (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.



## 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.

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**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.

## Not possible to use Create Path from Curve with a jointtarget instruction template

It is not possible to create a path from a curve when a jointtarget instruction template is active, for example MoveAbsJ, using the the Create Path from Curve tool. The Apply button will be disabled until an instruction template based on rotarget is selected.

This behavior is by design but is not documented.

## 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 .

## 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.

## 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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## Not possible to Modify System for Pack&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.

## 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.

## 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.

## 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'.

## Array of robtargets, tooldata and workobjects are not supported

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

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

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

## The RAPID functions Offs and RelTool are not fully supported

RobotStudio doesn't fully support instructions using Offs or RelTool functions. They will be synchronized and will appear in the element browser, but commands such as "View

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Tool at Target” and “Locate Target” will not work. Targets used in the instructions will not be visible in the graphics.

## **Error message starting system with IRB260/660**

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

## **Working range of IRB340**

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

## **Path handling of instructions with multiple joint targets**

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

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

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

## **Minor difference in process time of “Simulation Play” and “RAPID Editor Play”**

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

## **Event Manager: Simulation cannot be triggered by analog system signals**

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

## **Virtual Flex Pendant: Emergency Stop button**

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

## **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.

## **Graphics and Geometry**

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### **The Healing option may increase size of CAD models**

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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.*

## **DirectX may require manual installation**

The DirectX components that are installed with the Full installation of RobotStudio have been seen to require manual installation on certain computers.

**Workaround:** *Install DirectX manually. It can be downloaded from <http://www.microsoft.com>.*

## **Virtual FlexPendant impairs performance when on top of graphics viewer**

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

## **Problems when undoing Boolean operations on Geometry**

Undoing a Boolean operation might not succeed. To recover from these problems, you need to delete the items that caused the problem.

## **Out of memory**

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

## **JointTargets for external axis**

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

## **Direct3D limitations**

The following two settings in the 'Graphics Performance' dialog (Tools/Options) have no effect

- Cull back-facing triangles.
- Enable two-sided lighting.

**Workaround:** *Select the graphical object in the object browser and open the "Graphics Appearance" dialog box (context menu) that handles these options per object instead.*

## **Use Direct3D on Windows Vista for improved performance**

Windows Vista is optimized for Direct3d, which is why it is recommended to use it as the graphics renderer for RobotStudio. This can be changed in *RobotStudio* → *Main Menu* → *Tools* → *Options* → *Graphics* → *Renderer* → *Direct3D*.

## **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.*

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## Visual Studio Tools for Applications

### The RobotStudio API is not thread safe

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

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

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

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

### Static events cannot be called from applications developed in VSTA.

This affects for example the Simulation – Tick event.

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

### Debugging of VSTA Applications

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

**Workaround:** Restart RobotStudio to remove the extra menus.

### VSTA Library add-ins not available

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

### Use Visual Studio 2008 Express for advanced add-in

The purpose of VSTA is to write custom actions and minor utilities. For advanced add-in development use Visual Studio 2008 Express that can be downloaded free of charge from <http://www.microsoft.com/express/>

### RsLoadData does not work from VSTA

(CQ7935)

### VSTA limitation

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

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## ScreenMaker information

### *Introduction*

The purpose of this section is to provide information on the new features and improvements in the release.

### *Installation*

This chapter contains instructions for installing ScreenMaker. ScreenMaker has been integrated in RobotStudio. The following installation options related to ScreenMaker are available for RobotStudio.

- **Complete Installation.** ScreenMaker and its dependencies ( FlexPendant SDK and PC SDK ) get installed
- **Custom Installation.** ScreenMaker can be unselected if it is not required. If ScreenMaker is unselected, ScreenMaker ribbon button will be disabled.
- **Minimal Installation.** ScreenMaker will not be installed and ScreenMaker ribbon button will be disabled.

### *Demonstration and Tutorials*

There is one demonstration station and associated ScreenMaker project included with this version. These files are found under the “My ScreenMaker Projects” directory in the user’s RobotStudio directory after installation.

- SCM\_ExampleProject
- SCM\_ExampleStation (found in the SCM\_ExampleProject directory)

This demonstration includes a complete station, project, and a multi screen ScreenMaker project.

### *Compatibility*

#### **RobotWare**

It is possible to use older RobotWare versions, but with some limitations. ActionTrigger has been redesigned and will work only on RobotWare 5.12.02 or later.

Button, TpsLabel, PictureBox controls have been modified for 5.13 release. Allow MultipleStates property of these controls can be accessed based on this change. Hence RobotWare versions less than 5.13 will not work for these controls for that specific property.

Memory Leak issue has been fixed in RunRoutine button.

#### **FlexPendant SDK**

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

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## Language Support

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

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

## Documentation

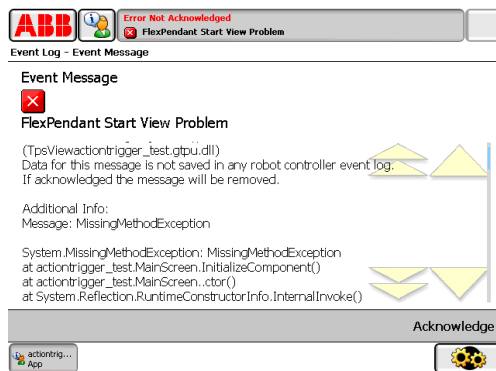
Application manual for ScreenMaker 5.13 is integrated into RobotStudio manual.

## Limitations fixed in 5.13

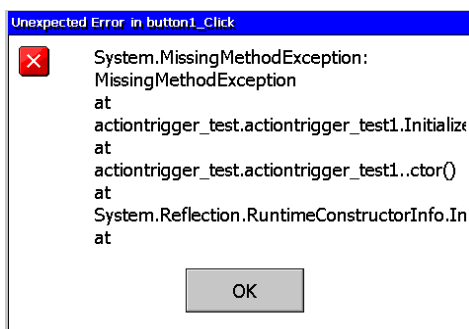
### Action Trigger Compatibility

In 5.12 CTP release, ActionTrigger Control triggers an event when setting non-default value. The fix not to trigger an action on non-default value is available in released version of RobotWare(5.12.02) or later. Enabled property can be used to set the state of action trigger.

If the desired RobotWare is not present and action trigger is used in the screenmaker applications first screen, the message as shown below appears.



If action trigger is present in screens other than first screen, the following gtpuMessageBox appears.



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## *New Features in 5.13*

### **Integration into Robot Studio**

ScreenMaker is now a part of RobotStudio installation. The ScreenMaker folder structure from where it refers to the components has changed and is now under Addins folder of RobotStudio.

User can launch ScreenMaker from Offline and Online tabs respectively. Different installation ( custom, minimal, complete) are described in the installation section of this document.

### **Offline/Online**

User can switch between Offline controllers and Online controllers. Only controllers connected through RobotStudio can be seen in ScreenMaker.

### **Connect / Disconnect**

User can connect to a controller and disconnect from a controller by right-clicking on the context menu at the project level.

### **Close Project Removed and Close ScreenMaker included**

Close Project is replaced with "Close ScreenMaker" button on the ribbon. Users can still Close the project explicitly from the context menu.

### **Making ScreenMaker Application as Default Application at startup**

ScreenMaker application can be made as the default application at startup. This option is available from the Properties ribbon in ScreenMaker.

### **Support for DNUM**

DNUM data type is supported in ScreenMaker.

### **SaveAsFlexpendant Project**

User can save a ScreenMaker project as FlexPendant project. Advanced users and .NET developers can program using VisualStudio 2008.

### **Not allowed to add action if controller is not connected**

If controller is not connected to ScreenMaker application, user is not allowed to define actions.

### **Deploy Binaries to HOME folder instead of SYSTEM folder**

Binaries of ScreenMaker Project after building is being deployed to HOME folder to facilitate backup. So any binaries which are present in System folder of the same application can be deleted manually.

## *Known Limitations*

### **Calling custom actions**

Custom actions can be used to call public methods from components. It is supported for only graph control.

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

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

### **Not Possible to access RAPID data from Shared Modules**

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RAPID data present in modules that are shared across tasks cannot be accessed.

### 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 in this release.

### 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

### Transparent Background on LED shows previous screen

If LED is set to transparent background the previous screen is visible.

### Graph functionality is limited

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

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

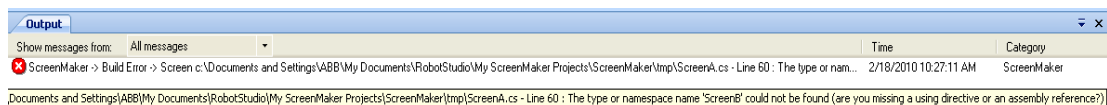
### Rename of Screen

There is limitation in ScreenMaker with respect to renaming and this limitation is valid in a particular scenario.

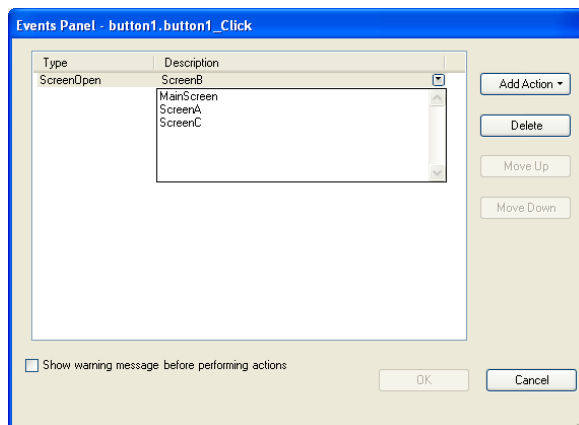
The scenario is as follows:

1. User has ScreenA and ScreenB in his ScreenMaker project.
2. User defines an action in which ScreenA opens ScreenB
3. User renames ScreenB to ScreenC

But ScreenA still refers to ScreenB in the defined actions list even though it no longer exists. When the user builds the ScreenMaker project he gets a Build Error similar to *"The type or namespace name ScreenB could not be found" in the output window.*



**Workaround:** User can open the action list and select the different screen, see below.

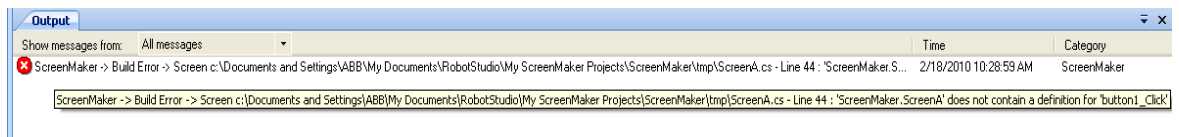


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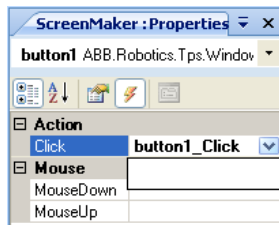
## Deletion of EventHandlers

There is a limitation in ScreenMaker with respect to deleting eventhandlers.

**Example:** Consider *button1\_Click* event handler is being used by both *button1* and *button2* controls. If user deletes *button1\_Click* from EventsManager, both *button1* and *button2* still hold reference to *button1\_Click* eventhandler. Hence when built will throw error. The error looks like this **“ScreenA does not contain a definition for button1\_Click”**



**Workaround:** User has to deselect the *button1\_Click* from controls(*button1/button2*) event tab, see below.



## Call .NET Method

There is a limitation in ScreenMaker with respect to deleting of references that have been added using Call .NET method action and is valid in the following scenario.

1. User creates a Visual Studio Class Library which has some public .NET methods in them.
2. User builds the Visual Studio Class Library
3. User adds the library ( .dll) created in ScreenMaker
4. User defines actions using Call .NET method for the library added
5. User Saves and Builds the ScreenMaker project.
6. User decides to remove the library added in ScreenMaker and removes it.
7. When user closes RobotStudio/ScreenMaker/ScreenMaker Project and re-launches them again **FileNotFoundException** occurs when screen is selected.

The reason is that ScreenMaker application still refers to the library as the actions in Actions dialog contains references to the methods in library.

**Workaround 1:** If the library is removed from ScreenMaker, then remove the actions from the Actions list dialog which contains references to the library. This needs to be done manually before closing.

**Workaround 2:** Copy .NET dlls to be referenced in ScreenMaker installation bin folder. Reference .NET dlls from this location instead of any other folder.

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## Unexpected interference of editing controls when enable property of other controls is bound to a RAPID variable

When an editing control (NumEditor, DataEditor) is included in a screen, clicking in the associated field opens a NumPad or an AlphaPad control. At the same moment, all other controls in the screen are automatically disabled. When the input is completed, the input control is closed and the enabled property of the other controls is restored at the value it had when the operator had clicked in the field. This can get into an unexpected state if the enabled property is also bound to a rapid bool value. For example. assume the RAPID data used to enable some controls was **false** before editing. Then assume that the RAPID data is set to **true** while editing. When the edit session is complete, the original enabling state is restored and the controls are disabled, although the intention was to have them enabled.

**Workaround:** Avoid editing controls (like NumPad, AlphaPad) being active while there are other controls that are bound to rapid variables (and could change state)

## Visual Studio FlexPendant project created from ScreenMaker project throws error when designer form is opened

Value cannot be null. Parameter name: instance warning is seen when designer form is opened in Visual Studio 2008 after conversion.

**Workaround 1:** *ABBScreenMakerControlDesigner* present in ScreenMaker installation folder must be registered in GAC. Follow these steps:

1. Open a VS 2008 CMD window
2. Register the assembly into the GAC:

```
C:\Program Files\ABB Industrial IT\Robotics IT\RobotStudio
5.13\Bin\Addins\ScreenMaker\Bin>gacutil /i ABBScreenMakerControlDesigner.dll
```

3. Close VS and try to open the screen again

**Workaround 2:** Manually add *ABBScreenMakerControlDesigner.dll* as a reference in the Visual Studio project created.