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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.
- **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.

## *Installation*

Upon installation of RobotStudio 5.13.01, 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.

### 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 loose the trial period time).

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

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

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

### Activate automatically over the Internet or manually

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

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

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

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

### How do I activate later?

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

1. 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.

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 5.13.01.

## *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*

# Release Information

## *Release Name*

The release name is RobotStudio 5.13.01

The release contains the following products:

- RobotStudio 5.13.01 build 3828.1034
  (built with RobotWare 5.13.01 build 1034)

## *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-June-18**

# RobotStudio 5.13.01

## *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.*

## *Recommended Hardware*

High-performance desktop or laptop workstation:

| | |
|---|---|
| **CPU**: | 2.0 GHz or faster processor |
| **Memory**: | 1 GB system memory at minimum,<br>3 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 (100% / 96 dpi) up to Medium size (125% / 120 dpi) |
| **Mouse**: | Three-button mouse |
| **3D Mouse** | Any 3D mouse from 3DConnexion, see http://www.3dconnexion.com. |
| **DVD-ROM Drive** | if installing from a DVD |

# *Supported RobotWare Versions*

RobotStudio 5.13.01 is distributed with RobotWare 5.13.01 and works with RobotWare 5.05 up to 5.13.01. Please see below for details.

## Compatibility Limitations

### 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

- 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.

## 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
```

### 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 not compatible with RW 5.13.01**

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. To create a compatible configuration, proceed as follows:

1. Start a VC with a RobotWare 5.13.01 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. Load the backup and restart the system. You are done.

## *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 5.13.01 supports all future minor revisions of RobotWare, but no future major releases. For example, RobotStudio 5.13.01 will support RobotWare 5.13.02 (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.

## *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.

## *Robot Libraries*

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

### ABB Robot Libraries supported by RobotStudio 5.13.01

| 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 |
| | |
| | |

## *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 5.13.01

| 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 RobotStudio Operating Manual contains more information about the combinations of robots, track motions and positioners that RobotStudio supports.

## *Language Support*

RobotStudio 5.13.01 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

## *New Functionality in RobotStudio 5.13.01*

### PC SDK and FlexPendant SDK 5.13.01 installed with RobotStudio

Version 5.13.01 of PC-SDK and FlexPendant SDK are installed with the Complete installation of RobotStudio and can optionally be installed with the Custom installation option.

### Smart Components

#### New base component: MoveAlongCurve

A base component that moves an object along a geometric curve at a specified speed

#### Show/Hide available for Queue Components

Some people find it too time consuming for show/hide operations of several object to use SmartComponents. That is why Show/Hide is now available for Queues.

#### New base component: Simulation Events

To get events for simulation start and stop.

#### New base component: JointReader

Reads the joint values of a mechanism. Similar to PositionSensor.

### Offline

#### Baseframe values can be copied between mechanical units

A copy function is now available in the System Configuration dialog, so that a baseframe value can be copied to another single mechunit

## *Solved Limitations in RobotStudio 5.13.01*

**The RobotStudio Operating Manual incorrected tagged as Draft**

This has been fixed**.**

**RobotStudio supports DPI up to 120 dpi**

The previous dpi limitation for the screen resolution has been removed.

**Ensure that the calibration frame and the workobject coincide for positioners**

**Incorrect display in Chinese manual**

**Insert Action Instruction/Modify Instruction: Bool argument not possible to set to TRUE or FALSE**

**IRB 360 L: Axis 4 is faulty values while doing jogging.**

**Joint values for linear axis of IRB540 (J4, J5) not updated in VFP**

**Tasks window: Checkboxes disappear after restart**

**Timer Component does not reset itself to zero when starting a simulation**

**Type A, B and D positioners not placed correctly in station**

## *Solved PDDs in RobotStudio 5.13.01*

| PDD Nr | Description |
|---|---|
| PDD7618 | PROC domain not shown in Configuration Editor |
| PDD9445 | Simulation/Monitor/TCP trace does not handle stationary tools |
| PDD9446 | Wrong location of some dialogs when using multiple screens |
| PDD9454 | Error in VC configuration file causes missing browser content |
| PDD9472 | All motion tasks not restored after the 'Unpack&Work' of a multimove station/system |
| PDD9477 | Configuration Editor table has confusing behavior |
| PDD9549 | Failed to Set PP without message box in Rapid Editor |
| PDD9570 | Functions 'Attach To' & 'Detach' not enabled in context menu while multiple parts selected |
| PDD9572 | Run Mode in task window not updated properly |
| PDD9573 | No message when action not possible in task window |
| PDD9626 | Screen Resolution problem in Windows XP |
| PDD9651 | OK button grayed in RS options |
| PDD9685 | ScreenMaker project corrupted, when using additional referenced assemblies |
| PDD9763 | Back from Full Screen fails in RobotStudio Viewer |
| PDD9786 | Screenmaker : Unexpected interference of editing controls when enable property of other controls is bound to a rapid variable |
| PDD9851 | Errors when programming a robot on a track using conveyor tracking |
| PDD9853 | Detach failed |
| PDD9855 | File Transfer overwrites file without warning |
| PDD9970 | ScreenMaker: add custom action doesn't work and fatal error happen |
| PDD9997 | RobotStudio 5.13.01 does not install FP SDK template for Visual Studio |

# *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.*

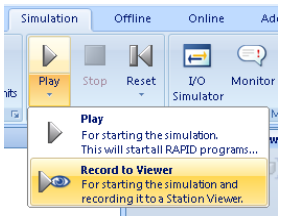
*Alt 2:Install the Track mediapool of the RobotStudio DVD image and edit the file program.id of the system to point to the installed Track mediapool. The system must be cold-started for the changes to take effect.*

## 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

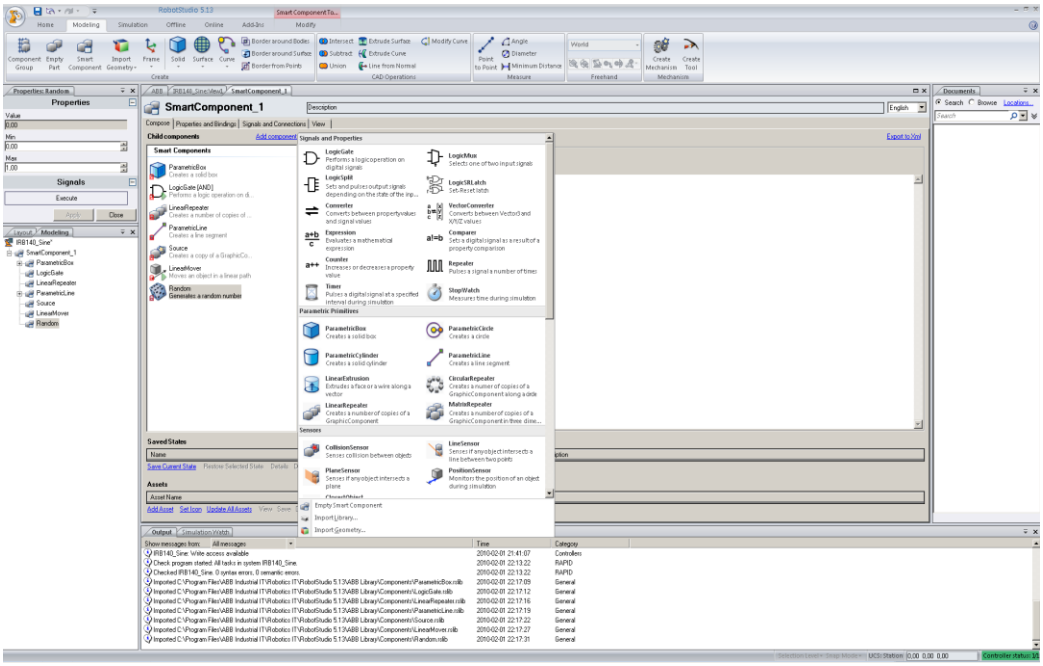
The new Simulation Play option *'Record to Viewer'* has been introduced in RobotStudio 5.13, see picture below. The reason for the introduction of this option is the need for a special recording mode to allow simulations created with the SmartComponent Source to be shown in the Station Viewer.



# *New Functionality in RobotStudio 5.13*

## Smart Components

Smart Components offers a new way of creating simulations by adding behavior to the simulated objects. It brings life to the graphical component libraries by the addition of so-called *Base Smart Components* for basic motion, signal logic, arithmetic, parametric modeling, sensors etc, etc. Moreover, Smart Component authoring can be separated from its use in a simulation. The internal logic of the user-created, composite Smart Component is hidden to the component user that only needs to know how to connect it to other high-level Smart Components of the simulation. This allows Smart Components for common equipment to be re-used over and over again, thus saving valuable time.

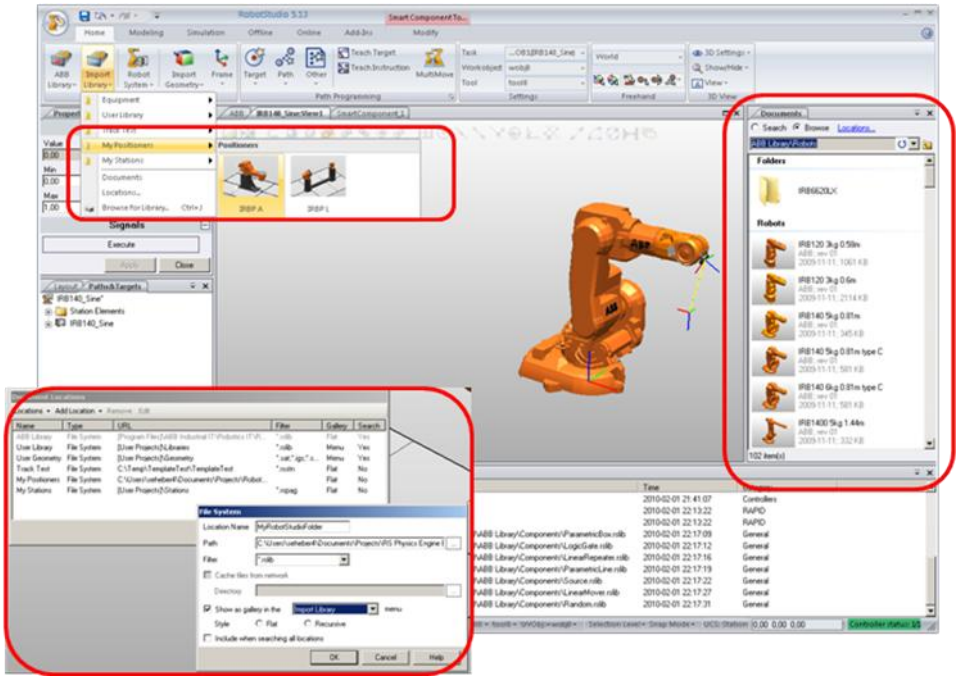



The Base Smart Components available in RobotStudio 5.13 will cover the most cases, which removes the need for customization in e.g. Visual Studio Tools for Applications (VSTA). Advanced users still have the possibility to develop their own customized smart components using Microsoft Visual Studio C# or any other programming language that supports Microsoft .NET Framework.

Smart Components is a replacement to the Event Manager. Instead of adding the simulation logic to the centralized Event Manager, the logic is distributed to the simulation objects themselves. However, the Event Manager will still be available for backwards compatibility.

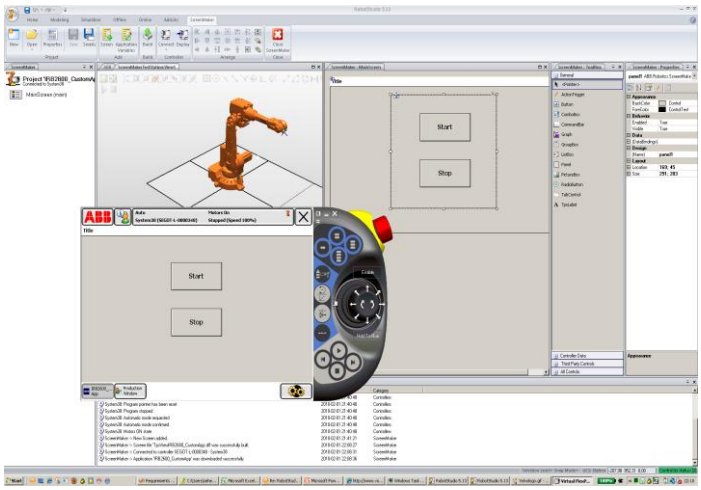
## Document Manager

The Document Manager allows you to search and browse RobotStudio documents like libraries, geometries and so on in large numbers and from different locations. Commonly used folders can be added to a gallery such as the standard gallery for ABB Library components. Two modes are supported: Searching and Browsing



## ScreenMaker

ScreenMaker is fully integrated with RobotStudio and need no longer be installed as a separate product. It allows easy creation of FlexPendant operator panels.

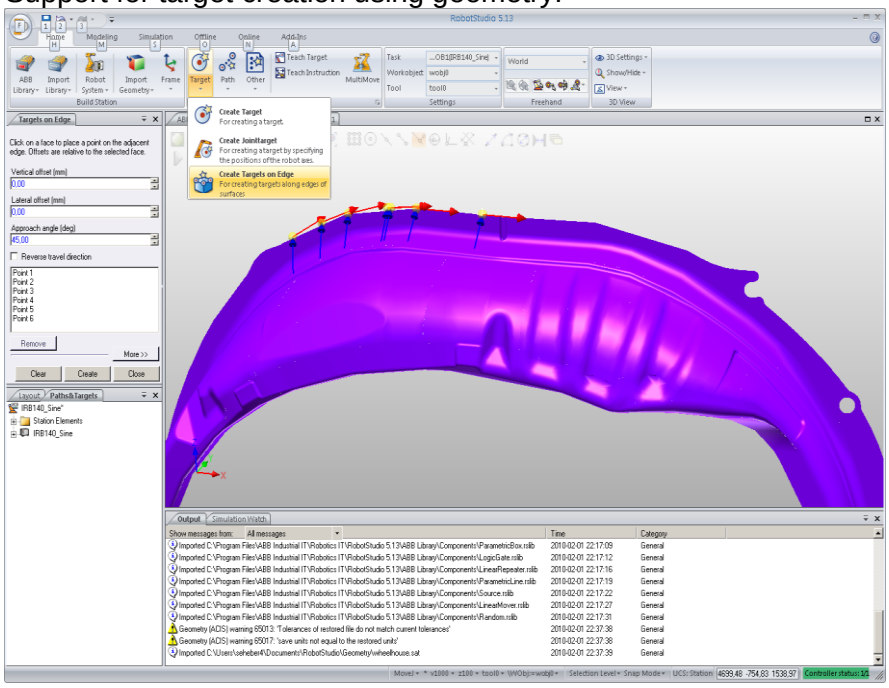


## Developer Tools

PC-SDK and FlexPendant SDK are now integrated in the RobotStudio installer and can be installed with the Complete or Custom installation option.

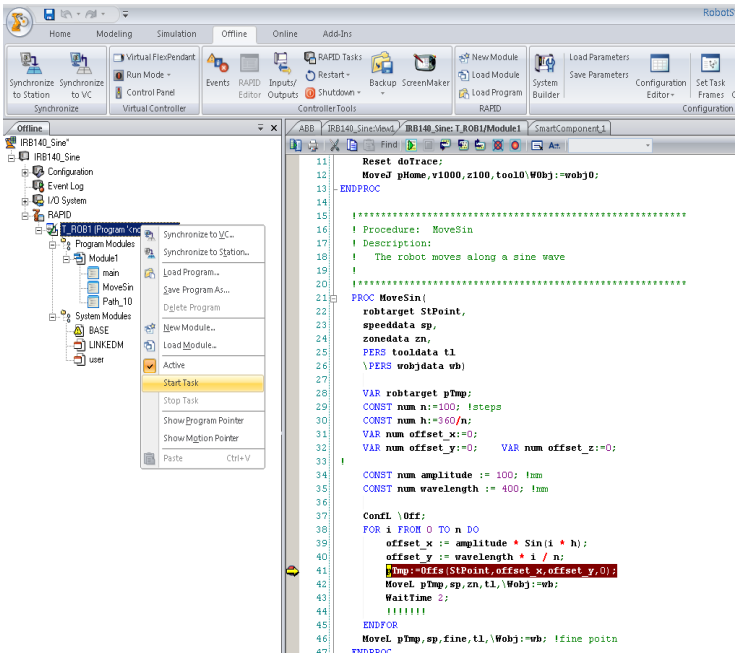
## Targets on Edge

Support for target creation using geometry.



## Start and Stop of Tasks in Offline browser

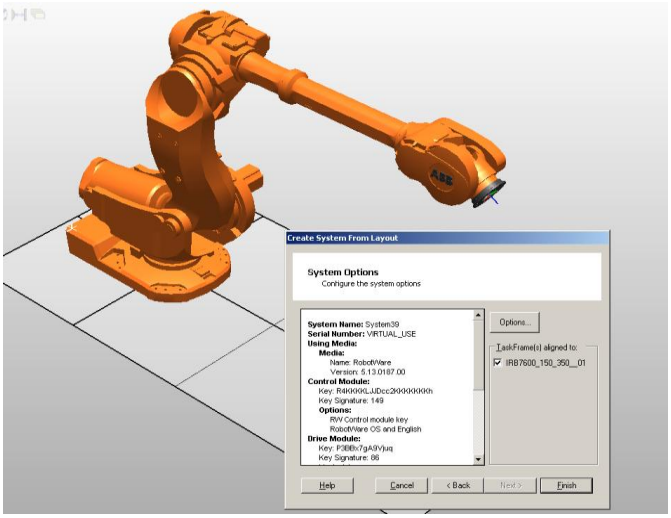
Tasks (both motion tasks and background tasks) can be selectively started and stopped from the Offline browser.




## Improved support for task frame alignment

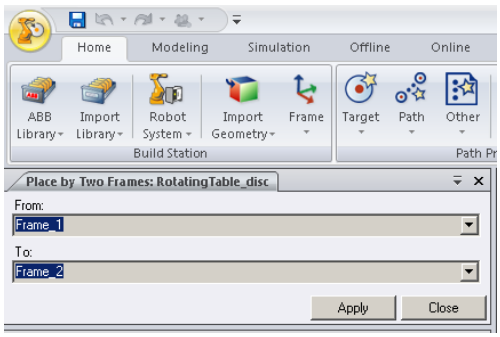
It is easier to define and modify the task frame in RobotStudio 5.13. By default, the task frame is aligned with the robot base frame in '*System From Layout'*. This corresponds to setting the base frame translation and rotation equal to zero in the Motion Configuration database of the controller (MOC.CFG).

When moving the task frame, the user gets the options to move or keep the base frame location. Correspondingly, when adjusting the base frame using the Set Position tool, the user gets the option to adjust the task frame.



### Place by Two Frames

New place option

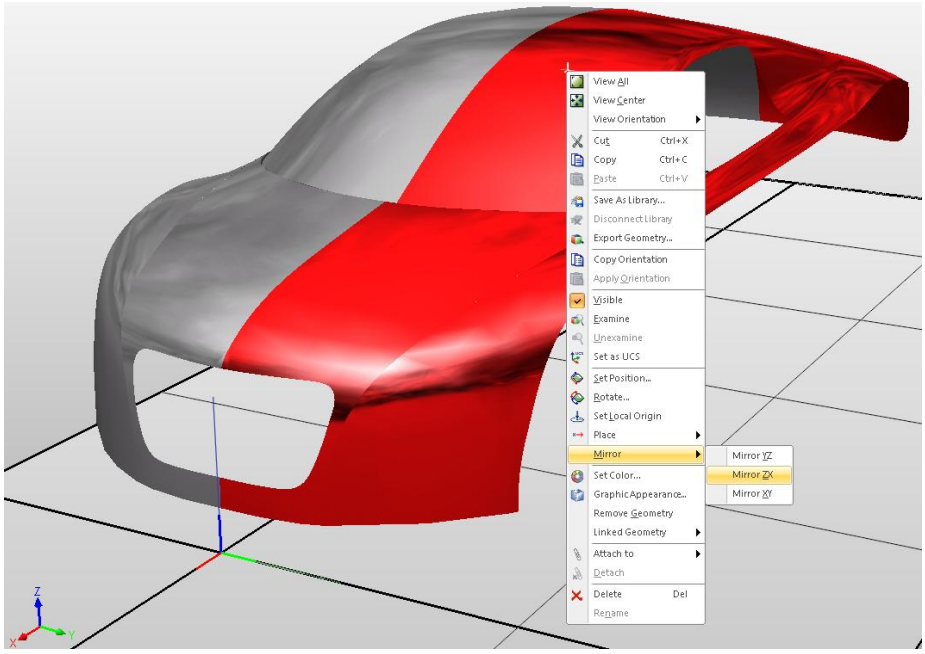



### Support for LOCAL procedures in RAPID

RobotStudio now supports RAPID procedures declared as LOCAL.

### Mirror function

Geometric entities such as parts, bodies, and curves can now be mirrored around its local origin.




## *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

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.

**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'

**Typcial 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 .

### 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 meaningfull error when max number of client connections reached |
| PDD8847 | Refresh funcion 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 |
| 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 dispappear 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' incorrecly located |
| PDD9419 | Incomprehensive message when restoring backup after system is upgraded |
| PDD9449 | Crash on controller restart |
| PDD9462 | Not possible to distinguish for which mechancial 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 |
| PDD9734 | Missing configuration data of target instruction for IRB1600ID |
| PDD9740 | Incorrect behavior of RS after undoing deletion of a body |
| PDD9742 | No visible / invisble 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

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

### **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.*

***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**

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 Flex***Pendant 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***
*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* ***FullTrus****t 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.*

### 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.*

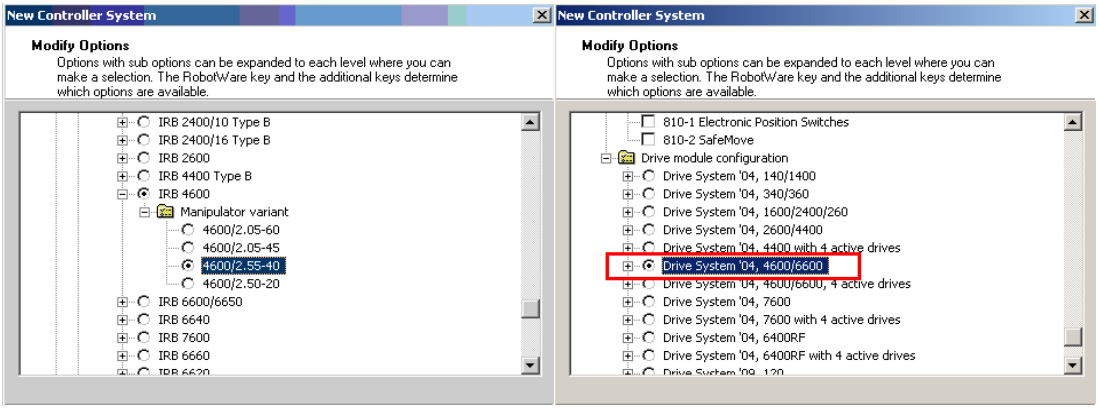
## Modify system with additional Mediapool(s) not in default location.

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.

***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 robtarget 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.*

### 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 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 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.

### 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

### 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.*

### 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.*

## *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.

# 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.

## *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 5.13.01*

**ScreenMaker Databinding for the screen title does not work** This has been fixed.

**Binding problem in RunRoutineButton of ScreenMaker**

The control "RunRoutineButton" is allowing to bind and call all the routine in a module including main routine. In 5.13.01 it can also be bound to user defined service routines.

**Binaries deployed to HOME folder**

The resulting binaries of the ScreenMaker project are deployed to the HOME folder of the controller system. The reason is to have it included in a system backup.

**Background of LED control shows previous screen**

The background of the LED control it no longer transparent

**FlexPendant Project Conversion (Invalid Class String)**

The error message Invalid Class String that appeared in certain cases when saving a project as FlexPendant project has been fixed.

**Call .NET Method**

The limitation in ScreenMaker with respect to deleting of references that have been added using Call .NET method action. The effect was the screen from the ScreenMaker Project was not getting opened. This has been changed.

**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. The same state is retained as it was before opening Numpad.

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

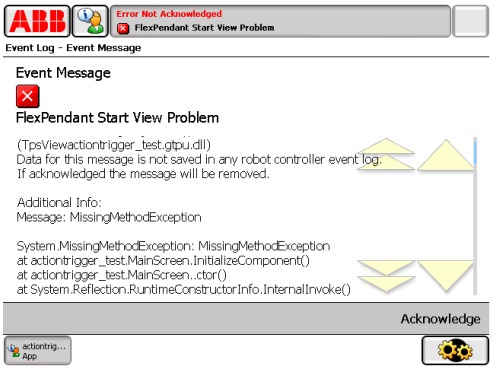
Value cannot be null. Parameter name: instance warning is seen when designer form is opened in Visual Studio 2008 after conversion.This has been changed and user can see the designer.

# *Limitations fixed in 5.13*

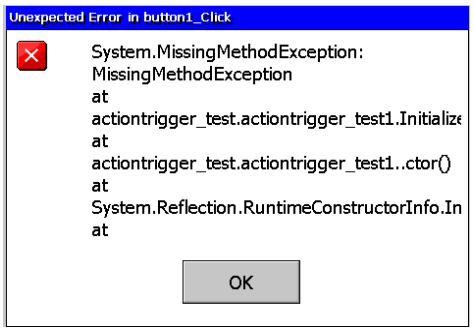
## Action Trigger Compatibility

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.




# *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**

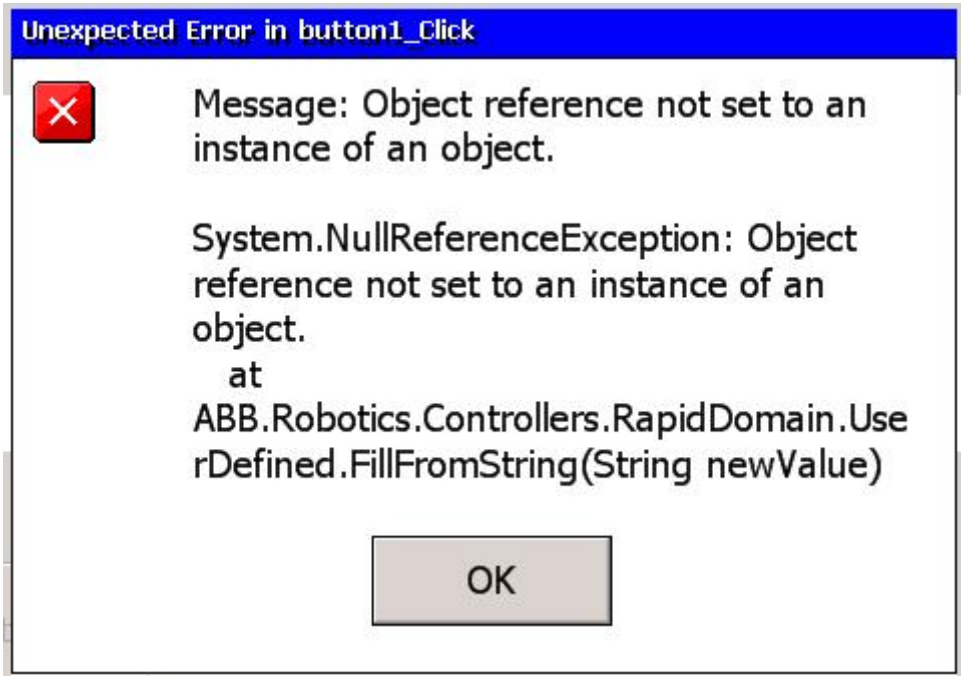
Binaries of ScreenMaker Project after building is being deployed to HOME folder to facilitate backup. So any binaries which are present in System folder of the same application can be deleted manually.

## *Known Limitations*

** New for 5.13.01

****Error on FlexPendant when using Turkish Language Settings**

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




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

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

### 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

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.

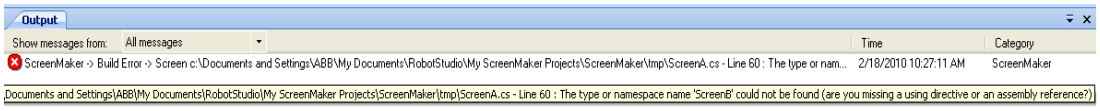
## Rename of Screen

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

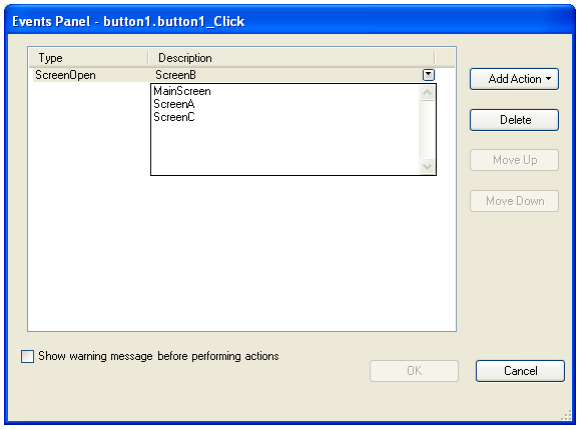
The scenario is as follows:

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."*



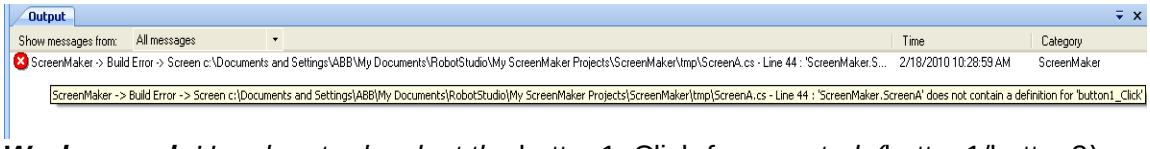

***Workaround:*** *User can open the action list and select the different screen, see below.*



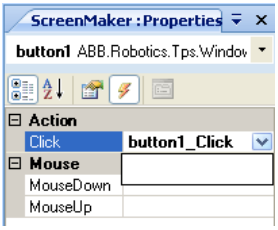

## Deletion of EventHandlers

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"**

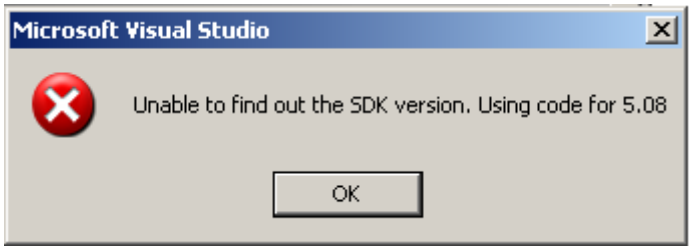



***Workaround:*** *User has to deselect the* button1_Click *from controls(*button1/button2*) event tab, see below.*




## Visual Studio FlexPendant project created from ScreenMaker project displays error when modified

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




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

**Initial State:**

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

Instead of Navigate inheriting from `ABB.Robotics.ScreenMaker.Windows.Forms.ScreenForm` use `ABB.Robotics.Tps.Windows.Forms.TpsForm,` see below

**Modified State:**

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

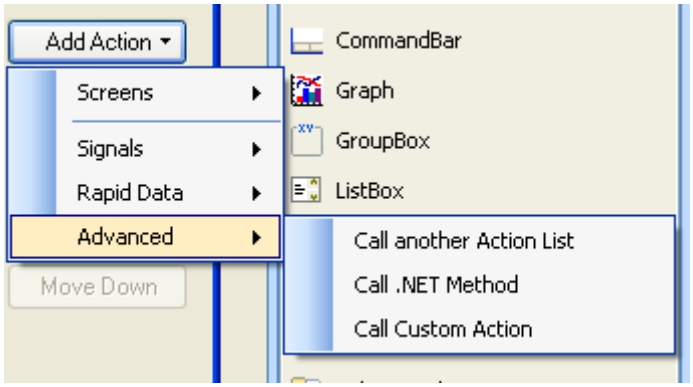
This change will also enable the toolbox with FlexPendant specific GUI controls.

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

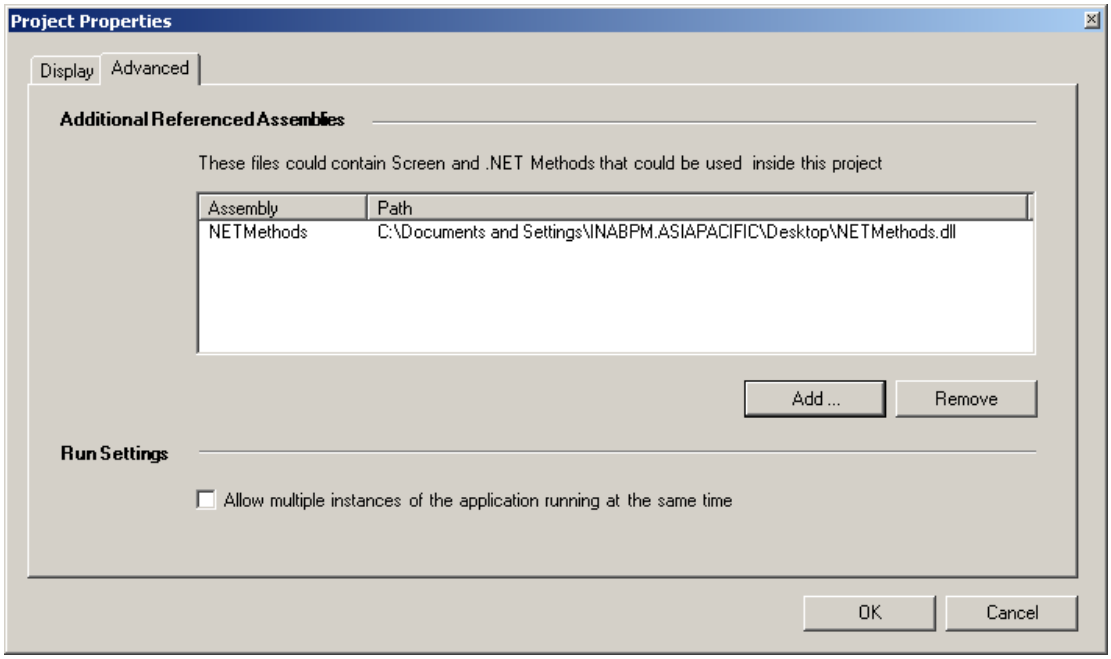
```
public class Navigate : ABB.Robotics.ScreenMaker.Windows.Forms.ScreenForm
//commented - ABB.Robotics.Tps.Windows.Forms.TpsForm
{}
```

## *Supporting Information*

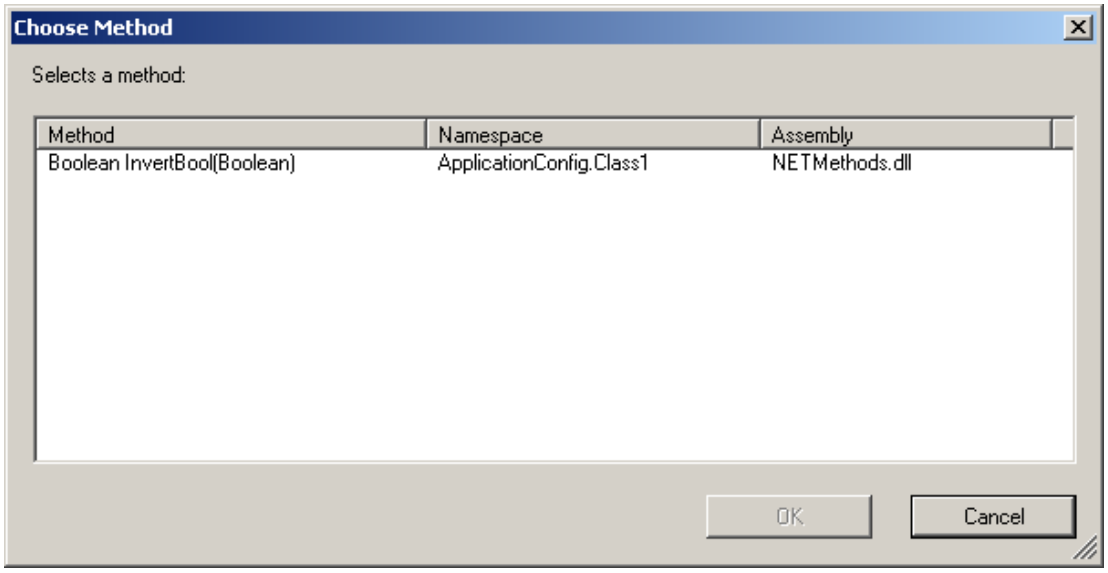
### Advanced Actions List – Call .NET method




User can import dlls. The references are added in the ScreenProject Properties Advanced tab. Once the references are defined, the .NET methods appear in the dialog. User can select them and include them in the actions list which would be executed on performing the desired action.

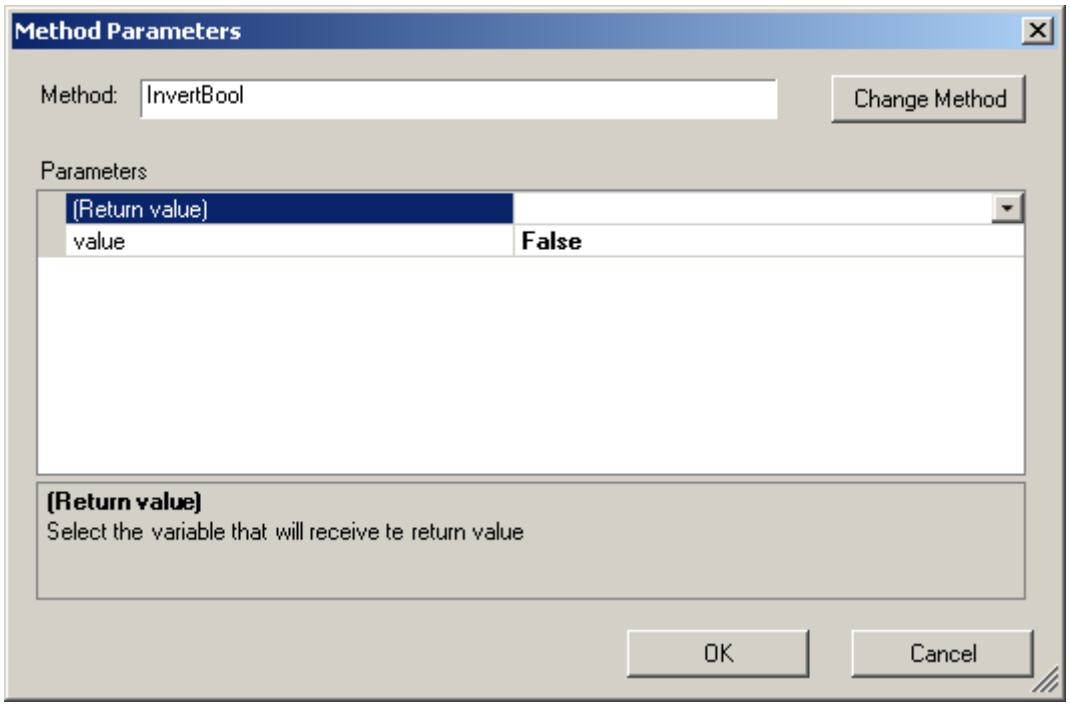



Once the references are defined, the .NET methods appear in the dialog.




User can double click the method and bind the return value to the application variable.

Binding is possible only to the application variable.




If you no longer wish to use this library, remove the reference and the actions that have been created using for this library using 'Call .NET Method'