

Release Notes

RobotStudio

6.01 SP1

Revision: -

The information in this manual is subject to change without notice and should not be construed as a commitment by ABB. ABB assumes no responsibility for any errors that may appear in this manual.

Except as may be expressly stated anywhere in this manual, nothing herein shall be construed as any kind of guarantee or warranty by ABB for losses, damages to persons or property, fitness for a specific purpose or the like.

In no event shall ABB be liable for incidental or consequential damages arising from use of this manual and products described herein.

This manual and parts thereof must not be reproduced or copied without ABB's written permission.

Additional copies of this manual may be obtained from ABB.

The original language for this publication is English. Any other languages that are supplied have been translated from English.

© Copyright 2008 - 2015 ABB All rights reserved.

ABB AB  
Robotics Products  
SE-721 68 Västerås  
Sweden

## Table of Contents

---

<b>1 Release Information</b>	<b>5</b>
1.1 General	5
1.2 System recommendation	5
1.3 Simulation Models	7
<b>2 What's new in RobotStudio 6.01</b>	<b>9</b>
2.1 New robot models	9
2.2 General	10
2.3 Layout and Modeling	10
2.4 Offline programming	14
2.5 Online functions	16
<b>3 Late Breaking Information</b>	<b>20</b>
<b>4 Corrections</b>	<b>21</b>
4.1 Corrections made in 6.01 SP1	21
4.2 Corrections made in 6.01	21
<b>5 Known Limitations</b>	<b>23</b>
5.1 General	23
5.2 Online	23
5.2.1 Online - Paint	23
5.2.2 Online – Integrated Vision	24
5.3 Offline	25
5.3.1 General	25
5.3.2 Station Viewer	27
5.3.3 MultiMove	27
5.3.4 External Axis	27
5.3.5 Network Drives and UNC Paths	27
5.3.6 RAPID	28
5.3.7 Paint	29
5.3.8 Graphics and Geometry	29
5.4 ScreenMaker Limitations	30

## Table of Contents

---

<b>6 RobotWare Compatibility</b>	<b>31</b>
<b>6.1 General</b>	<b>31</b>
<b>6.2 RobotWare 5.05 and 5.06 Compatibility</b>	<b>31</b>
<b>6.3 RobotWare 5.07 Compatibility</b>	<b>31</b>
<b>6.4 RobotWare 5.08 Compatibility</b>	<b>31</b>
<b>6.5 RobotWare 5.10 Compatibility</b>	<b>31</b>
<b>6.6 RobotWare 5.11 Compatibility</b>	<b>31</b>
<b>6.7 RobotWare 5.12 Compatibility</b>	<b>32</b>
<b>6.8 RobotWare 5.13 Compatibility</b>	<b>32</b>
<b>6.9 RobotWare 5.15 Compatibility</b>	<b>33</b>
<b>6.10 RobotWare 6 Compatibility</b>	<b>33</b>
<b>6.11 General Compatibility Limitations</b>	<b>33</b>
<b>6.12 ScreenMaker Compatibility</b>	<b>33</b>
<b>6.13 Support for future RobotWare versions</b>	<b>34</b>

# 1 Release Information

## 1.1 General

---

### Release Name

The release name is RobotStudio 6.01 SP1 and the build number is 6.01.6426.0123.

---

### Release Date

The release date is May 8<sup>th</sup>, 2015.

---

### Demo stations

The following demo stations are included in this version.

- Demo AW Station
- Demo Solar Simulation
- Demo Exhaust Pipe
- Demo FlexLoader

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

---

### ScreenMaker Demo Station and Project

There is a demo station and associated ScreenMaker project available.

- SCM\_ExampleProject (*ScreenMaker Project*)
- SCM\_ExampleStation (*RobotStudio station*)

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


---

### Tutorials

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

---

### Documentation

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

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

## 1.2 System recommendation

---

### Recommended Software

Operating System	
Microsoft Windows 7 SP1	32-bit edition
Microsoft Windows 7 SP1 (recommended)	64-bit edition
Microsoft Windows 8.1 (recommended)	64-bit edition

**Note**

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

**Recommended hardware**

Item	Requirement
CPU	2.0 GHz or faster processor, multiple cores recommended
Memory	3 GB if running Windows 32-bit 8 GB or more if running Windows 64-bit (recommended)
Disk	10+ GB free space, solid state drive (SSD)
Graphics card	High-performance, DirectX 11 compatible, gaming graphics card from any of the leading vendors. For the Advanced lightning mode Direct3D feature level 10_1 or higher is required.
Screen resolution	1920 x 1080 pixels or higher is recommended
DPI	Normal size (100% / 96 dpi) up to Large size (150% / 144 dpi) Only Normal size supported for Integrated Vision.
Mouse	Three-button mouse
3D Mouse [optional]	Any 3D mouse from 3DConnexion, see <a href="http://www.3dconnexion.com">http://www.3dconnexion.com</a> .

## 1.3 Simulation Models

### Robot Libraries

IRB Variant
120 3kg/0.58m
120T 3kg/0.58m
1200 5kg/0.9m BTM
1200 5kg/0.9m STD
1200 7kg/0.7m BTM
1200 7kg/0.7m STD
140 5kg/0.8m Type A/B
140 5kg/0.8m Type C
140 6kg/0.8m Type C
140T 5kg/0.8m Type C
1400 Type A/B
1400H Type A/B
1410
1520ID
1600 5kg/1.2m
1600 5kg/1.2m Type A
1600 5kg/1.45m
1600 5kg/1.45m Type A
1600 6kg/1.2m
1600 6kg/1.45m
1600 7kg/1.2m
1600 7kg/1.2m Type A
1600 7kg/1.45m
1600 7kg/1.45m Type A
1600 8kg/1.2m
1600 8kg/1.45m
1600 10kg/1.2m
1600 10kg/1.45m
1600ID 4kg/1.5m
2400 10kg
2400 16kg
2400L
2600 12kg/1.65m
2600 20kg/1.65m
2600 12kg/1.85m
2600ID 8kg/2.0m
2600ID 15kg/1.85m
260
340
360 1kg/1130 Std No axis 4
360 1kg/1130 Wash-down No axis 4
360 1kg/1130 Standard
360 1kg/1130 Wash-down
360 1kg/1130 Stainless
360 1kg/800 Std No axis 4
360 1kg/800 Wash-down No axis 4
360 1kg/800 Std
360 1kg/800Wash-down
360 3kg/1130 Std No axis 4
360 3kg/1130 Wash-down No axis 4
360 3kg/1130 Standard
360 3kg/1130 Wash-down

IRB Variant
360 3kg/1130 Stainless
360 1kg/1600 Standard
360 6kg/1600 Standard
360 8kg/1130 Standard
4400 45kg
4400 60kg
4400L 10kg
4400L 30kg
4400S 30kg
4450S 30kg
4600 20kg/2.5m
4600 20kg/2.5m Type C
4600 45kg/2.05m Type C
4600 60kg/2.05m
4600 60kg/2.05m Type C
460
4600 40kg/2.55m
4600 40kg/2.55m Type C
4600 45kg/2.05m
6400R 200kg/2.5m
6400R 200kg/2.8m
6400R 120kg/2.5m
6400R 150kg/2.8m
6400R 150kg/2.8m
6400R 100kg/3.0m
640
660 180kg/3.15m
660 250kg/3.15m
6600 175kg/2.55m
6600 175kg/2.80m
6600 225kg/2.55m
6600ID 185kg/2.55m
6620 150kg/2.2m
6620LX-150/1.9m
6640 130kg/3.2m
6640 180kg/2.55m
6640 185kg/2.8m
6640 205kg/2.75m
6640 235kg/2.55m
6640ID 170kg/2.75m
6640ID 200kg/2.55m
6640 150kg/2.55m DP6
6640 165kg/2.8m DP6
6640 185kg/2.75m DP6
6640 200kg/2.55m DP6
6650 125kg/3.2m
6650 200kg/2.75m
6650ID 170kg/2.75m
6650S 125kg/3.5m
6650S 200kg/3.0m
6650S 90kg/3.9m
6600 100kg/3.35m

IRB Variant
6660 130kg/3.1m
6660 205kg/1.9m
6700 145 kg/3.2m MH
6700 145 kg/3.2m SW
6700 150 kg/3.2m MH3
6700 150 kg/3.2m
6700 155 kg/3.05m MH
6700 155 kg/3.05m SW
6700 175 kg/3.05m MH3
6700 175 kg/3.05m
6700 200 kg/2.8m MH
6700 200 kg/2.8m SW
6700 205 kg/2.8m MH3
6700 205 kg/2.8m
6700 140 kg/2.85m MH
6700 140 kg/2.85m SW
6700 155 kg/2.85m MH3
6700 155 kg/2.85m
6700 220 kg/2.65m MH
6700 220 kg/2.65m SW
6700 235 kg/2.65m MH3
6700 235 kg/2.65m
6700 175 kg/2.6m MH
6700 175 kg/2.6m SW
6700 200 kg/2.6m MH3
6700 200 kg/2.6m
6700 220kg/3.0m MH
6700 220kg/3.0m SW
6700 245kg/3.0m MH3
6700 245kg/3.0m
6700 270kg/2.7m MH
6700 270kg/2.7m SW
6700 300kg/2.7m MH3
6700 300kg/2.7m
7600 150kg/3.5m
7600 325kg/3.1m
7600 340kg/2.8m
7600 400kg/2.55m
7600 500kg/2.3m
7600 500kg/2.55m
760
*8700 475kg/4.2m MH6
*8700 475kg/4.2m SW6
*8700 550kg/4.2m MH3
*8700 550kg/4.2m
*8700 630kg/3.5m MH6
*8700 630kg/3.5m SW6
*8700 800kg/3.5m MH3
*8700 800kg/3.5m
**940
*14000

\*\* requires the StandAlone Controller mediapool that is available for download from Add-Ins tab / RobotApps / RobotWare Add-Ins



#### Note

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

### Robot Libraries Paint

Variant
52 short vertical arm
52 std vertical arm
540-12 std arm
580-12 std arm
580-12 short arm
5300-12 left
5300-12 right
5320-1500
5320-2000
5350/01 Type Left
5350/01 Type Right
5350/02 Type Left Side Left
5350/02 Type Left Side Right
5350/02 Type Right Side Left
5350/02 Type Right Side Right
5400-12 std arm
5400-13 std arm
5400-14 std arm
5400-22 process arm
5400-23 process arm
5400-24 process arm
5400-12 std arm axis 2 +60 deg
5400-13 std arm axis 2 +60 deg
5400-14 std arm axis 2 +60 deg
5500 35A b_00 / b_80
5500 35B b_00 / b_80
5500 ProArm 35A b_00 / b_80
5500 ProArm 35B b_00 / b_80

### Track Libraries

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

Track family	Length
IRBT4003	1.7 m to 10.7 m
IRBT4004	1.9 m to 19.9 m
IRBT6003	1.7 m to 10.7 m
IRBT6004	1.7 m to 19.7 m
IRBT7003	1.7 m to 10.7 m
IRBT7004	1.7 m to 19.7 m
RTT_Bobin	1.7 m to 11.7 m
RTT_Marathon	1.7 m to 11.7 m
Paint Rails left and right versions	2 m to 20 m
IRB5350 Rail left and right versions	3 m to 10 m



---

## 2 What's new in RobotStudio 6.01

---

### Overview

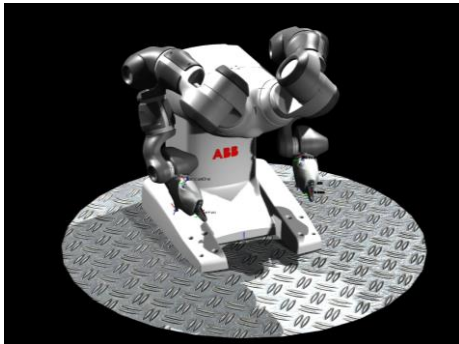
The new functionality of RobotStudio 6.01 is described in this section.

### 2.1 New robot models

---

#### IRB 14000

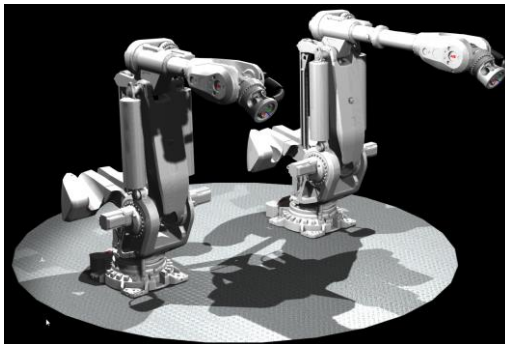
The new dual arm robot is available in RobotStudio. You can use it with the Smart Grippers that are available from the *'Import Library'* gallery.



---

#### IRBT 8700

The heavy duty robot IRB 8700 is now available in RobotStudio. It comes in two sizes of which the strongest can take up to 800 kg payload. The IRB 8700 is available with the LeanID wrist in addition to the regular wrist. You can get it pre-dressed for spot welding or material handling.



---

#### IRBT 4004 / 6004 / 7004

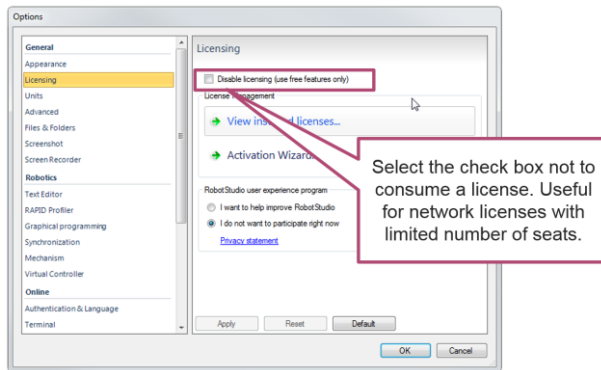
The IRBT x004 series of track motions has been available since long in RobotStudio. The new thing in 6.01 is that the mirrored and double carriage variants are also available. The double carriage variant is modeled as two individual models that needs to imported and configured separately.



## 2.2 General

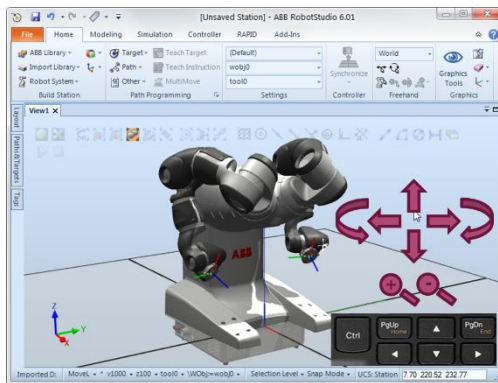
### Disable licensing

If you are using a network license, you can use RobotStudio in Basic mode without grabbing a license from the license server if you select the check box *'Disable licensing'* in the RobotStudio Options.



### Keyboard shortcuts for navigation in the 3D graphics view

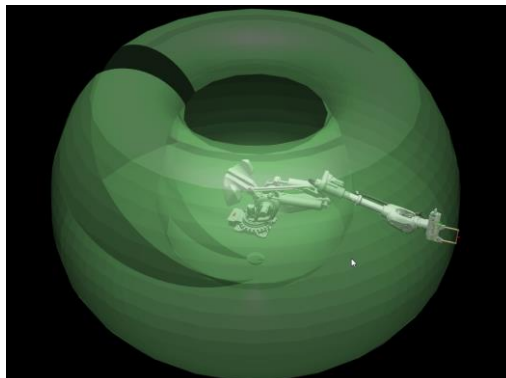
The arrow keys can be used to rotate the 3D view. If you press and hold the Ctrl button you can pan the view with the arrow keys. You can zoom by the pressing the PageUp and PageDown buttons. The navigation keys work also for station viewers as well as the *'Online Monitor'*.



## 2.3 Layout and Modeling

### 3D Work Envelope

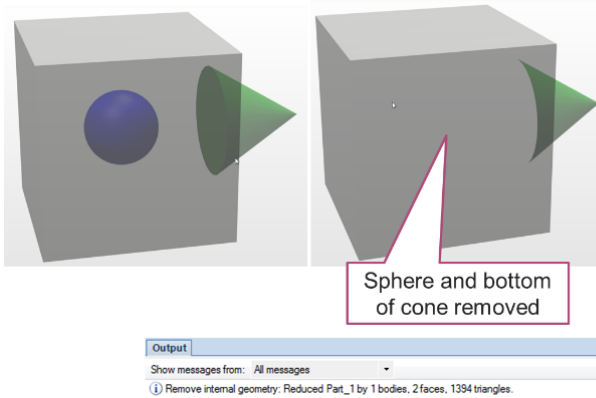
A 3D volume representing the work envelope of the arobot can be enabled by selecting the *'Work envelope'* option of the context menu of a robot. You can select choose between using the wrist center point or the active tool center point to define the work envelope.



## Remove internal geometry

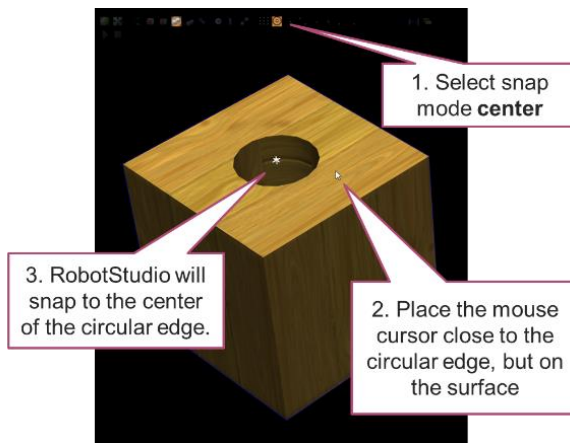
Hidden bodies, faces and triangles can be automatically removed by the function 'Remove internal geometry'. The function aims to simplify the process of removing excess detail of CAD parts.

1. Original part **with** internal geometry
2. Reduced part **without** internal geometry



## Snap to center of hole

If you click on a surface close to a circular edge with 'Snap Mode: Center' enabled, RobotStudio will snap to the center of the circular edge. This is useful if you want to pick the center point of a hole.

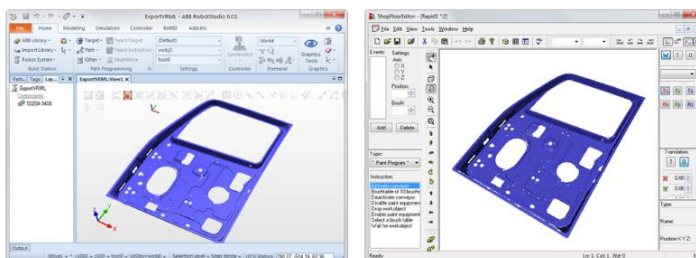


## VRML export

Parts and stations can be exported to the VRML2 format using the 'Export Geometry' function.

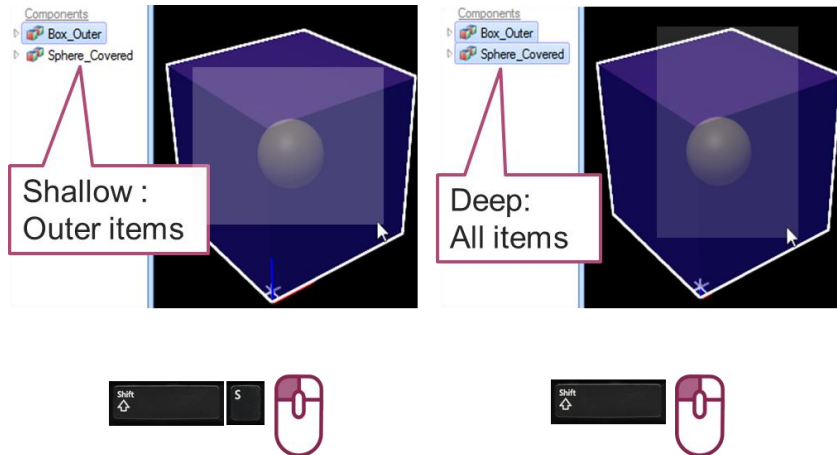
Source: RobotStudio

Target: ShopFloor Editor (for example)



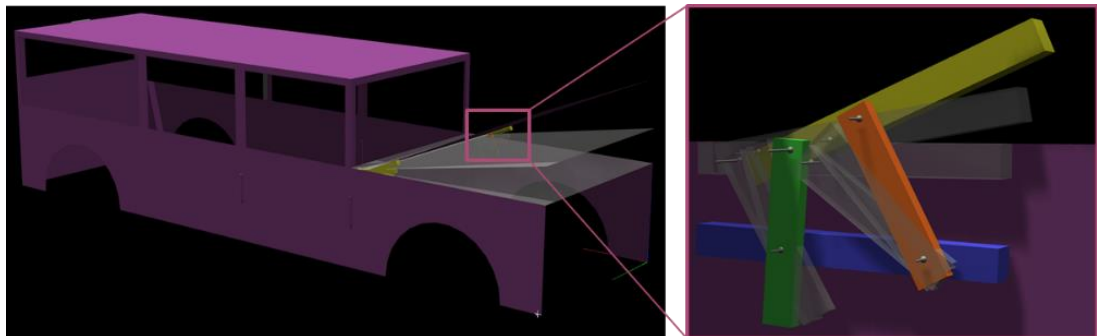
## Shallow rectangle selection

By pressing and holding the Shift keyboard button you can draw a selection rectangle with the mouse cursor in the 3D view. Starting with RobotStudio 6.01, you can optionally select only the currently visible objects using rectangle selection. This selection mode is called *'shallow rectangle selection'* and is enabled if you press and hold the keyboard buttons Shift and S and draw a rectangle in the 3D view using the mouse. The default selection mode is still the usual *'deep rectangle selection'* that selects everything covered by the selection rectangle regardless of its visibility.



## Four bar linkage

Four bar linkages are typically used for the hinges of motor hood. These can now be modeled in RobotStudio if you use an .rsxml file to describe your mechanism. The library can be built by importing the .rsxml file using the *'Import Library'* command.

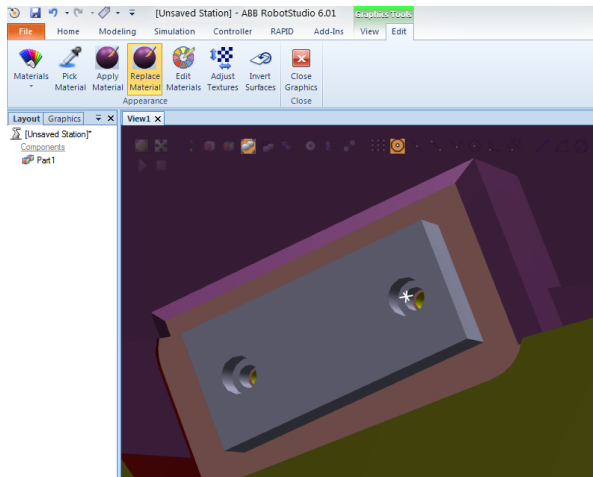


Sample .rsxml file:

```
<?xml version="1.0"?>
<Mechanism xmlns="urn:abb-robotics-robotstudio-graphiccomponent" lengthUnit="mm" angleUnit="deg" name="Test"
modelName="Test" type="Other">
  <Links baseLink="FourBarLink_Base">
    <Part name="FourBarLink_Base" source="FourBarLink_Base.sat" />
    <Part name="FourBarLink_Crank" source="FourBarLink_Crank.sat" />
    <Part name="FourBarLink_Lever" source="FourBarLink_Lever.sat" />
    <Part name="FourBarLink_Coupler" source="FourBarLink_Coupler.sat" />
  </Links>
  <Joints>
    <!-- This is the new tag />
    <FourBarJoint name="J1" axis="0, -1, 0" parent="FourBarLink_Base" child="FourBarLink_Coupler">
      <Crank Link="FourBarLink_Crank" point1="1354.00 , 0 , 602.99" point2="1396.73, -1, 683.64"/>
      <Lever Link="FourBarLink_Lever" point1="1215.17 , 0 , 600.23" point2="1323.31, -1, 682.53"/>
    </FourBarJoint>
  </Joints>
  <Limits>
    <Limit joint="J1" min="-90" max="90" />
  </Limits>
</Mechanism>
```

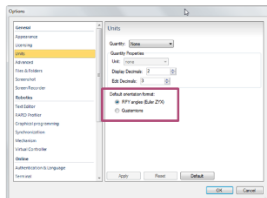
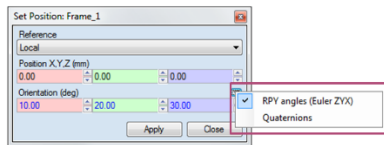
## Graphics Tools: Replace Material

If you have a part with several different materials, i.e. colors, and you want to replace one of them, then you can use the function 'Replace Material'. Select a material from the 'Materials' gallery and click on a surface of your part to replace its material.



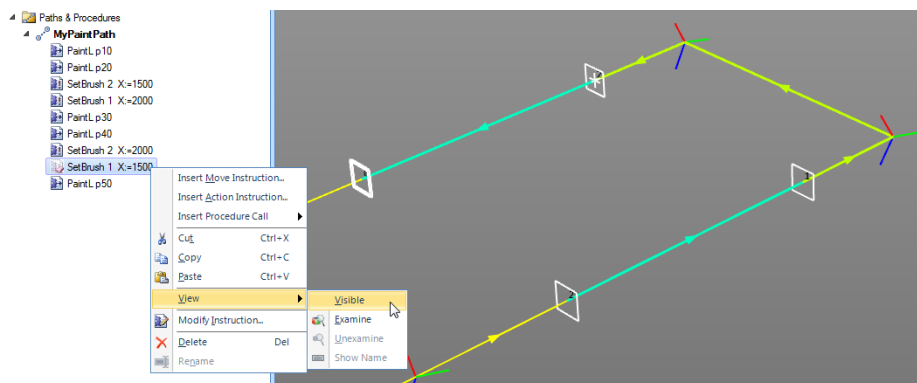
## Switch between Euler angles and Quaternions

The representation of orientations can be switched between angles and quaternions. Which representation to use by default is defined by the RobotStudio Options.



## Show and Hide SetBrush instructions

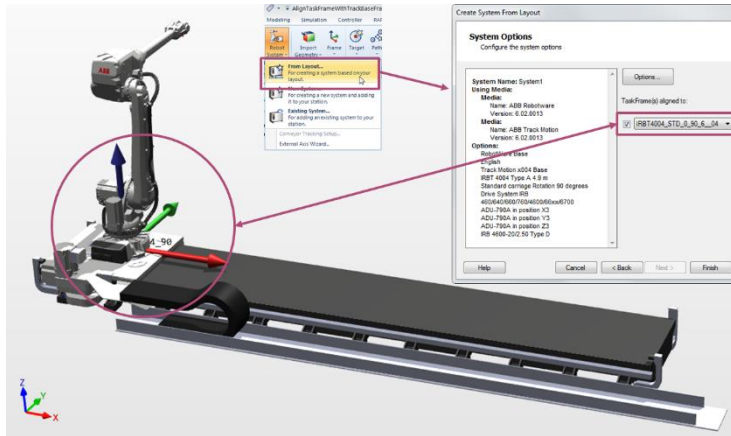
The visibility of *SetBrush* instructions can be changed through a context menu command.



## 2.4 Offline programming

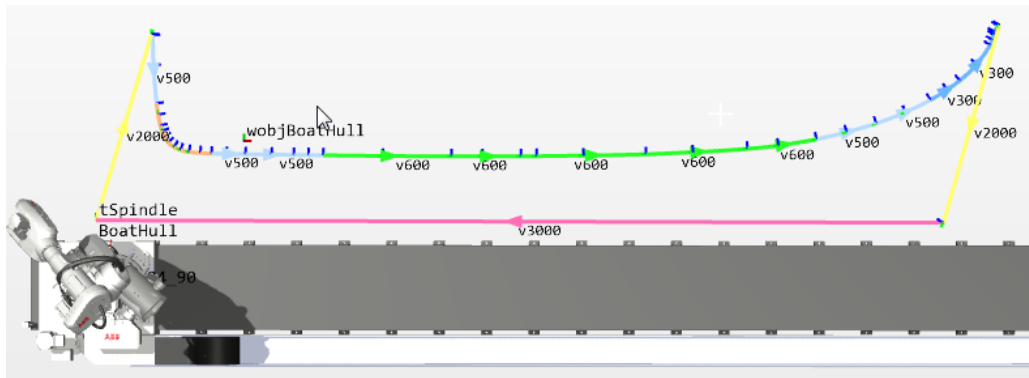
### System From Layout: Align task frame with track base frame

There is an option in the 'System From Layout' wizard to place the task frame by the robot base frame. In 6.01, the selection has been extended to also include the track base frame, if available.



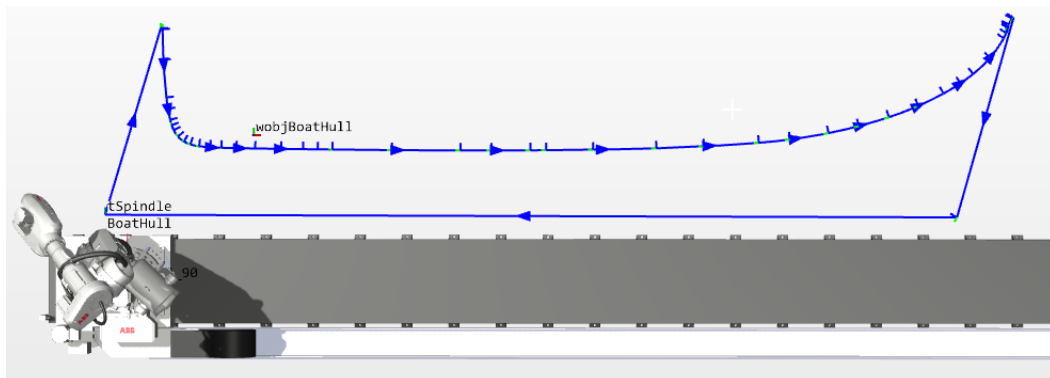
### Visualization of programmed speed

The programmed speed of a path can be visualized by the command 'Show speed' in the Path context menu.



### Set color of path

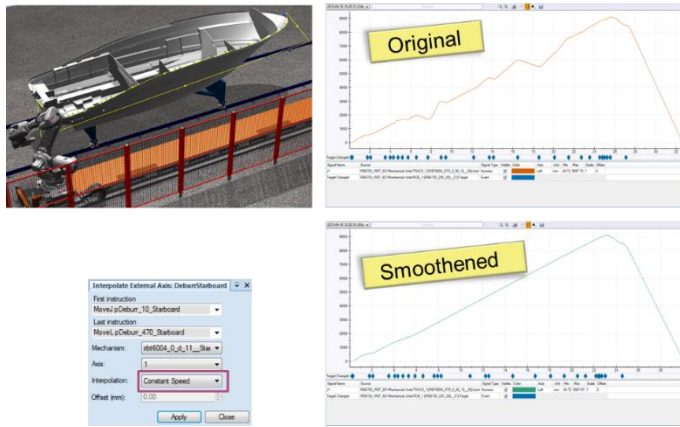
The color of all motion instructions of path can be set by the function 'Set Color'. Starting with 6.01, the function is also available on the Path level. The command will override any colors defined on the instructions.





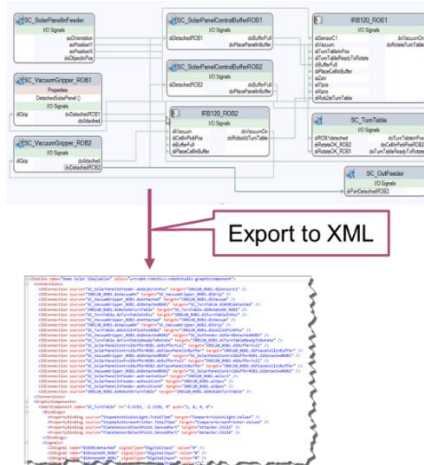
## External axis smoothing

The movement of a linear or rotating external axis can be smoothed by the new option 'Constant speed' that is available in the command 'Interpolate External Axis'.



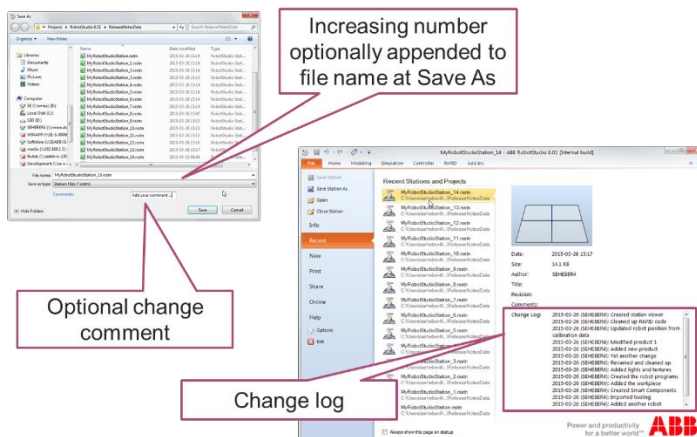
## Export station logic

The Station logic used to define the behavior of the surrounding equipment and its connections to the virtual controller can be exported to a file for later re-use in another station.



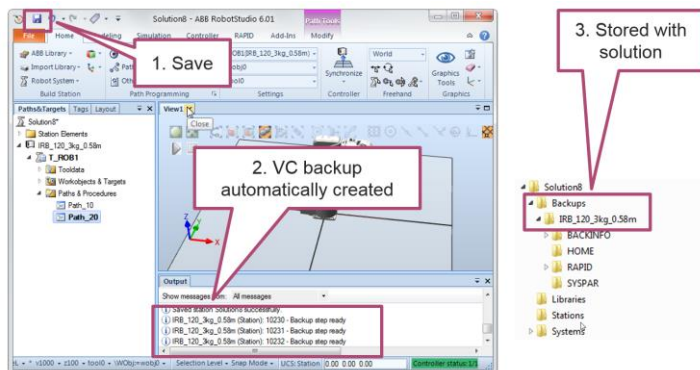
## Station change log and version numbering

Each time a station is saved using 'Save As', its filename is incremented and a change log comment optionally added. The change log will be displayed in the Info and Recent sections of the File tab.



## Automatic backup on save of RobotStudio Solution

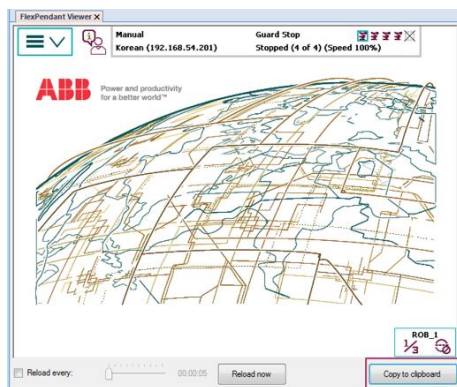
The controllers of your station will be automatically backup when saving the station if you are using a solution. The backups can be used to manually restore the controller data.



## 2.5 Online functions

### FlexPendant Viewer – Copy to Clipboard

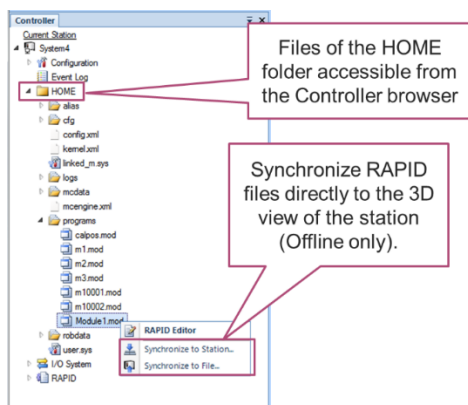
The new button 'Copy to clipboard' is useful e.g. when creating user documentation of FlexPendant user screens.



### HOME folder visible in Controller browser

The content of the HOME folder of the connected virtual or real controller is visible in the Controller browser. Both RAPID and configuration files can be edited as text files.

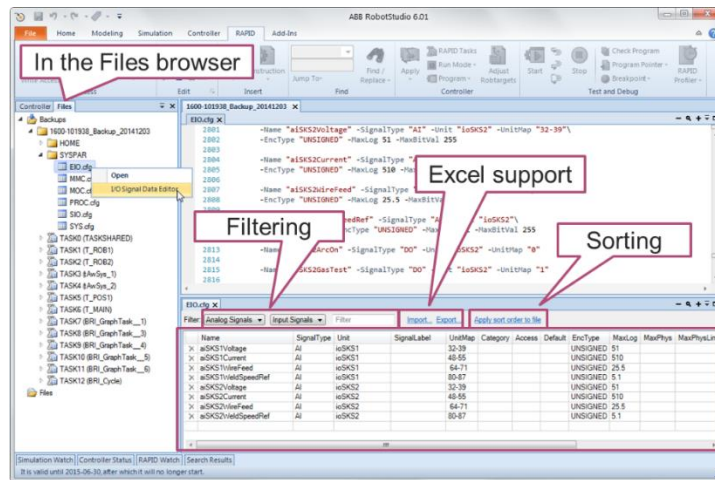
For virtual controllers, RAPID modules can be synchronized to the graphics environment of the station using the context menu of the RAPID module file. To synchronize any changes back to the RAPID module, use the command 'Synchronize to file'.





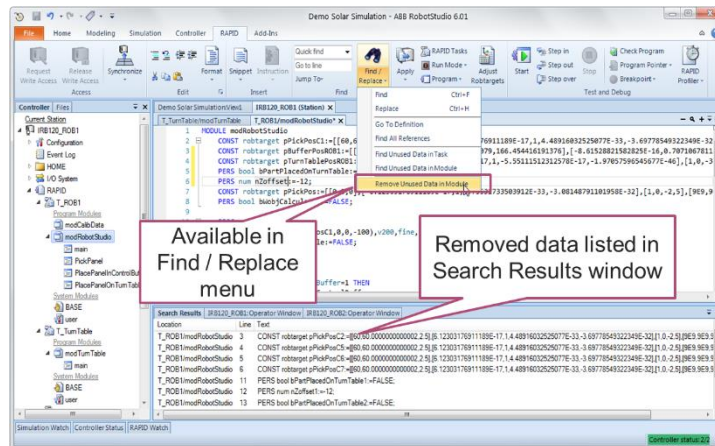
## I/O Signal Data Editor

The signal instances of a EIO.CFG file can be edited with the 'I/O Signal Data Editor' available in the Files browser of the RAPID tab.



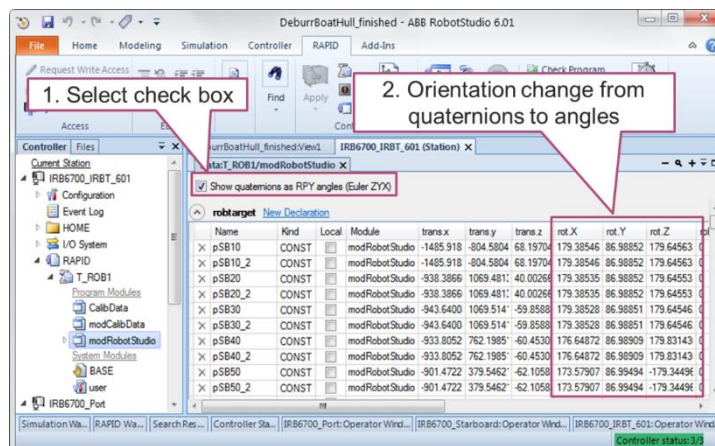
## Remove unused data in RAPID module

To clean up a module, you can use the command 'Remove unused data in Module'. The command will remove any RAPID data that is declared in the selected module, but neither used in the module nor in the current task.



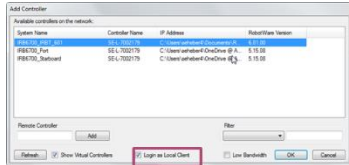
## Display Euler angles in RAPID Data Editor

By selecting the checkbox 'Show quaternions as RPY angles' in the RAPID Data Editor, the orientation of e.g. robtargets will be displayed in angles instead.

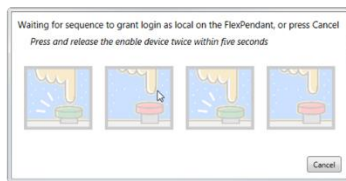


## Local client

RobotStudio can act as a local client thereby getting full access to the controller functionality without restrictions in manual mode. When you select the local client checkbox in the 'Add Controller' dialog or in the 'Login' dialog you can get local client privileges by pressing the enabling switch on the safety device twice. Examples of safety devices are the FlexPendant, the Jokab JSHD4, and the Keba T10.

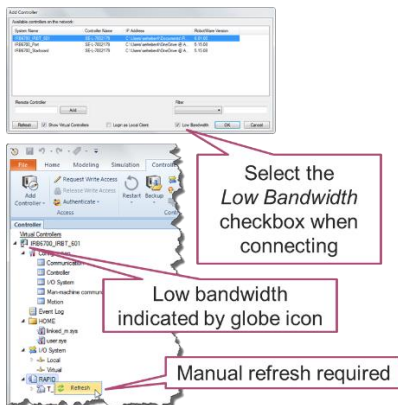


Select the Local Client checkbox when connecting



## Low bandwidth mode

The low bandwidth mode is useful when connecting RobotStudio to a controller over a network connection with limited bandwidth. It reduces controller communication to a fraction of the regular connection mode.



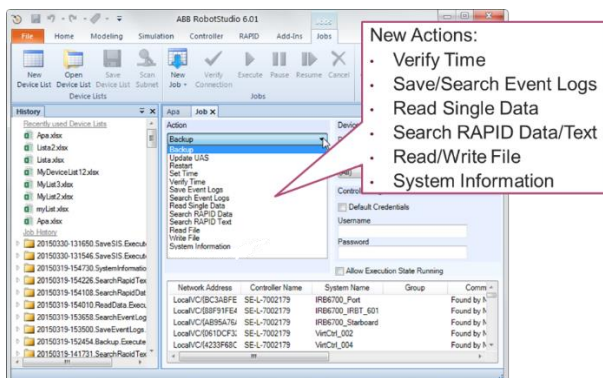
Select the Low Bandwidth checkbox when connecting

Low bandwidth indicated by globe icon

Manual refresh required

## New Job Actions

There are new job actions for verifying time, saving or searching event logs, reading cfg data, signal values and RAPID data or text. You can also read or write files and get the system information for all controllers. Note that the Restart action has been removed.

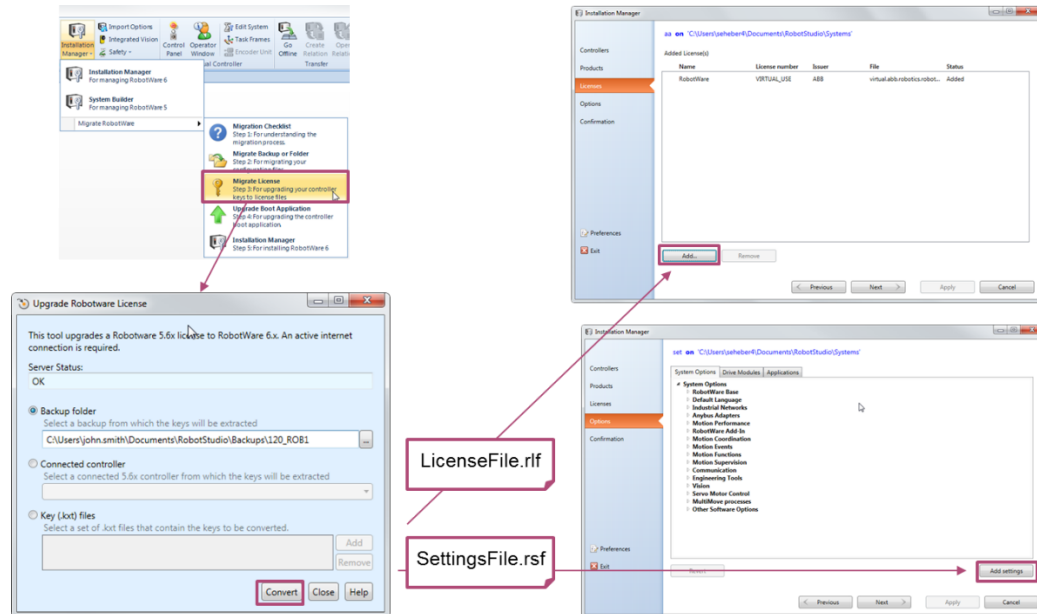


**New Actions:**

- Verify Time
- Save/Search Event Logs
- Read Single Data
- Search RAPID Data/Text
- Read/Write File
- System Information

## Settings file for automatic selection of RobotWare options

When migrating a RobotWare 5.60/5.61 key using a backup or a connected controller you will get a settings file (.rsf) in addition to the license file (.rlf). The settings file can be used by the Installation Manager to automatically select the options used by the original system.



## 3 Late Breaking Information

---

### Overview

This section contains information about late changes that were done after the RobotStudio 6.01 Operating Manual was finalized. The following new commands has been added but are not covered by the 6.01 Operating Manual

- Remove internal geometry
- VRML export
- Shallow rectangle selection
- Four bar linkage
- Graphics Tools: Replace Material
- Visualization of programmed speed
- External axis smoothing
- HOME folder visible in Controller browser
- Display of Euler angles in RAPID Data Editor
- New and removed Job Actions

See section 2 for more information.

## 4 Corrections

### 4.1 Corrections made in 6.01 SP1

#### Overview

This section describes the corrections made in 6.01 SP1.

#### Corrections

ID	Title
-	The base Smart Component 'LogicExpression' failed <i>A problem with the regular expression parser caused the smart component to fail.</i>
-	The Jobs action 'System Information' failed <i>The System Information action is new to 6.01 and unfortunately failed due to a late change.</i>
-	Unhandled exception when library mechanism was selected for external axis <i>The exception appeared, for example, when browsing to a mechanism library when configuring an external axis servo gun.</i>
-	Unhandled exception when copying target to a new workobjekt <i>When copying targets from one workobject to another by copy/paste or drag-and-drop an unhandled exception appeared.</i>

### 4.2 Corrections made in 6.01

#### Overview

This section describes the corrections made in 6.01.

#### Product Defect Documents (PDD)

ID	Title
36	RobotStudio cannot be closed while simulation is running
45	Geometry import fails for curves in COLLADA format (.dae)
1229	Not possible to save multiple RAPID modules in one operation
1231	File Transfer window does not allow drag-and-drop file within pane inside another folder
1267	UAS Users window sometime abruptly minimizes
1395	Virtual Controller connection may fail after crash of RobotStudio
1590	Cosmetic errors in the I/O Simulator user interface
1688	No switch to Controller tab when controller is connected from File tab
1690	Focus removed from I/O Simulator when 'Follow Program Pointer' is active
1757	The I/O simulator does not show signals that are configured with a mix of upper and lower case letters in the Configuration database.
1916	Add RobotStudio option for not grabbing a network license
1943	Back-up folder looks like robot system folder in RobotStudio
1955	UAS: Renamed Users group is not removed from Users list
1982	RobotStudio does not open Controller tab when a controller is added from File tab
2067	Cannot make bodies permanently invisible, they become visible when re-loading station
2087	Incorrect formatting of RAPID program with ERROR statement
2104	Columns for Module in dialog for 'Synchronize to RAPID' are too narrow
2136	Error in page numbers when printing RAPID module

2434	'AutoConfiguration' fails for circular points when using stationary tool and moving workobject
2557	Drag-and-drop errors in 'File Transfer' tool
2652	Add option to show 'All Tags' in the 'Show/Hide' menu
3109	System From Layout: The pedestal weight is automatically added to the configuration parameters for IRBT x004
3173	The instance editor does now allow to change characters of the signal definition from upper case to lower case
3190	Crash when importing a STEP file created with SolidWorks
3344	Library for IRBT 4004 type A not correct – hole pattern missing on carriage
3368	'System from Layout' must be blocked for IRB on RTT with IRBP K (not enough drives)
3406	Changing language causes .rspag or .rsstn file to be re-opened if RobotStudio was started by double-clicking file in Windows Explorer.
3875	Allow remote controller connection
3904	French localization issues
4115	Losing view center when rotating the view
4156	Lack of error handling in Control Panel
4173	The function 'Migrate Backup or Folder' is greyed out
4236	Automatic transparency not documented in the Operating Manual
4304	Copy / Paste of move instructions reverses order if pasted on other move instruction
4358	Visual SafeMove fails to automatically generate zone from simulation
4467	Memory issue when restoring backup on virtual controller
4538	Direction control should not response to point picking
4569	Saving a station viewer may cause libraries to be renamed and relocated
4571	Poor performance with 'System from Layout'
4572	Error message for 'Upgrade Boot Application' clarified if controller already upgraded
4598	Library for IRBT 4004 type A not correct – hole pattern on carriage incorrect
4602	RobotStudio fails when connected through Remote Access in Remote Service
4616	Frequent RobotStudio crashes during Smart Component simulation
4628	Installation issues causes CAD conversion to fail
4633	RobotWare 6 appears as two different versions in Add-Ins browser.
4634	RobotStudio Product Specification does not contain the option numbers
4657	Conveyor tracking: Start window width cannot be set to non-zero for paint systems
4673	CAD import fails due to faulty installation
4697	Visual SafeMove incorrectly warns about difference between safety and controller configuration
4764	Not possible to delete station tasks
4732	Simulation hangs every second time
4761	'Import Geometry' fails due to problems with installation
4777	Slow response for 'View Robot at Target'
7514	Unit mapping missing in the 'I/O System' viewer
8743	The function 'Show Work Envelope' ignores the x values of tooldata
9844	Hint about possibly empty path added to function 'Create Target on Edge'
10725	Cannot select range of instructions in 'Interpolate External Axis'

## 5 Known Limitations

---

### Overview

This section describes known limitations in RobotStudio.

### 5.1 General

---

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

RobotStudio is generally **not forwards compatible**, i.e. it is not possible to load stations or libraries created in RobotStudio 6.01 into an earlier version of RobotStudio such as e.g. RobotStudio 5.15.02, 5.61.02, 6.0, 6.00.01 or earlier. However, RobotStudio is **backwards compatible**, which means stations and libraries created in versions 5.15.02, 5.61.02, 6.0, 6.00.01 or earlier can be opened in RobotStudio 6.01.

### 5.2 Online

---

#### Visual SafeMove windows can be re-opened from the Quick Access Toolbar menu

Any windows that are closed can be re-opened using the Quick Access Toolbar menu, as the command Default Layout does not recover these windows.

#### Individual RAPID tasks cannot be stopped for RobotWare 5.60 and later

When running multitasking systems, it is not possible to start and stop individual tasks with the dropdown menu of the task node in the Controller browser. This is due a restriction introduced with RobotWare 5.60 and later.

#### Signal Analyzer Online not available for RobotWare 5.60, RobotWare 5.15.02 and earlier

The feature Signal Analyzer Online is not available for controllers running RobotWare 5.60, RobotWare 5.15.02 and earlier. The reason is a vulnerability in Robotware that may cause interruptions in the robot operation.

Signal Analyzer Online is supported by Robotware 5.15.03 and later, and RobotWare 5.61 and later, where the problem has been corrected.

It is not recommended to use Signal Analyzer Online of RobotStudio 5.15.01 or 5.15.02 with RobotWare versions prior to 5.15.03 or 5.61.

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

Only TCP robots and track mounted robots will be visualized in the Online Monitor, no other external axes or positioners.

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

#### 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.

### 5.2.1 Online - Paint

---

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

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

**Workaround:** Create the backup of the PIB board with the FlexPaint Pendant using an USB-stick.

---

### **Go Offline does not work for Paint systems**

The Go offline function will not create a working Virtual controller system for Paint system unless the Paint package I/O option is set to Simulated.

## **5.2.2 Online – Integrated Vision**

---

### **Information – Integrated Vision only works on 32-bit installations**

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

---

### **Information – Camera firmware version and update**

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

There are two important things to know before upgrading a sensor

- The user must make sure to first backup the files on the camera. This can be done using the Rapid snippets for camera backup/restore, or the FlexPendant Explorer.
- The latest available firmware version may vary across sensor types. However, when the firmware update utility presents the latest available version it shows the firmware with the highest version number which may not apply to the sensor to be updated. However, the appropriate firmware will be applied.

---

### **Information – The spreadsheet view**

The spreadsheet view is not enabled when editing in the in the following modes “Add part location tool”, “Add part inspection tool”. Before entering the spreadsheet mode click for example “Setup Image” or Output to Rapid.

---

### **Information – Calibration board without fiducial**

When using the calibration boards, checkerboard or board with dots, the user must select the preferred origin by clicking and accepting (press enter) three points on the board. Only after these three points have been selected is it possible to click “calibrate” to execute the calibration.

---

### **Information - Use default camera settings**

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

Telnet port: 23

User: “admin”

Password: “”

---

### **Information – User Credentials**

It is now possible to create user profiles with different access levels on the camera. For detailed information about this, please refer to the Integrated Vision User Manual.



**Remaining error – Save image on camera**

It is not possible to save an image on the camera using “Save Image”. This is by design, but the dialog still allows the user to try to do this. The result is that the image is not saved and no error message is given.

**Remaining error - Connect button greyed out for no reason**

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

**Workaround:** *Restart the Integrated Vision Add-In.*

**Remaining error – VC started from Controller->Add controller does not detect cameras**

A VC that is started from Controller->Add controller does not detect cameras on the network, even if the VC\_network\_definition.xml is correctly configured and the firewall is turned off. The reason is that the controller is not able to detect new cameras on the network when it is in “Motors On” state. When the VC is started stand-alone in RobotStudio it is automatically set to “Motors On” when started.

**Workaround:** *To allow it to discover cameras, turn the control panel key to manual mode or launch the VC as part of a station.*

**User tip - Removing cameras from configuration**

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

**User tip – Viewing all cameras present on the network**

Connect->Add Sensor is normally used for setting the IP addresses of sensors that are not currently on the correct subnet (192.168.125.X). Since the dialog shows all cameras “seen” by the PC, this dialog is useful when error tracing camera network problems.

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

**User tip – Warm start the controller after changing network settings**

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

## 5.3 Offline

### 5.3.1 General

**\*The Work Envelope function does not support IRB 14000**

The function is disabled for the IRB 14000 and cannot be activated.

**The 2D work envelope fails for certain robot models**

As a result, the generated work envelop may appear distorted.

**Update of current selection in the 3D graphics window may be delayed**

A problem related to the graphics driver has been observed on certain PCs. The problem is that the update of the current selection in the 3D graphics is delayed until the next redraw.

**Workaround:** Add or uncomment the following line in the file RobotStudio.exe.config

```
<add key="DoublePresentWorkaround" value="true" />
```

---

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

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

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

---

### Updates of instruction template and code snippets

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

...\My Documents\RobotStudio\Instruction Templates

...\My Documents\RobotStudio\Code snippets

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

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

and

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

to the data folder.

---

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

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

---

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

The VC will hang when started with a system containing the RobotWare option *RRI* (Robot Reference Interface) if the GSI folder structure is missing.

**Workaround:** create GSI Folder before starting the VC inside the HOME directory of the system. See the Application Manual for Robot Reference interface for more information.

---

### System in Guard Stop state in Automatic mode after run-time error

Certain run-time errors may cause the controller system to enter *Guard Stop* state in *Automatic* mode. This is the same behavior as in a physical robot controller system. This typically happens when a run-time error related to Conveyor Tracking occurs. A simulation cannot be started when the controller is in this state.

**Workaround:** To reset the controller state, open the Control Panel window and first switch to *Manual* mode, and then back to *Automatic* mode.

---

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

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

---

### Path handling of instructions with multiple joint targets

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

---

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

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

### 5.3.2 Station Viewer

---

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

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

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

### 5.3.3 MultiMove

---

#### MultiMove error: **'Object reference not set to an instance of an object'**

When the Test Play button is pressed in the MultiMove tool, the following error message may be displayed: *'Object reference not set to an instance of an object'*, but the robot moves and the Status *'Calculation OK'* is displayed. In addition, when *'Create Paths'* is pressed the following message is displayed: *'Can't create paths : Value cannot be null'*, and no paths are created. In the *'Create Paths Settings'*, is the WP TCP drop down empty.

**Reason:** *wobj is not set for the current task*

### 5.3.4 External Axis

---

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

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

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

### 5.3.5 Network Drives and UNC Paths

---

#### RobotStudio on computers with roaming user profiles

RobotStudio may fail on PC configurations with roaming user profiles, i.e. when the users' documents folder resides on a server and not on the local disk.

**Workaround:** Redefine the *'User Project Folder'* to a folder on the local disk (File → Options → General → Files&Folders → User Project Folder).

---

#### Virtual Controller does not support UNC paths

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

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

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

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

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

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

1. Open the file Virtual FlexPendant.exe.config located in

C:\Program Files (x86)\ABB Industrial IT\Robotics IT\RobotStudio 5.61\Bin

2. Add the following lines

```
<?xml version="1.0"?>
<configuration>
  <startup useLegacyV2RuntimeActivationPolicy="true">
    <supportedRuntime version="v4.0" sku=".NETFramework,Version=v4.0"/></startup>
  <runtime>
    <loadFromRemoteSources enabled="true"/>
  </runtime>
</configuration>
```

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

For further information, see

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



#### Note

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

### 5.3.6 RAPID

#### Robtarget names must be unique in RAPID even if they are LOCAL

RobotStudio requires that robtargt names are unique for the RAPID synchronization to work properly, i.e. you cannot have a global robtargt named pMyTarget1 in module A and a local robtargt with the same name in Module B.

#### Global robtargts cannot be made local through Synchronization to VC

Global robtargts cannot be changed to local through *Synchronization to VC*, the option is disabled (PDD 3140).

**Workaround:** Change the robtargts to module local in the RAPID Editor and Synchronize to station.

#### Error Message: Sync. to Station completed with errors

*Error Message: Sync to Station completed with errors: New data <name> <type> has same name as existing object in same block <routine>.*

When this error message appears, there is a storage type 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.

### 5.3.7 Paint

---

#### Lack of Virtual Controller support for the Paint systems

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

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

---

#### 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

### 5.3.8 Graphics and Geometry

---

#### Enforce selected graphics device for PCs with multiple graphics cards

For best performance when running RobotStudio on a PC with multiple graphics cards, RobotStudio can be configured to use a specified device. By this option you can ensure maximum performance. This is useful for e.g. Lenovo W540 that has both an integrated Intel graphics device and a discrete NVIDIA card.

Open the file `RobotStudio.exe.config` that is located in the folders

`C:\Program Files (x86)\ABB Industrial IT\Robotics IT\RobotStudio 6.0\Bin64`  
and

`C:\Program Files (x86)\ABB Industrial IT\Robotics IT\RobotStudio 6.0\Bin`  
and uncomment the line

```
<add key="GraphicsDeviceType" value="Discrete"/>
```

Valid values are 'Discrete', 'Integrated' and 'Warp' (software renderer).

Note that there are two different files, one for the 32-bit version, and another for the 64-bit version.

---

#### Problems when undoing Boolean operations on Geometry

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

---

#### Out of memory

The application might fail when out of memory due to the import of very large ACIS files or load of very large stations.

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

## 5.4 ScreenMaker Limitations

---

### **\*A ScreenMaker application may fail to build if the DPI setting is not set to 100%**

Certain UI controls in ScreenMaker may fail to build correctly if the DPI setting is not set to 'Smaller – 100%'.

**Symptom:** The error message caused by this problem will read '*System.Drawing.Font does not contain a constructor that takes 2 arguments.*'

**Workaround:** Set DPI to 100% on your PC.

---

### **File changes to FlexPendant applications does not load the changes until a FlexPendant reset**

With RobotWare 6.0x the controller's restart will no longer reset the FlexPendant memory. This was part of an effort to improve the restart time of the controller.

This means that after placing a new FlexPendant application file(s) on the FlexPendant unit, you need to manually reset the FlexPendant for it to reload its assets.

To manually reset the FlexPendant you need to use the reset button on the FlexPendant's backside. (See Operating Manual – IRC5 with FlexPendant, 3HAC16590)

---

### **Dynamic update of Rapid Data**

The switch from Manual Mode to Auto Mode causes the RAPID boolean data bound to the enabled property of control change to value TRUE. This behaviour is noticed when the mode is changed from a different screen and not on the screen where the control is bound to RAPID boolean data. An additional side effect is that the enabled property of RunRoutine button has been disabled as similar behavior was seen.

---

### **Running Routine with Movement**

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

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

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

---

### **PictureBox control as a Widget**

If a Picture Box control is created as a widget from a Windows 8 operating system, the control is not shown on the FlexPendant. The behavior is fine with any other operating system like Windows 7.

---

## 6 RobotWare Compatibility

### 6.1 General

---

#### Supported RobotWare versions

RobotStudio 6.00.01 is distributed with RobotWare 6.00.01 and works with RobotWare 5.07 and later. Please check details below.

### 6.2 RobotWare 5.05 and 5.06 Compatibility

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

### 6.3 RobotWare 5.07 Compatibility

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

---

#### General

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

---

#### Offline

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

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



#### Note

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

The virtual controller does not support RobotWare 5.07.08 and RobotWare 5.07.07.

---

#### Online

*FlexPendant Viewer* does not work RobotWare 5.07

### 6.4 RobotWare 5.08 Compatibility

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

---

#### Offline

RobotWare 5.08 is not supported.

**Workaround:** Use RobotWare 5.08.01 or later.

### 6.5 RobotWare 5.10 Compatibility

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

---

#### Offline

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

### 6.6 RobotWare 5.11 Compatibility

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

## Offline

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

## 6.7 RobotWare 5.12 Compatibility

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

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

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

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

#### **EIO.CFG:**

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

EIO_CROSS:
    -Res "AlHVEEn" -Act1 "HVEEnabled"
```

#### **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
```

## 6.8 RobotWare 5.13 Compatibility

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

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

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

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



## 6.9 RobotWare 5.15 Compatibility

---

### Signal Analyzer Online

The feature Signal Analyzer Online requires RobotWare 5.15.03 or later.

## 6.10 RobotWare 6 Compatibility

---

### Overview

RobotWare 6.00 and 6.00.01 systems cannot be directly upgraded to RobotWare 6.01. To upgrade a system, you need to create backup and migrate it using the tool *'Migrate Backup or Folder'*, then recreate the system and finally, restore the backup.

For this reason, the functions *'Unpack&Work'*, *'Go Offline'* and *'New Solution with Station and Robot Controller – From backup'* are blocked to prevent upgrade from RobotWare 6.00 or 6.00.01 to RobotWare 6.01.

RobotStudio, however, is compatible with both RobotWare 6.00 / 6.00.01 and 6.01.

## 6.11 General Compatibility Limitations

---

### RAPID Profiler

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

### Safety Configuration

Safety configuration of a track motion IRC5 system equipped with a safety controller of type EPS or SafeMove can be done without the need to read track motion parameters manually when using RobotWare 5.11.01 or later. Encrypted parameters needed by the safety controller will be automatically read by EPS Wizard and SafeMove Configurator, respectively.

### Signal Analyzer Online

Signal Analyzer Online requires RobotWare 5.15.01 or later.

### Signal Analyzer.

The error message *Failed to subscribe on signal* may sometimes appear during signal recording for RobotWare 5.15 or earlier.

**Workaround:** *Restart the VC or upgrade to RobotWare 5.15.01 or later.*

### Configurations

The feature **Configurations** for selecting the robot arm configuration (confdata) may fail, or not present all solutions, in some specific circumstances even when the target is reachable if RobotWare 5.14 or earlier is used.

**Workaround:** *Upgrade to RW5.14.01 or later*

## 6.12 ScreenMaker Compatibility

---

### RobotWare

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

- ActionTrigger will work only on RobotWare 5.12.02 or later.

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

---

**FlexPendant SDK**

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

**6.13 Support for future RobotWare versions**

RobotStudio 6.01 supports all future minor revisions of RobotWare 6.01, but no future major releases. For example, RobotStudio 6.01 will support RobotWare 6.01.01 (if, and when available) but not RobotWare 6.02, or 6.03.