Release Notes

RobotStudio

6.02.01 SP1

Revision: -

Table of Contents

1 Release Information

1.1 General

Release Name

The release name is RobotStudio 6.02.01 SP1 and the build number is 6.02.6806.1029. There are no new features compared to 6.02.01 but one correction, see section *7.1 Corrections made in 6.02.01 SP1.*

Release Date

The release date is February 5th, 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*	64-bit edition
Microsoft Windows 10*	64-bit edition

* YuMi cameras cannot be configured using Integrated Vision on Windows 8 and 10.

> ℹ️ **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 http://www.3dconnexion.com.

1.3 Simulation Models

Robot Libraries

IRB Variant	IRB Variant	IRB Variant
120 3kg/0.58m	4400L 10kg	6700 150 kg/3.2m
120T 3kg/0.58m	4400L 30kg	6700 155 kg/3.05m MH
1200 5kg/0.9m BTM	4400S 30kg	6700 155 kg/3.05m SW
1200 5kg/0.9m STD	4450S 30kg	6700 175 kg/3.05m MH3
1200 7kg/0.7m BTM	4600 20kg/2.5m	6700 175 kg/3.05m
1200 7kg/0.7m STD	4600 20kg/2.5m Type C	6700 200 kg/2.8m MH
140 5kg/0.8m Type A/B	4600 45kg/2.05m Type C	6700 200 kg/2.8m SW
140 5kg/0.8m Type C	4600 60kg/2.05m	6700 205 kg/2.8m MH3
140 6kg/0.8m Type C	4600 60kg/2.05m Type C	6700 205 kg/2.8m
140T 5kg/0.8m Type C	460	6700 140 kg/2.85m MH
1400 Type A/B	4600 40kg/2.55m	6700 140 kg/2.85m SW
1400H Type A/B	4600 40kg/2.55m Type C	6700 155 kg/2.85m MH3
1410	4600 45kg/2.05m	6700 155 kg/2.85m
1520ID	6400R 200kg/2.5m	6700 220 kg/2.65m MH
1600 5kg/1.2m	6400R 200kg/2.8m	6700 220 kg/2.65m SW
1600 5kg/1.2m Type A	6400R 120kg/2.5m	6700 235 kg/2.65m MH3
1600 5kg/1.45m	6400R 150kg/2.8m	6700 235 kg/2.65m
1600 5kg/1.45m Type A	6400R 150kg/2.8m	6700 175 kg/2.6m MH
1600 6kg/1.2m	6400R 100kg/3.0m	6700 175 kg/2.6m SW
1600 6kg/1.45m	640	6700 200 kg/2.6m MH3
1600 7kg/1.2m	660 180kg/3.15m	6700 200 kg/2.6m
1600 7kg/1.2m Type A	660 250kg/3.15m	6700 220kg/3.0m MH
1600 7kg/1.45m	6600 175kg/2.55m	6700 220kg/3.0m SW
1600 7kg/1.45m Type A	6600 175kg/2.80m	6700 245kg/3.0m MH3
1600 8kg/1.2m	6600 225kg/2.55m	6700 245kg/3.0m
1600 8kg/1.45m	6600ID 185kg/2.55m	6700 270kg/2.7m MH
1600 10kg/1.2m	6620 150kg/2.2m	6700 270kg/2.7m SW
1600 10kg/1.45m	6620LX-150/1.9m	6700 300kg/2.7m MH3
1600ID 4kg/1.5m	6640 130kg/3.2m	6700 300kg/2.7m
2400 10kg	6640 180kg/2.55m	7600 150kg/3.5m
2400 16kg	6640 185kg/2.8m	7600 325kg/3.1m
2400L	6640 205kg/2.75m	7600 340kg/2.8m
2600 12kg/1.65m	6640 235kg/2.55m	7600 400kg/2.55m
2600 20kg/1.65m	6640ID 170kg/2.75m	7600 500kg/2.55m
2600 12kg/1.85m	6640ID 200kg/2.55m	7600 500kg/2.3m
2600ID 8kg/2.0m	6640 150kg/2.55m DP6	7600 150kg/3.5m MH3
2600ID 15kg/1.85m	6640 165kg/2.8m DP6	7600 325kg/3.1m MH3
260	6640 185kg/2.75m DP6	7600 340kg/2.8m MH3
340	6640 200kg/2.55m DP6	7600 400kg/2.55m MH3
360 1kg/1130 Std No axis 4	6650 125kg/3.2m	7600 500kg/2.55m MH3
360 1kg/1130 Wash-down No axis 4	6650 200kg/2.75m	7600 390kg/3.1m MH6
360 1kg/1130 Standard	6650ID 170kg/2.75m	7600 320kg/2.8m MH6
360 1kg/1130 Wash-down	6650S 125kg/3.5m	7600 390kg/2.55m MH6
360 1kg/1130 Stainless	6650S 200kg/3.0m	7600 390kg/3.1m SW6
360 1kg/800 Std No axis 4	6650S 90kg/3.9m	7600 320kg/2.8m SW6
360 1kg/800 Wash-down No axis 4	6650S 100kg/3.5m MH6	7600 390kg/2.55m SW6
360 1kg/800 Std	6650S 190kg/3.0m MH6	760
360 1kg/800Wash-down	6650S 100kg/3.5m SW6	8700 475kg/4.2m MH6
360 3kg/1130 Std No axis 4	6650S 190kg/3.0m SW6	8700 475kg/4.2m SW6
360 3kg/1130 Wash-down No axis 4	6650S 125kg/3.5m MH3	8700 550kg/4.2m MH3
360 3kg/1130 Standard	6650S 200kg/3.0m MH3	8700 550kg/4.2m
360 3kg/1130 Wash-down	6650S 90kg/3.9m MH3	8700 630kg/3.5m MH6
360 3kg/1130 Stainless	6600 100kg/3.35m	8700 630kg/3.5m SW6
360 1kg/1600 Standard	6660 130kg/3.1m	8700 800kg/3.5m MH3
360 6kg/1600 Standard	6660 205kg/1.9m	8700 800kg/3.5m
360 8kg/1130 Standard	6700 145 kg/3.2m MH	*910SC 3kg/0.55m
4400 45kg	6700 145 kg/3.2m SW	**940
4400 60kg	6700 150 kg/3.2m MH3	14000

* new in RobotStudio 6.02.01
** requires the StandAlone Controller mediapool that is available for download from Add-Ins tab / RobotApps / RobotWare Add-Ins

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ℹ️ **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
IRBT2005	2 m to 21 m
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 6.02.01

Overview

RobotStudio 6.02.01 contains several new features.

2.1 New robot model: IRB 910SC

Overview

RobotStudio 6.02.01 includes the new SCARA robot IRB 910SC with 0.55 m reach and 3 kg payload.
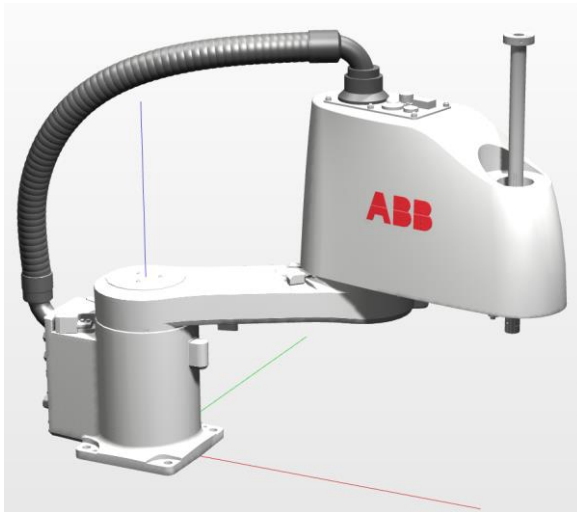
2.2 Elevated Rail for IRB5500

Overview

IRB5500 can be mounted on the so-called Elevated Rail that is integrated with RobotStudio 6.02.01
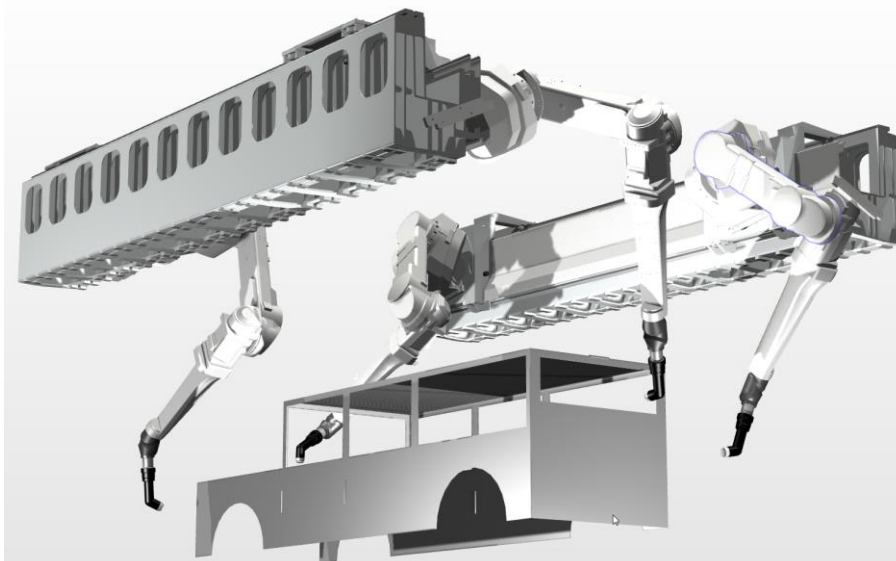
2.3 Stop background tasks

Overview

Background tasks can be stopped by using the Selected Tasks-list that is new in RobotStudio 6.02.01. RobotWare 6.02 or later is required to stop background tasks from RobotStudio.
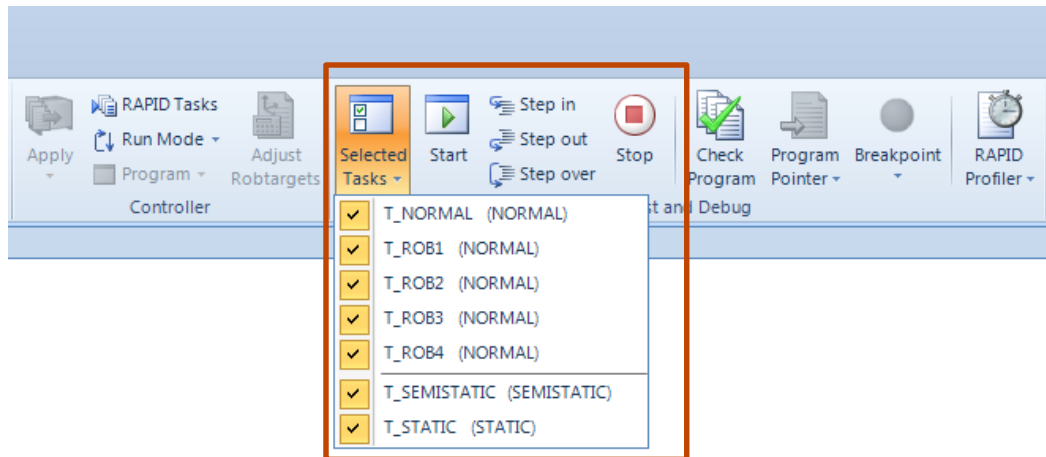
3 What's new in RobotStudio 6.02.00.02

Overview

RobotStudio 6.02.00.02 contains RobotWare version 6.02.00.02. No other changes has been made.

4 What's new in RobotStudio 6.02.00.01

Overview

RobotStudio 6.02.00.01 contains RobotWare version 6.02.00.01. No other changes has been made.

5 What's new in RobotStudio 6.02

Overview

This section describes the new features of RobotStudio 6.02.

5.1 General

Paint robots supported by RobotWare 6.02

Paint robots are supported from RobotWare 6.02 onwards.

5.2 New robots and equipment models

IRB 6650S LeanID & IRB 7600 LeanID

The LeanID family of robots have been extended to IRB 6650 S and IRB 7600
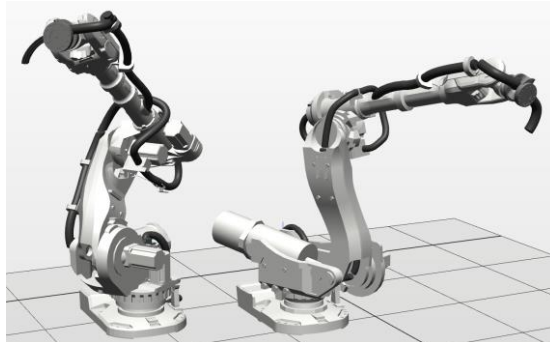
There are versions for material handling (MH6) and spot welding (SW6). There is also a variant with the regular, non-LeanID wrist, but dressed with a cable package for material handling (MH3).

IRB 6700 – longer motor housing

The length of the motor housing has been increased by up to 20 mm. All RobotStudio models for the IRB 6700 have been replaced. Users that have an IRB 6700 with the old motor housing gets an extra safety margin by using the new models compared to the real robot.
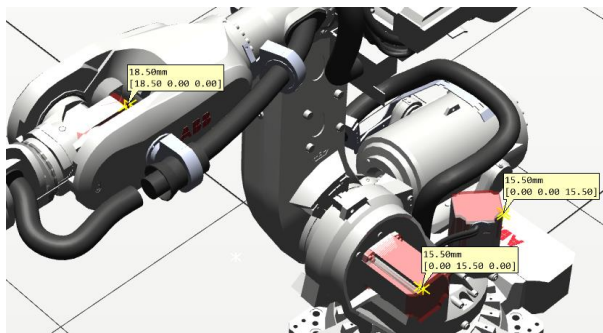
IRBT 2005 – Medium-sized track motion

There is a new medium-sized family of track motions denoted IRBT 2005. It supports IRB 2xxx and IRB 4600. It comes in several variants, for general use, for arc welding and for material handling. It is available as standard, mirrored, and with double carriage.
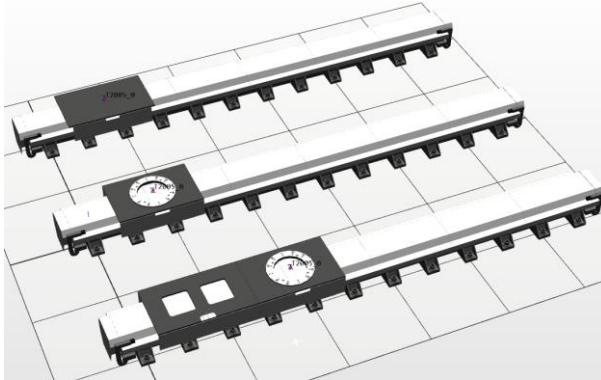
5.3 Geometry and modeling functions

New CAD converters

A number of CAD converters of formats not previously supported in RobotStudio are available from RobotStudio 6.02 onwards. These are

- DXF/DWG

- JT

- NX

- Parasolid

- Solid Edge

- SolidWorks

To order, contact your local ABB Robotics sales representative.

CATIA V5 Converter support for CGR and 3DXML

The CGR and 3DXML formats are now supported for users with the CATIA V5 CAD Converter option.

Assembly structure preserved

Any assembly structure of an imported CAD object will be preserved in RobotStudio.

You can collapse an assembly into a Part using the new command 'Merge to Part'.

Export geometry – CATIA V5 added list of target formats

If you have the CATIA V5 CAD converter, you can now export files in the CATIA V5 format.
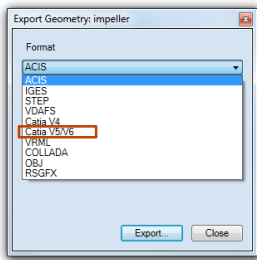
Change local origin of component group

The local origin of a component group can be modified.
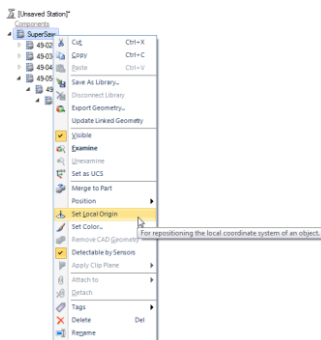
Freehand move and rotate of multiple targets

The freehand move and rotate functions are now available for a multi-selection of targets, which was not the case before.
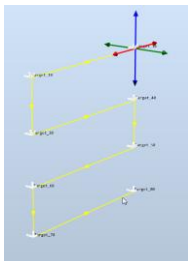
Defeaturing – for simplifying geometry

Defeaturing automatically identifies and removes small features such as fillets, chamfers, and round holes that offline programmers typically want to eliminate from a 3D model.
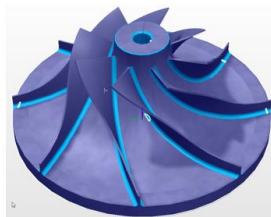
Original ~ 4 MB   Defeaturing Preview   Defeatured ~1 MB
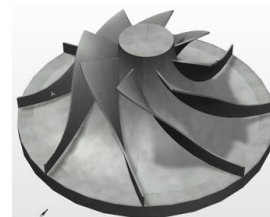
Note that the Defeaturing function may take a considerable amount of time depending on the complexity and size of the CAD model.

5.4 Offline programming

Customize system options

When creating a new solution with a robot system you can now easily customize your RobotWare 6 options in the same way as you have been able to do for 'System From Layout'.
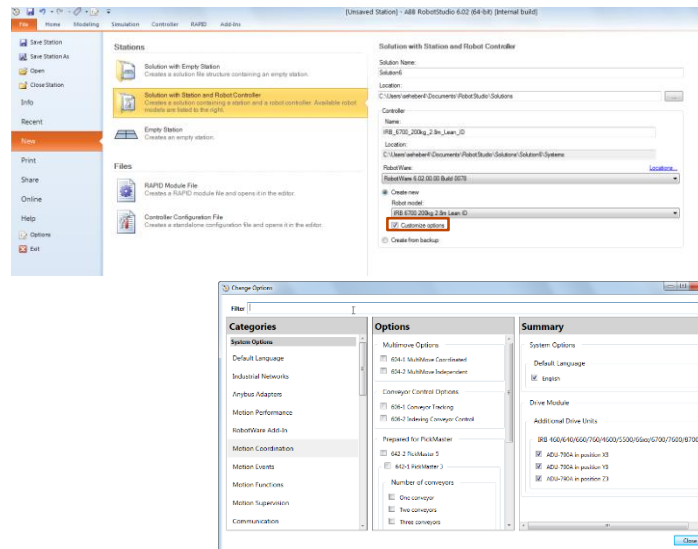
Unpack to solution

Any pack&go file can be unpacked to the so-called *solution* format by selecting the checkbox 'Unpack to Solution' in the Unpack&Work wizard. A solution consists of a folder structure that helps you keep track of your station and controller data.
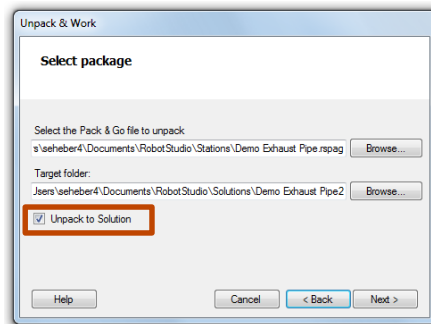
Conveyor tracking – new implementation

The RobotWare option Conveyor Tracking is better supported in RobotStudio 6.02. Several changes have been made to make it easier to work with multiple conveyors as well as multiple robots. Any RobotStudio station created in previous versions of RobotStudio will be automatically migrated when opened in RobotStudio 6.02.
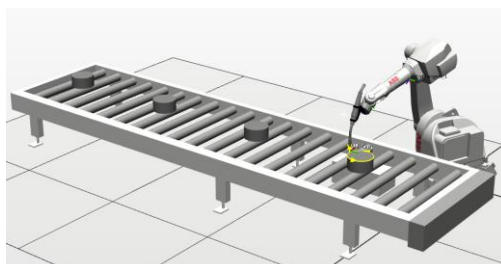
CAD converter available from within RobotStudio

The CAD-converter which was previously available as a stand alone tool has been integrated in RobotStudio and is now available from the Import Geometry menu.
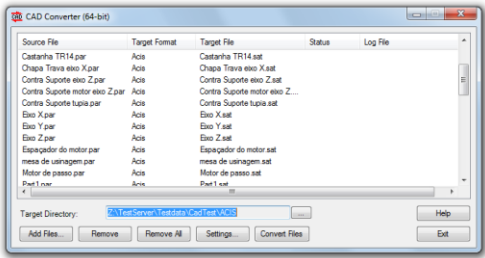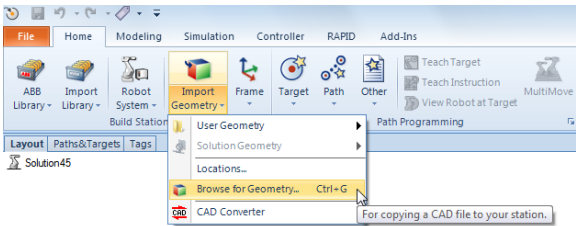
Examine for instructions

The examine function is available for Instructions. You can activate it from the context menu or by double-click.
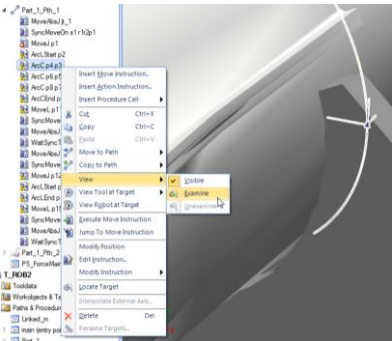
SetBrush for customized paint instructions

SetBrush instructions are visualized with a square along the corresponding path segment for PaintL and PaintC instructions. New for RobotStudio 6.02 is the ability to add the visualization of SetBrush instructions for *any* configured instruction. This is useful if you are programming custom RAPID instructions based on the PaintL/C instructions, e.g. MyPaintL/MyPaintC. This behavior is configured in the Instruction Template Manager.
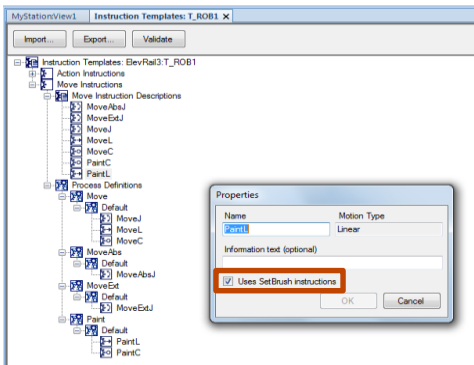
Visualization of SetBrush instructions

Erroneous trig planes outside path

New for RobotStudio 6.02 is that a SetBrush instruction is visualized even if the specified trig plane is incorrectly located outside of the current path segment (PaintL instruction). The SetBrush instructions will become red instead of the ordinary white in the 3D graphics view and, in addition, have an error icon in the Paths&Targets browser. These SetBrush instructions will give rise to so-called trig errors during program execution.

Trig planes inside zones

SetBrush instructions whose trig planes appear in the zones of the preceeding or subsequent targets will be indicated by yellow color in the 3D graphics view and have a warning icon in the Path&Targets browser. These SetBrush instructions *may* give rise to trig errors during program execution.
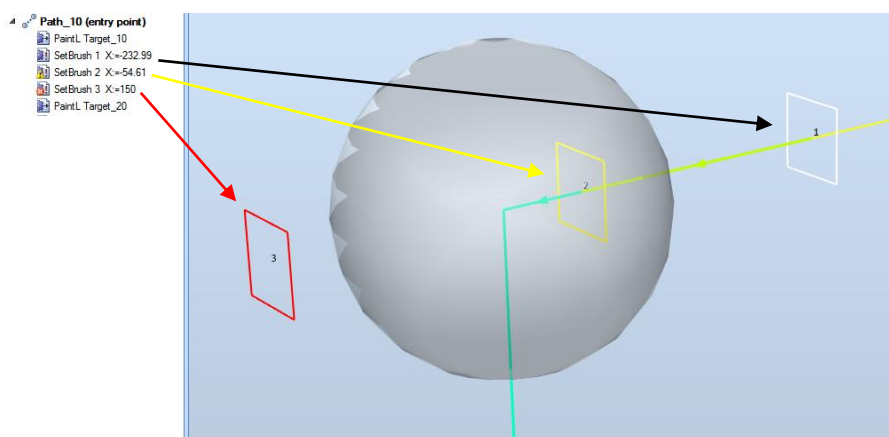
Locate Move Instruction

Move instructions can be located through a shortcut of the context menu of the target node in the Paths&Targets browser. From before, targets of a move instructions can be located in the opposite way.

Locate Move Instruction (new)   Locate Target (existing)
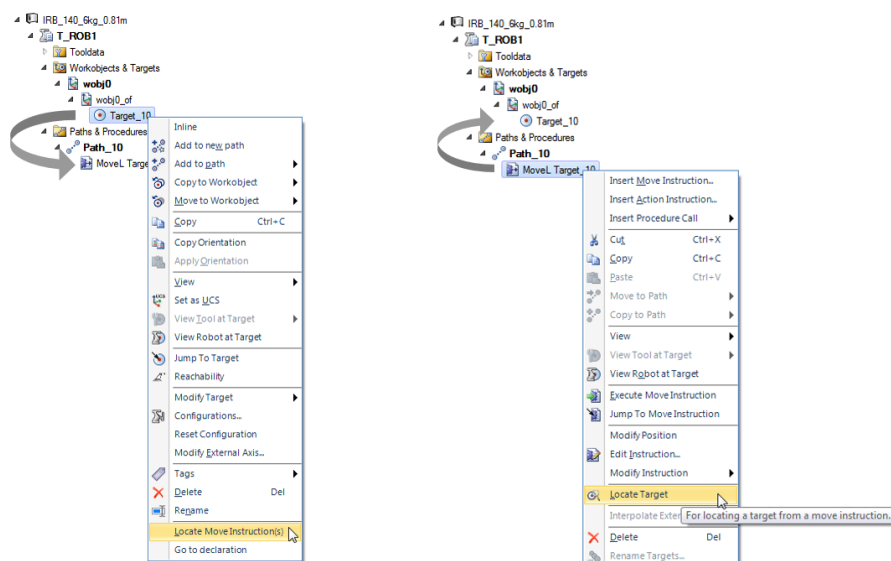
Keyboard shortcuts for freehand move and reorient

The arrow keys can be used to move objects using the Freehand Move and Rotate functions.
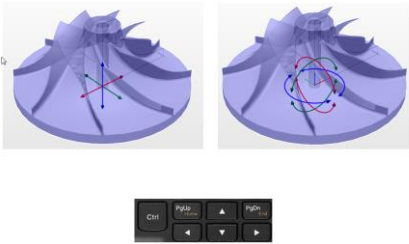
5.5 Online functions

Jobs – Read RAPID files from the RAPID task

The Action 'Read File' has been extended to allow loaded modules of a RAPID task to be saved in addition to reading from the HOME folder as was possible before.
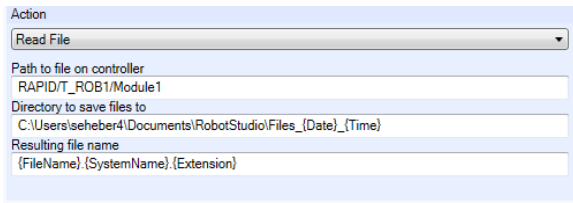
Add Controller – use a Device List to add you controllers

A device list created in the in the Jobs function can be used to allow convenient connection to the controllers of your factory shopfloor. This is particularly useful if they are distributed over several subnets.
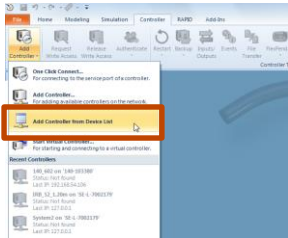
Transfer – support for backups and HOME folder

The transfer function has been extended to support use of a controller backup as end-point. Another improvemen is that the HOME folder is included in the transfer.
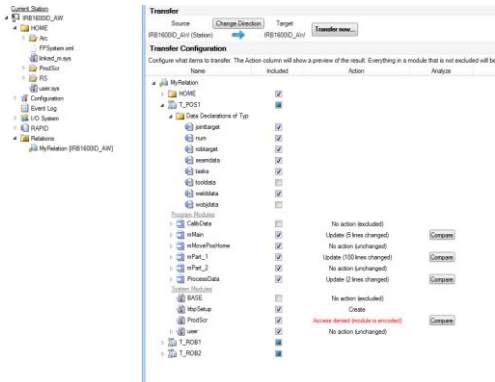
6 Late Breaking Information

Overview

This section describes changes and additions done after the Operating Manual was finalized.

6.1 New link for manual activation

The link for manual activation of RobotStudio Premium licenses has been changed to http://www.manualactivation.e.abb.com/. The link in RobotStudio is updated, but the Operating Manual still refers to the old link.
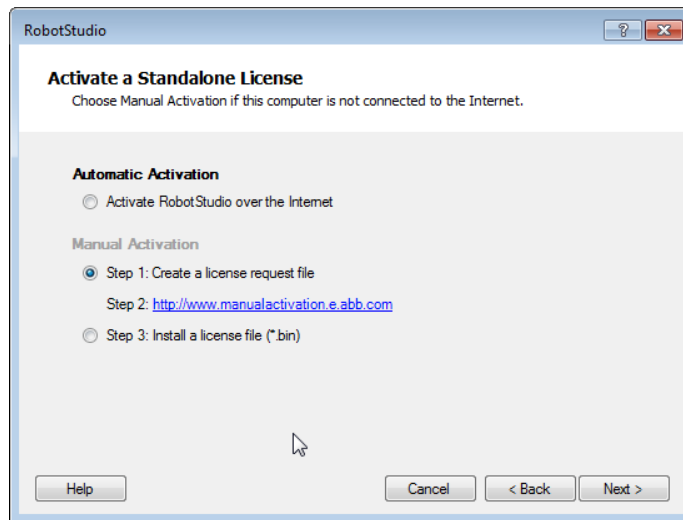
6.2 Rename systems for real controller

A RobotWare 6.02 system for a real controller can be renamed without requiring re-installation. In the **Installation Manager** window, select an active or running system and then click **Rename**.
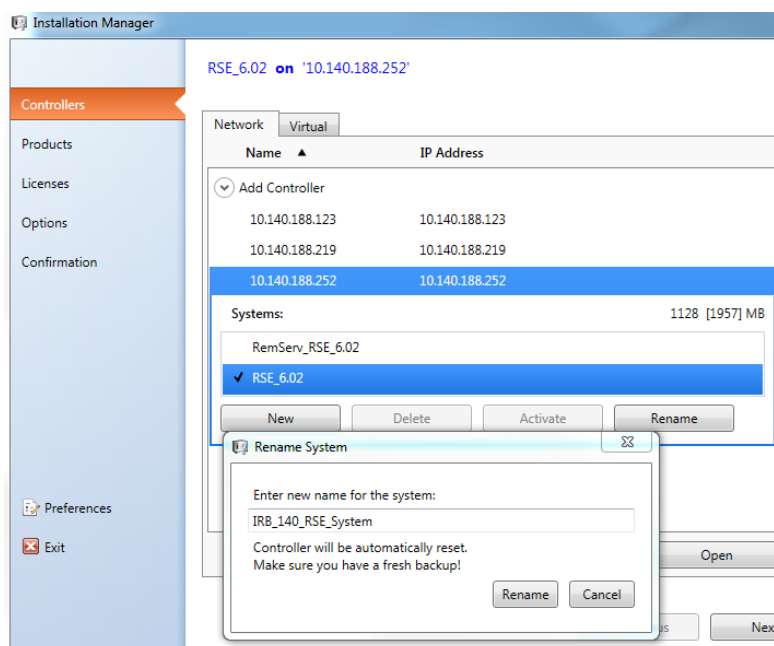
6.3 Conveyor Tracking

Creating/Modifying a connection

When creating or modifying a connection between a RobotStudio conveyor and virtual controller, then two main scenarios are supported.

Scenario 1: Starting from the station layout

In this scenario, a RobotStudio station is created from scratch and the motion configuration parameters of the connected virtual controller shall be updated to match the station layout. For this to happen, the radio button "**Use Station Values**" of the Base Frames group shall be selected.

If, in addition, you want the conveyor base frame to be zero, i.e. that the task frame (aka controller world) should coincide with the conveyor base frame, then also the checkbox "**Align Task Frame**" shall be selected.

Scenario 2: Starting from the controller configuration parameters

In this scenario, you want the RobotStudio station to be updated to match the motion configuration parameters of your controller. This may be the case if you want to setup a RobotStudio station that corresponds to a real controller backup from the shop floor. Then the option "**Use controller values"** shall be selected. As a consequence the connected robot and its task frame may be moved if required.

Note that the conveyor itself will never be automatically moved. The reason is that several robots may be connected to it and any automatic movement of the conveyor will propagate to other robot systems.
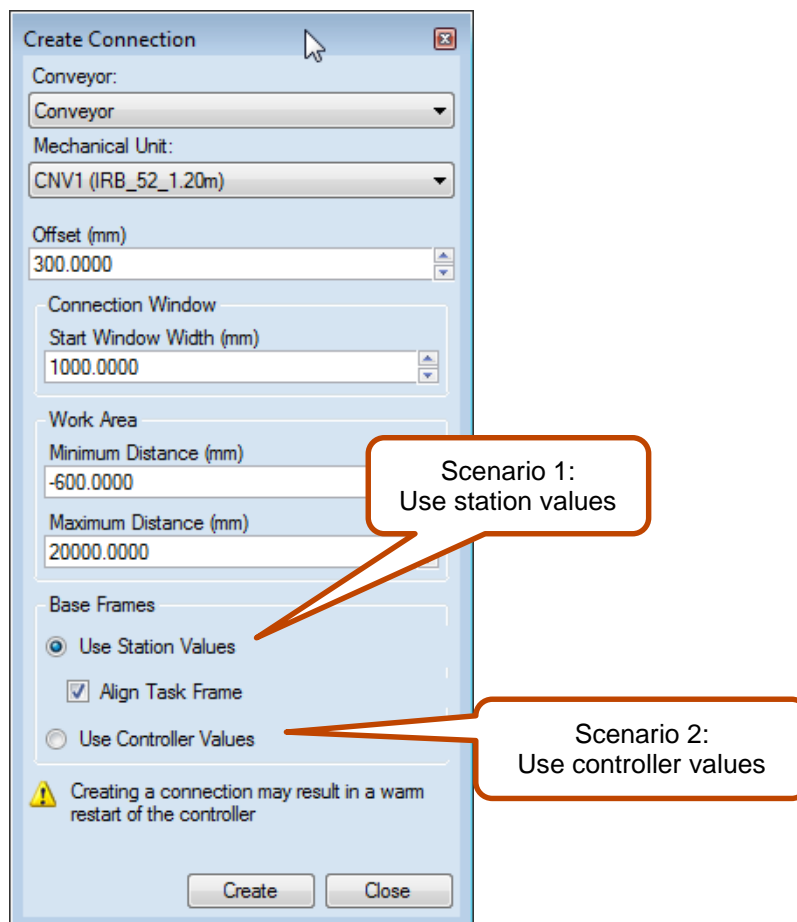
7 Corrections

7.1 Corrections made in 6.02.01 SP1

Overview

This section describes the correction made in 6.02.01 SP1.

Incorrect frame alignment for 'Set Normal to Surface'

The function 'Set Normal to Surface' gave an incorrect result when applied outside borders of graphical parts that lacked the underlying geometrical description. This is fixed in RobotStudio 6.02.01 SP1.

7.2 Corrections made in 6.02.01

Overview

This section describes the corrections made in 6.02.01

Product Defect Documents (PDD)

ID	Title
1379	Part not positioned correctly if attached directly to robot link
2131	Incorrect axis-limits of IRB 5400-systems
3349	RS cannot stop task
5667	Exception when requesting mastership on RW5.61.01 controller
5680	EnvironmentAPI exception
5719	Bug when creating system from layout
5757	Enabling workenvelope throws exception with IRB6620LX
5762	RAPID coloring mixed up
5784	Restore of a Backup does not work if Backup from different PC
5793	Incorrect RS model for the IRBP B750 and IRBP B500
5925	RobotStudio 6.02 Stops Simulating previous Station without any reason
5926	Simulation hangs
5927	Double click on scroll bar (Controller tab: Configuration - I/O system/signal screen) opens
5968	RS freezes during simulation when recording video
5976	Not able to save Station Viewer
6006	Some errors in RobotStudio 6.02

7.3 Corrections made in 6.02

Overview

This section describes the corrections made in 6.02

Product Defect Documents (PDD)

ID	Title
196	Mispositioning of conveyor when when connecting it with 2 robots

763	Incorrect MarkUp position after being moved
1209	RAPID Editor doesn´t know Instructions (Identifier not found)
1287	I/O Instance Editor does not gain focus
1354	Editor stays open, if modified RAPID module is deleted
1379	Part not positioned correctly if attached directly to robot link
1480	Regression in RS handling of external option version inconsistency
1898	Part incorrectly connected to the conveyor
1913	Configuration Editor does not show icons for write protection anymore
2103	Selected object not always correct
2451	Backup attempt throws exception when auto mode is not acknowledged
2744	Robot library not found automatically
2859	NX CAD support in Robot Studio
2936	Controller is not in motors on . . .
3231	Problem with IRB 580 with the IRB 5320 in RobotStudio 5.15.x
3280	RobotStudio Chinese Error
3347	System 'from layout' not working correctly with a Paint robot on a track
3619	RobotStudio Crashed or dismiss information from STEP files created with SolidWorks
4089	List of available RobotWare versions not refreshed after uninstall of RobotWare
4482	Operating manual RobotStudio section 7 File tab
4519	Request for improvements when using 2 robots with 1 conveyor
4688	Possible Configuration Values List Incomplete in RobotStudio
4692	RS/Visual SafeMove: Get wrong vectors for Tool Orienation supervision.
4736	modify conveyor
4780	Problems with 3D models recreation
4811	Viewer different from simulation
4853	Position YuMi arm not updated
4861	RobotStudio Help: configuration editor information is not updated
4879	RobotStudio documentation error
4953	Visual SafeMove - Get Vectors for Active Tool Does not work in Visual Safe Move if Online Monitor is not active
4954	Visual SafeMove - Auto Generate from Simulation only makes Generate Axis Range active after recording a simulated path
4957	RobotStudio - confusion between Simulated I/O and Virtual I/O
4959	RS throws No connection to controller exception
4962	Saving Program via RS fails with a popup
4985	Lack of progress bar when changing local origin
5002	Jobs System Information does not show relevant info
5008	Synchronisation of Rapid from station to YuMi controller with error
5024	Visual Safe Move can not open sxml
5030	YuMi with teached point in RS out of working range
5043	Robot wobbles when using View Robot At Target
5044	Visual SafeMove: ToolZone just shown as a wire frame

Release Notes

RobotStudio 6.02.01 SP1

5067	Error Safe Station after removing real controller from station
5079	SetBrush events not showing on graphics
5086	RobotStudio not responding for longer time, if network drive is not connected
5092	Issues with uncoordinated track
5098	RobotWare in addins tab show nothing
5146	PD SDK performance
5180	Axis configuration for YuMi not found
5183	Not possible to overwrite system with SafeMove option
5193	Not able to find signals in singal analyzer
5194	Missing information in the help about station viewer and time slice mode
5229	Crash when saving station
5279	No trigger planes on graphics for PaintC commands
5322	Intellisense Set Go Instruction wrong
5323	Can't Set position on robot with conveyor tracking
5336	Unable to UnPack&Work a station
5377	Ability to set local origin of a Component Group
5402	Problem with saving station
5459	Not possible to import UAS file with passcode
5470	Problems with opening backup
7514	Mapping of I/O not visible I/O System
10084	Incorrect robot parameters for paint rails

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8 Known Limitations

Overview

This section describes known limitations in RobotStudio.

8.1 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 6.02.01 into an earlier version of RobotStudio such as e.g. RobotStudio 5.15.02, 5.61.02, 6.0, 6.00.01, 6.01, 6.02 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, 6.01 or earlier can be opened in RobotStudio 6.02.01.

8.2 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.

8.2.1 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.

8.2.2 Online – Integrated Vision

*Emulated cameras not discovered when controller in Motors On

For RobotWare 5.61 onwards, the camera discovery mechanism is disabled when the controller is in Motors On. As a consequence, the camera nodes will not appear in the controller browser.

Workaround: Switch to Manual Reduced Speed and use the Refresh command on the Integrated Vision node in the browser to make the cameras appear.

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 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 addres is used and persits, please try a static address instead. **Offline**

8.3.1 Conveyor Tracking

*Incorrect default values for c1Position and c1Speed for RobotWare 5 with the PaintWare option

The default values for the parameters c1Position and c1Speed may become incorrect for a virtual controller system. The symptom is that its attribute values are all zero, see snapshot below.
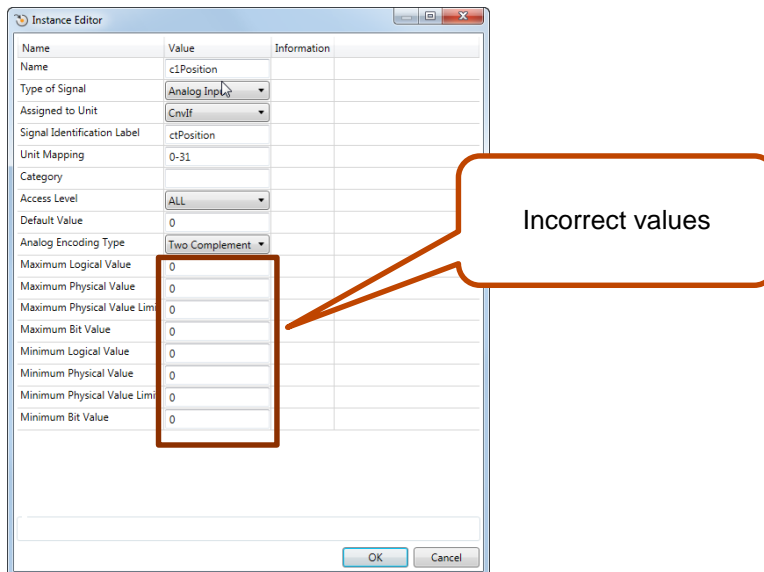
Workaround: Save the following lines to a CFG file named 'TEMP.CFG' or similar and load in the the virtual controller followed by a restart.

```
EIO:CFG_1.0:5:0::
#

EIO_SIGNAL:

      -Name "c1Position" -SignalType "AI" -Unit "CnvIf"\
      -SignalLabel "ctPosition" -UnitMap "0-31" -Access "ALL"\
      -MaxLog 21474.8 -MaxPhys 1 -MaxPhysLimit 1\
      -MaxBitVal 2147483647 -MinLog -21474.8 -MinPhys -1 -MinPhysLimit -1\
      -MinBitVal -2147483647

      -Name "c1Speed" -SignalType "AI" -Unit "CnvIf" -SignalLabel "ctSpeed"\
      -UnitMap "32-63" -Access "ALL"\
      -MaxLog 21474.8 -MaxPhys 1 -MaxPhysLimit 1\
      -MaxBitVal 2147483647 -MinLog -21474.8 -MinPhys -1 -MinPhysLimit -1\
      -MinBitVal -2147483647
```

8.3.2 General

Backup fails for RobotStudio solutions with SafeMove or Electronic Position Switches

Backups are automatically created for virtual controller systems that are part of a RobotStudio solution when saving the station. For virtual controller systems with the RobotWare options *SafeMove* or *Electronic Positioning Switches* the backup will fail since these systems contain files that are read-only. As a result, an error message is presented in the output window: *"<System name>: Backup failed".* The station will be successfully saved but there will be no backup created.

Workaround: Ignore the error message "<System name>: Backup failed" *and create a manual backup whenever needed. The RobotStudio Option* "Enable automatic backup of controllers in solution" *that is available in"* RobotStudio Options -> Robotics -> Virtual Controller" *can be de-selected to disable the backup function.*

IRB 14000 cannot be combined with any other robot

The function system from layout fails if trying to create a MultiMove system where one robot is a IRB 14000. The reason is that the IRB 14000 cannot be combined with any other robot.

Workaround: Create a separate system for the IRB 14000.

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 jointtargets. The functions will leave the jointtargets as is. Interpolate Path gives an Unknown Error and Tool Compensation reports an error message

Event Manager: Simulation cannot be triggered by analog system signals

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

8.3.3 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.

8.3.4 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

8.3.5 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.

8.3.6 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
<?xml version="1.0"?>
<configuration>
      <startup useLegacyV2RuntimeActivationPolicy="true">
      <supportedRuntime version="v4.0" sku=".NETFramework,Version=v4.0"/></startup>
      <runtime>                                       <!-- THIS IS ONE OF THE NEW LINES!!! -->
            <loadFromRemoteSources enabled="true"/>   <!-- THIS IS ONE OF THE NEW LINES!!! -->
      </runtime>                                      <!-- THIS IS ONE OF THE NEW LINES!!! -->
</configuration>
```

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

> For further information, see

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

> ---
> **ℹ 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.
> ---

8.3.7 RAPID

Robtargets that are LOCAL to a PROCEDURE cannot be synchronized with RobotStudio

> The RobotStudio synchronization engine that translates 3D data of the station to RAPID code and vice versa does not support robtargets that are declared locally to a procedure.

> **Workaround**: *Declare the robtargets as global or local to a module instead.*

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

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

Global robtargets cannot be made local through Synchronization to VC

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

Workaround: *Change the robtargets 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.

8.3.8 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.*

8.3.9 Graphics and Geometry

*New CAD converters not available in Premium trial license

The new CAD converters for DXF/DWG, JT, NX, Parasolid, Solid Edge, and SolidWorks are not available in the trial license but can be ordered from ABB.

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.

8.4 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.

9 RobotWare Compatibility

9.1 General

Supported RobotWare versions

RobotStudio 6.02.01 is distributed with RobotWare 6.02.01 and works with RobotWare 5.07 and later. Please check details below.

9.2 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.

9.3 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.

> **ℹ 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

9.4 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.

9.5 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.

9.6 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.

9.7 RobotWare 5.12 Compatibility

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

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

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

Workaround: Add the following parameters to the configuration files

`EIO.CFG:`

```
EIO_SIGNAL:

     -Name "doMainInMC" -SignalType "DO" -Unit "SysComm" -UnitMap "44"

     -Name "A1HVErrNo" -SignalType "GO" -Unit "SysComm" -UnitMap "150-151"\

     -Access "ALL"

     -Name "A1HVEn" -SignalType "DO" -Unit "SysComm" -UnitMap "155"\

     -Access "ALL"

EIO_CROSS:

     -Res "A1HVEn" -Act1 "HVEnabled"
```

`SYS.CFG:`

```
CAB_TASK_MODULES:

     -File "INTERNAL:/pntrapid/T_ROB1/cycinfo.sys" -ModName "cycinfo"\

     -Task "T_ROB1"

     -File "INTERNAL:/pntrapid/csvlkup.sys" -ModName "csvlkup" -AllTask \

     -Hidden
```

9.8 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.

9.9 RobotWare 5.15 Compatibility

Signal Analyzer Online

The feature Signal Analyzer Online requires RobotWare 5.15.03 or later.

9.10 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.

9.11 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

9.12 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.

9.13 Support for future RobotWare versions

RobotStudio 6.02.01 SP1 supports all future minor revisions of RobotWare 6.02, but no future major releases. For example, RobotStudio 6.02.01 SP1 will support RobotWare 6.02.02 (if, and when available) but not RobotWare 6.03, or 6.04.