Release Notes

RobotStudio

6.03

Revision: -

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1 Release Information

1.1 General

Release Name

The release name is RobotStudio 6.03 and the build number is 6.03.6890.0140.

Release Date

The release date is March 30th, 2016.

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 a) b)	64-bit edition
Microsoft Windows 10 b) (recommended)	64-bit edition

a) *Update KB2919355 is required for Windows 8.1,
see https://support.microsoft.com/en-us/kb/2919355*

b) *YuMi cameras cannot be configured using Integrated Vision on Windows 8.1 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 155 kg/3.05m MH
120T 3kg/0.58m	4400L 30kg	6700 155 kg/3.05m SW
1200 5kg/0.9m BTM	4400S 30kg	6700 175 kg/3.05m MH3
1200 5kg/0.9m STD	4450S 30kg	6700 175 kg/3.05m
1200 7kg/0.7m BTM	4600 20kg/2.5m	6700 200 kg/2.8m MH
1200 7kg/0.7m STD	4600 20kg/2.5m Type C	6700 200 kg/2.8m SW
140 5kg/0.8m Type A/B	4600 45kg/2.05m Type C	6700 205 kg/2.8m MH3
140 5kg/0.8m Type C	4600 60kg/2.05m	6700 205 kg/2.8m
140 6kg/0.8m Type C	4600 60kg/2.05m Type C	6700 140 kg/2.85m MH
140T 5kg/0.8m Type C	460	6700 140 kg/2.85m SW
1400 Type A/B	4600 40kg/2.55m	6700 155 kg/2.85m MH3
1400H Type A/B	4600 40kg/2.55m Type C	6700 155 kg/2.85m
1410	4600 45kg/2.05m	6700 220 kg/2.65m MH
1520ID	6400R 200kg/2.5m	6700 220 kg/2.65m SW
1600 5kg/1.2m	6400R 200kg/2.8m	6700 235 kg/2.65m MH3
1600 5kg/1.2m Type A	6400R 120kg/2.5m	6700 235 kg/2.65m
1600 5kg/1.45m	6400R 150kg/2.8m	6700 175 kg/2.6m MH
1600 5kg/1.45m Type A	6400R 150kg/2.8m	6700 175 kg/2.6m SW
1600 6kg/1.2m	6400R 100kg/3.0m	6700 200 kg/2.6m MH3
1600 6kg/1.45m	640	6700 200 kg/2.6m
1600 7kg/1.2m	660 180kg/3.15m	6700 220kg/3.0m MH
1600 7kg/1.2m Type A	660 250kg/3.15m	6700 220kg/3.0m SW
1600 7kg/1.45m	6600 175kg/2.55m	6700 245kg/3.0m MH3
1600 7kg/1.45m Type A	6600 175kg/2.80m	6700 245kg/3.0m
1600 8kg/1.2m	6600 225kg/2.55m	6700 270kg/2.7m MH
1600 8kg/1.45m	6600ID 185kg/2.55m	6700 270kg/2.7m SW
1600 10kg/1.2m	6620 150kg/2.2m	6700 300kg/2.7m MH3
1600 10kg/1.45m	6620LX-150/1.9m	6700 300kg/2.7m
1600ID 4kg/1.5m	6640 130kg/3.2m	7600 150kg/3.5m
*1600ID 6kg/1.55m	6640 180kg/2.55m	7600 325kg/3.1m
2400 10kg	6640 185kg/2.8m	7600 340kg/2.8m
2400 16kg	6640 205kg/2.75m	7600 400kg/2.55m
2400L	6640 235kg/2.55m	7600 500kg/2.55m
2600 12kg/1.65m	6640ID 170kg/2.75m	7600 500kg/2.3m
2600 20kg/1.65m	6640ID 200kg/2.55m	7600 150kg/3.5m MH3
2600 12kg/1.85m	6640 150kg/2.55m DP6	7600 325kg/3.1m MH3
2600ID 8kg/2.0m	6640 165kg/2.8m DP6	7600 340kg/2.8m MH3
2600ID 15kg/1.85m	6640 185kg/2.75m DP6	7600 400kg/2.55m MH3
260	6640 200kg/2.55m DP6	7600 500kg/2.55m MH3
340	6650 125kg/3.2m	7600 390kg/3.1m MH6
360 1kg/1130 Std No axis 4	6650 200kg/2.75m	7600 320kg/2.8m MH6
360 1kg/1130 Wash-down No axis 4	6650ID 170kg/2.75m	7600 390kg/2.55m MH6
360 1kg/1130 Standard	6650S 125kg/3.5m	7600 390kg/3.1m SW6
360 1kg/1130 Wash-down	6650S 200kg/3.0m	7600 320kg/2.8m SW6
360 1kg/1130 Stainless	6650S 90kg/3.9m	7600 390kg/2.55m SW6
360 1kg/800 Std No axis 4	6650S 100kg/3.5m MH6	760
360 1kg/800 Wash-down No axis 4	6650S 190kg/3.0m MH6	8700 475kg/4.2m MH6
360 1kg/800 Std	6650S 100kg/3.5m SW6	8700 475kg/4.2m SW6
360 1kg/800Wash-down	6650S 190kg/3.0m SW6	8700 550kg/4.2m MH3
360 3kg/1130 Std No axis 4	6650S 125kg/3.5m MH3	8700 550kg/4.2m
360 3kg/1130 Wash-down No axis 4	6650S 200kg/3.0m MH3	8700 630kg/3.5m MH6
360 3kg/1130 Standard	6650S 90kg/3.9m MH3	8700 630kg/3.5m SW6
360 3kg/1130 Wash-down	6600 100kg/3.35m	8700 800kg/3.5m MH3
360 3kg/1130 Stainless	6660 130kg/3.1m	8700 800kg/3.5m
360 1kg/1600 Standard	6660 205kg/1.9m	*910SC 3kg/0.45m
360 6kg/1600 Standard	6700 145 kg/3.2m MH	910SC 3kg/0.55m
360 8kg/1130 Standard	6700 145 kg/3.2m SW	*910SC 3kg/0.65m
4400 45kg	6700 150 kg/3.2m MH3	**940
4400 60kg	6700 150 kg/3.2m	14000

* new in RobotStudio 6.03
** requires the StandAlone Controller mediapool that is available for download from Add-Ins tab / RobotApps / RobotWare Add-Ins

> **ℹ 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
Elevated Rail left and right versions	3 m to 10 m

2 What's new in RobotStudio 6.03

Overview

RobotStudio 6.03 contain several new features.

2.1 New robots

New variants of the IRB 910SC: 0.45 cm and 0.65 cm

The SCARA family IRB 910SC has been extended with two more variants to complement the already existing 0.55 cm version; the 0.45 cm version and the 0.65 cm version.

Food grade versions of IRB 120 and IRB 1200

Two of our smallest robots are available in food grade versions, i.e. IRB 120FGL and IRB 1200FGL.
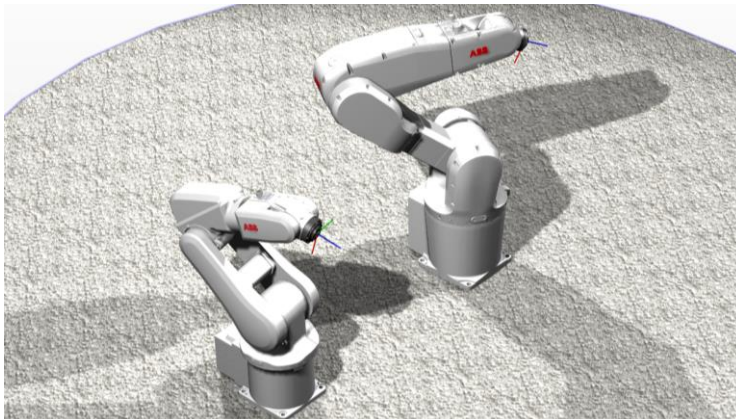
IRB 1600ID with increased payload: IRB 1600ID 6 kg/1.55 m

The capacity of the IRB 1600ID has been increased thanks to a new wrist design. The result is the IRB 1600ID 6 kg / 1.55 m version.

Design changes due to new Axis Calibration method

The mechanical design has changed due to the new calibration method that is gradually introduced. In this version, the models for IRB 6650S, IRB 6700 and IRB 7600 has been changed.
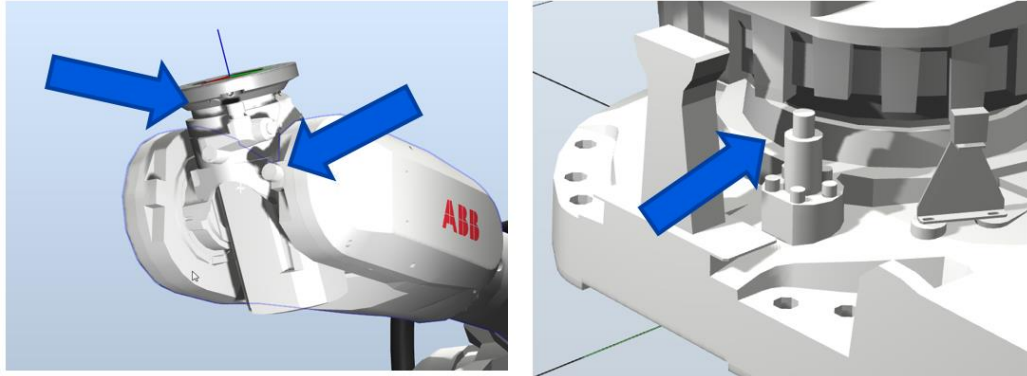
2.2 Next generation Visual SafeMove

Overview

A new generation of SafeMove is introduced with RobotStudio and RobotWare 6.03. It is configured through Visual SafeMove in RobotStudio. The Visual SafeMove configurator is available for robots with the options SafeMove Pro, SafeMove Basic, or , PROFIsafe.
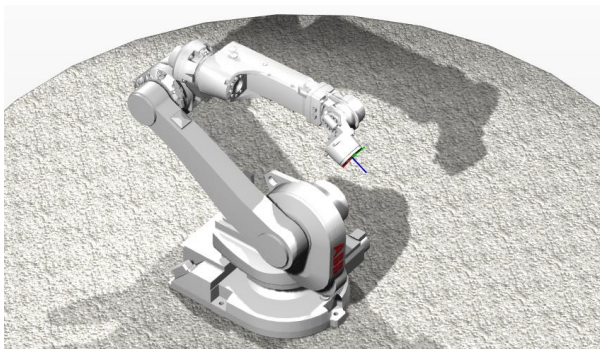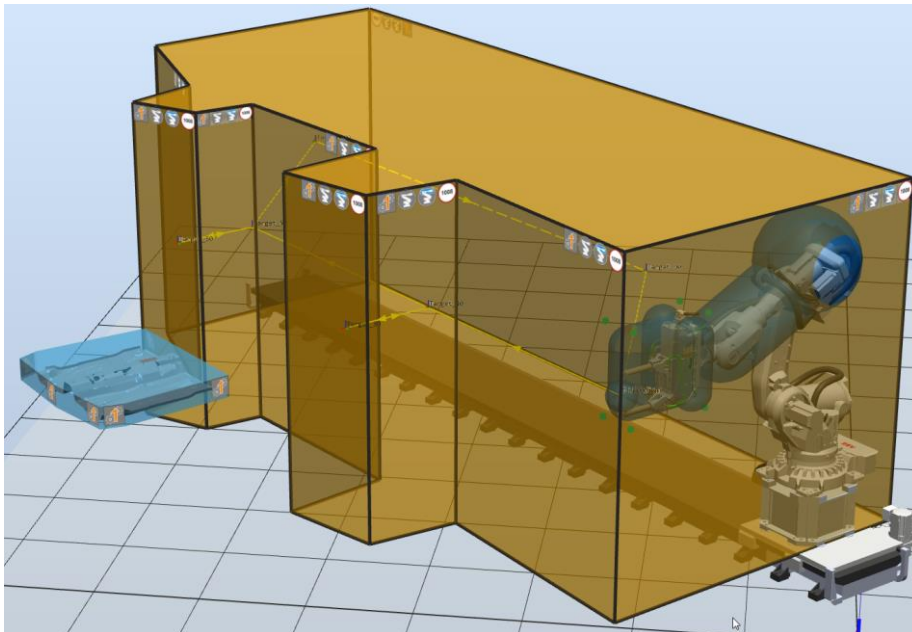

Visual SafeMove is part of the Basic edition

The Visual SafeMove configurator is available for users of the Basic edition of RobotStudio, i.e. no license is required. This applies also to Visual SafeMove for DSQC 647, which is the first generation of SafeMove. This is a change from earlier versions of RobotStudio, in which Visual SafeMove was part of the Premium edition.

2.3 Immersion

Oculus Rift support (ABB Internal only)

Stereo mode for Oculus Rift added in Graphics Tools tab which is activated from the Home tab.

In order to activate Rift functionality in 6.03 you need to either (1) have an ABB internal license, or, (2) add the line `<add key="EnableOculusRift" value="true"/>` to the file `RobotStudio.exe.config` that is located in the `Bin` and `Bin64` folders of the RobotStudio installation folder (`C:\Program Files (x86)\ABB Industrial IT\Robotics IT\RobotStudio 6.03\`)

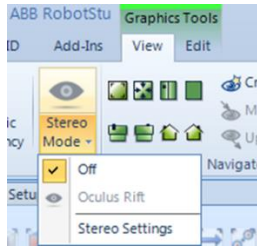RobotStudio 6.03 has been updated to work with the 0.8 version of the Oculus runtime. This means that the Rift will not appear as a second monitor in Windows. Laptops will likely not work at all. For more details, see https://developer.oculus.com/blog/upcoming-oculus-pc-sdk-0-7-compatibility-changes/. Also see this page for recommended hardware: https://www.oculus.com/en-us/oculus-ready-pcs/.

There is a new "Stereo/VR" options page that allows you to configure performance related settings.

The plan is to remove the ABB internal license check in 6.04 and make Rift publicly available for all RobotStudio users.

2.4 TrueMove® Path Visualization

"What you see is what you get"

The IRC5 controller features TrueMove that provides outstanding path following capabilities. When working with an ABB robot you can be confident that the robot will always follow the programmed path regardless of the programmed speed. In RobotStudio 6.03, the programmed path will be visualized to show exactly how the robot will move. The TrueMove path visualization applies to linear and circular motion instructions.

The picture below shows an example of the TrueMove path visualization. As you can see there is a perfect match between the visualized path (green) and the TCP trace (red) for linear and circular motion instructions.
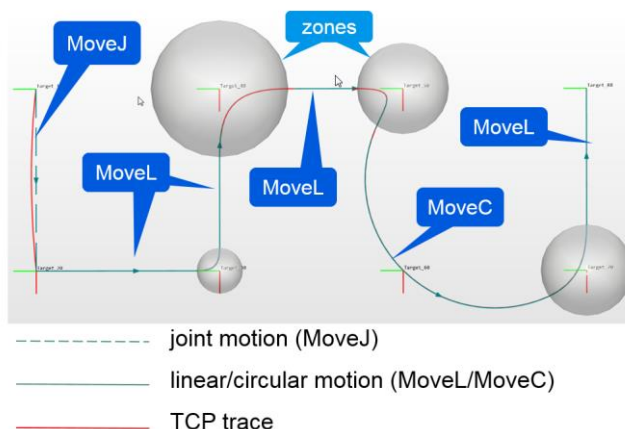
2.5 RAPID Editing and execution

Start and Stop of selected tasks

A new function added in RobotStudio 6.03 is the ability to start and stop execution of selected tasks in automatic operating mode for RobotWare 6.03 and later. Previously, this was only possible in Manual mode.
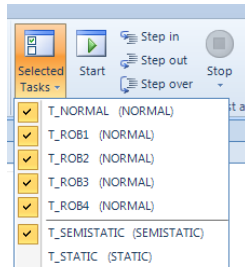
There are two ways to stop program execution, *Stop* and *Stop All Selected*. The *Stop* command stops all NORMAL tasks (including motions task) but no STATIC or SEMISTATIC tasks. The command *Stop All Selected* stops all tasks that are selected regardless of their type.
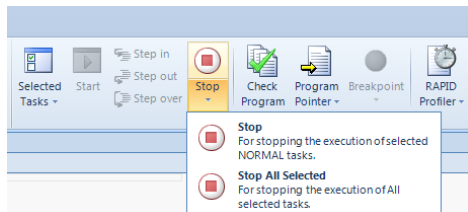
Task selection can only be modified when the controller is in Stopped state, i.e. if all NORMAL tasks are stopped. (Note that STATIC and SEMISTATIC tasks may be running even if the controller is in Stopped state.)

Callstack

There is a new window below the RAPID Editor that shows the current call stack of the running RAPID program. To refresh its content, press the arrow button.
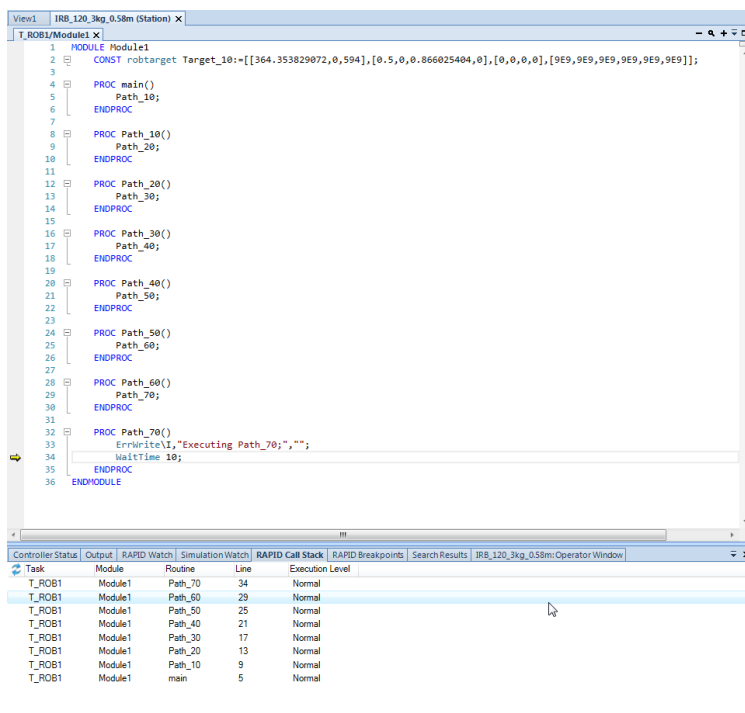
List of breakpoints

The current RAPID breakpoints are listed in a window below the RAPID Editor.
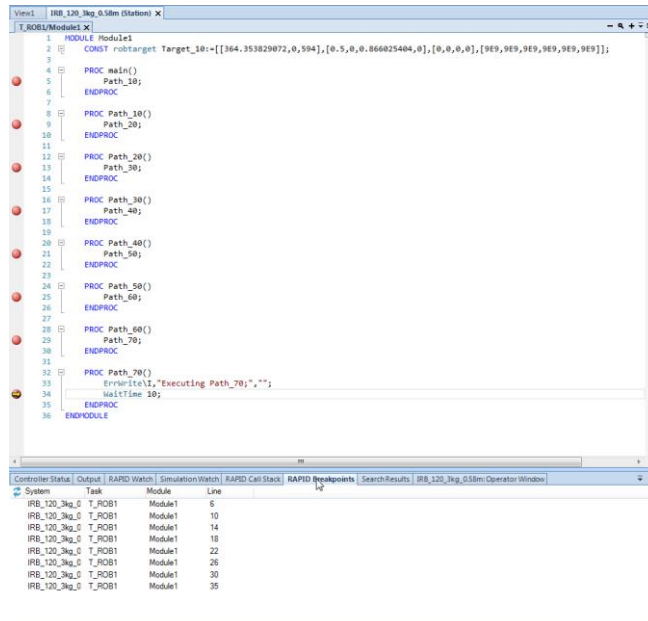
Navigate forwards and backwards

Two arrow buttons are added in the RAPID tab to quickly jump back and forth between recently edited RAPID modules.
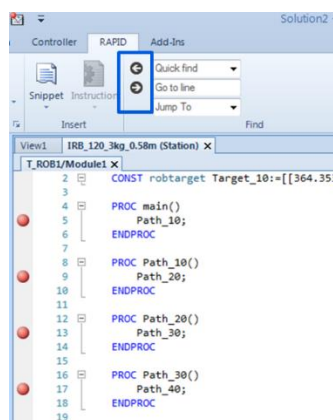
Toggle outlining

The outlining for an entire module or a selection thereof can be toggled in 6.03.
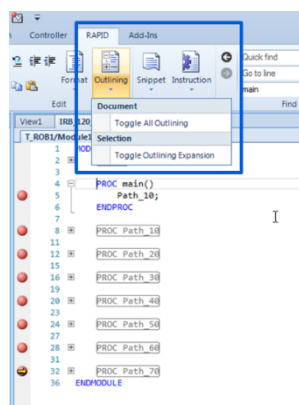
Improved semantic analysis

The semantic analysis of RAPID done by the RAPID Editor of RobotStudio has been improved and will e.g. provide an error indication when an assignment does not match the type of the declaration.

```
PROC Tmp1()

    VAR num myarray{2}:=[1,2];
    myarray{1} := "";
                        Type mismatch. Expected num

ENDPROC
```

Improved auto-completion

Auto-completion has been enhanced to support keywords. To enable it, just press <TAB> + <TAB> when the cursor is located by the end of the RAPID item. Also, you can jump between placeholders by pressing <TAB> key.

```
PROC Tmp1()

        FOR <ID> FROM <EXP> TO <EXP> DO
                <SMT>
        ENDFOR


ENDPROC
```

2.6 Improvements to Configuration Editor for text files

Outlining

Files can be opened for editing in the Files browser of the RAPID tab. Outlining has been extended to support this file type (.CFG) also.

```
1    EIO:CFG_1.0:6:1::              1    EIO:CFG_1.0:6:1::
2     #                             2     #
3    + INDUSTRIAL_NETWORK:          3    + INDUSTRIAL_NETWORK:
8    + PROFINET_INTERNAL_DEVICE:    8    + PROFINET_INTERNAL_DEVICE:
13   + PROFINET_DEVICE:             13   + PROFINET_DEVICE:
18   + EIO_SIGNAL:                  18   - EIO_SIGNAL:
                                    19
                                    20        -Name "doTest0" -SignalType "DO" -
                                    21
                                    22        -Name "doTest1" -SignalType "DO" -
                                    23
                                    24        -Name "doTest2" -SignalType "DO" -
                                    25
                                    26        -Name "doTest3" -SignalType "DO" -
                                    27
                                    28        -Name "doTest4" -SignalType "DO" -
                                    29
                                    30        -Name "doTest5" -SignalType "DO" -
                                    31
                                    32        -Name "doTest6" -SignalType "DO" -
                                    33
                                    34        -Name "doTest7" -SignalType "DO" -
                                    35
                                    36        -Name "doTest8" -SignalType "DO" -
                                    37
                                    38        -Name "doTest9" -SignalType "DO" -
                                    39
                                    40        -Name "doTest10" -SignalType "DO"
                                    41
                                    42        -Name "doTest11" -SignalType "DO"
                                    43
                                    44        -Name "doTest12" -SignalType "DO"
```

2.7 Controller Properties

Set IP Address

The IP address of the controller can be defined in a convenient way through RobotStudio
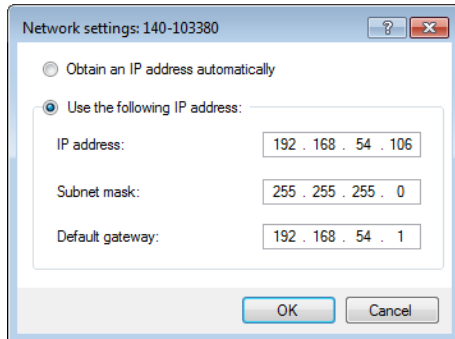
Define Time Server and Time Zone

The Time Server and Time Zone can be defined from the Controller Properties menu.

This function is for configuration of an individual controller whereas the corresonding Jobs action is designed for multiple controllers.
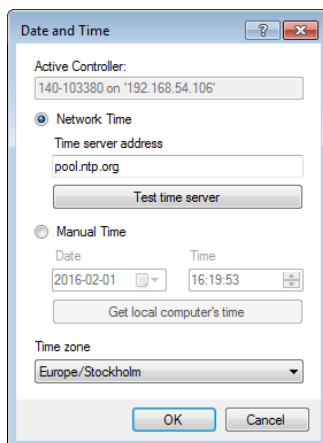
2.8 Jobs

Set Time Server and Time Zone

The Time Server and Time Zone can be defined through a Job Action.
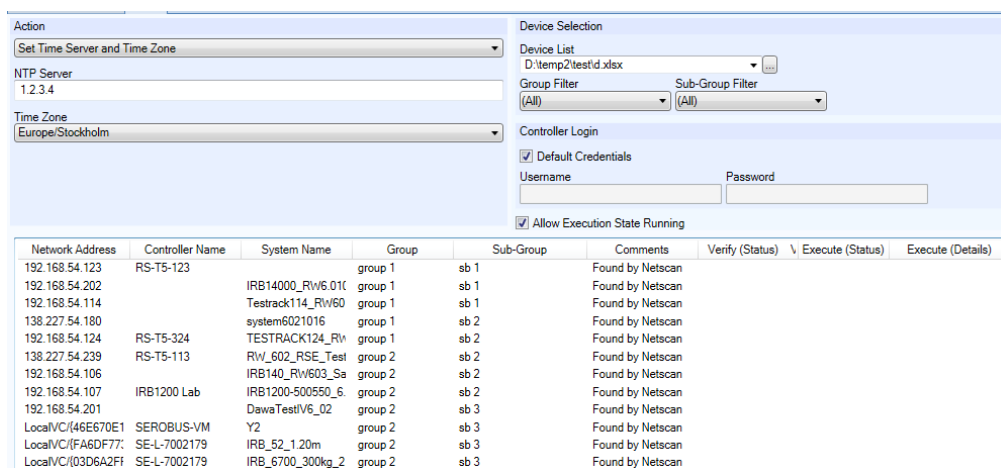
Filter on sub-group

Device lists can be filtered on sub-groups in addition to groups.

Run external tool

Any external command-line executable can be launched through the Job Action *'Run External Tool'*.

2.9 Interoperatibility

Geometry and graphics export on station level.

The content of an entire station can be exported to a number of CAD and graphics formats. Note that for so-called CAD formats (that contain BReps), parts or mechanism without this kind of content will be omitted.
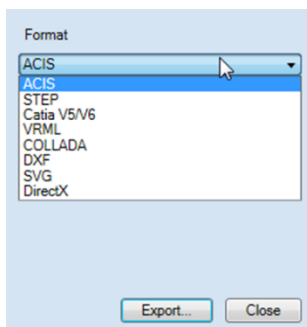
Export in DirectX format (.x)

The .x format is supported from RobotStudio 6.03 onwards.
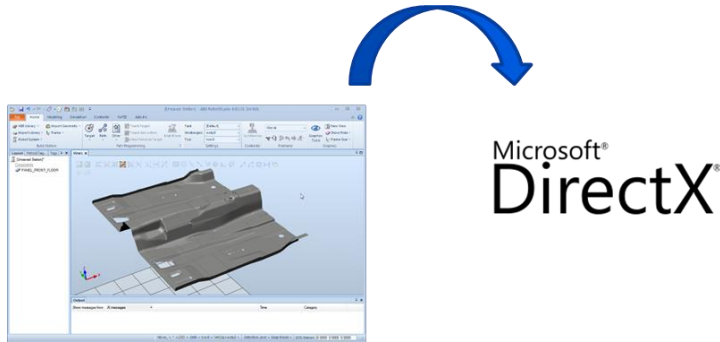
2.10 Local distribution of RobotWare Add-Ins

Overview

Distrubtion packages (.rspak) for e.g RobotWare Add-ins can be effienctly distributed in a local network by specifying their path in the Locations setting of the Documents window. The found packages will be displayed in a dedicated section of the RobotApps page.

17
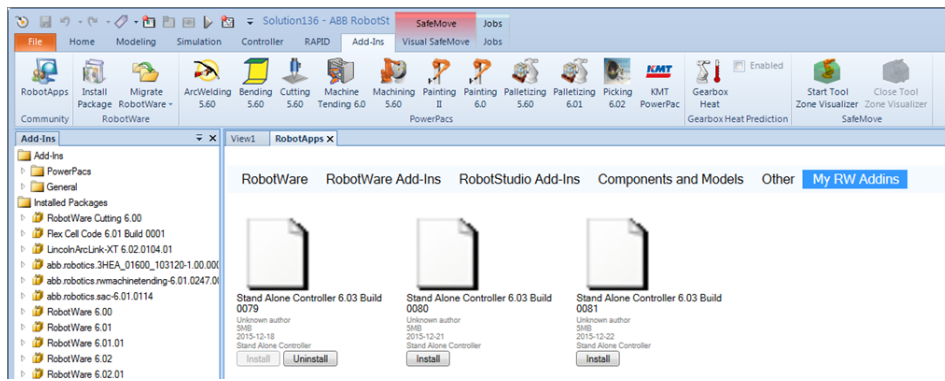
Late Breaking Information

Overview

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

18

3 Corrections

3.1 Corrections made in 6.03

Overview

This section describes the correction made in 6.03.

Product Defect Documents (PDD)

ID	Title
174	Enable property of the RunRoutineButton from ScreenMaker does not work
192	Problem with the function *Record to Viewer*
1160	The function *Verify configurations* not working as expected
1211	Configuration Editor and I/O Window does not jump to signals beginning with an alphabet character.
1287	I/O Instance Editor does not gain focus
1456	RobotStudio RAPID Data Editor slow to open
1750	RS Editor: Format RAPID issues
1826	Auto completion / selection list in RobotStudio does not work with declarations
1828	RAPID editor handles argument name Speed wrong
3027	Moved workobject not using calibration frame but library base frame
3591	RS Allows Use of Restricted Words
3852	Error when moving robot
3970	ScreenMaker build error *"assembly ABB.Robotics.ScreenMaker.Windows.Forms already exists"*
4250	Visual SafeMove: Differing behaviour of the arrow buttons for increasing and decreasing values.
4852	Visual SafeMove: Not able to choose which SafeMove function ID to generate.
4899	Kinematic error
4909	Operating Manual: Chinese translation issues
4963	STOP Task fails in RS
4995	RobotStudio: Clicking twice onto scrollbar of the I/O-System window will change the I/O value
5053	IV - Camera properties dialog
5217	Strange behaviour functions *'View Robot at Target'* & '*Jump to move instruction*'
5240	Unreachable targets in RobotStudio from real system
5287	Joint Dialog Box Not Visible
5344	Problem with mechanism in RS with formula based dependencies
5391	Save Program to controller
5496	New Conveyor modeling not described in help
5503	Not possible to export Catia V5/V8 R2015
5520	Problem with extend curve function
5565	Time zone cannot be set from RoboStudio
5585	RobotStudio '*View robot at target'* function incorrect state
5591	Unwanted closing of teaching wobj frame if 'View center' function issued in graphic
5627	Unknown Error when Events window is attempted to be opened
5631	RobotStudio Graphic Appearance function issue
5638	Multi selection not available in function 'Add controler from device List'

5640	File transfer function - disk space info not correct
5650	Sorting of signals in mapping order per device not described in help
5651	Object moved in wrong direction
5652	Create relation window does not show new feature
5654	Sync to Station or File for files in HOME not documented
5661	Pbls in RAPID Editor
5669	New argument TriggArray{} of instructions TriggL, TriggJ, TriggC etcetera not supported by RobotStudio editor
5673	Double click on routine node does not drive the editor to routine location
5687	Robot event dialog should close with escape key
5716	Missing work envelopes
5720	EnvironmentAPI
5729	Integrated Vision - Exception when closing RobotStudio
5730	Integrated Vision - Double vision node
5769	Dialog without close button
5788	IV Properties selection not logical
5800	Impossible to restart remotly (with RS) a system while another is still restarting (with a RobotStudio remote command too)...
5801	BACKINFO content cannot be viewed in RobotStudio offline Editor
5828	Kinematic errors
5879	Kinematic Model Does Not Match Controller Values
5880	Cannot Build IRB1200 System From Layout with RW 5.6x
5923	Login at System Failure
5930	Screenmaker - runRoutine button enabled control property issue
5935	Conveyor tracking
5966	Missing link in "Save module as"
5971	Issues when importing Signals/Connections
6024	Compile Mechanism removing part from baselink
6026	NumEditor in ScreenMaker shows always red number if a maximum or minimum value is used
6051	Shortcut key ALT does not work in Add Controllers window
6081	Failed to Save station
6083	Integrated Vision, error-message when configuring "Output To RAPID"
6106	Unable to load Solid Works CAD file in 64 bit version of RobotStudio
6109	Positioner IRBP R-300 and R-600 base frame definition and TCP accuracy problems
6156	RobotStudio: YuMi elbow won't move in linear jog
6181	Backup folder shown twice
6182	IRBP K-positioner library model not working correctly
6198	RAPID Editor - Unexpected reset of cursor position after mastership request
6199	Station viewer and collision set
6203	RobotStudio 6.02 configurations missing
6214	Unable to create a system with an IRB660 on a track
6241	Fatal Error using RobotStudio's Editor with TPReadNum
6243	Possible configuration for YuMi in RS not available
6266	External axis YuMi in RS wrong behaviour for entering decimal value for eax with dot
6276	Saving Pack and Go of a YuMi Station not ending

6288	External axis YuMi in RS wrong value for jointtarget
6322	Display of robot with trackmotion wrong (in online monitor robotstudio) when travel direction moves only to minus
6329	Wrong hose package model of IRB6700
6343	RobotStudio not able to make a backup of a big system
6349	Empty Solution
6481	Problem with positioners limits
6603	Error in RS6 when creating a system with 5.61 and modify system before creating

4 Known Limitations

Overview

This section describes known limitations in RobotStudio.

4.1 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 6.03 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 6.03.

4.2 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.

However, from RobotWare 6.03 onwards, then RAPID tasks to execute or to stop can be selected from RobotStudio RAPID tab.

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.

4.2.1 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.

4.2.2 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**

4.3.1 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.
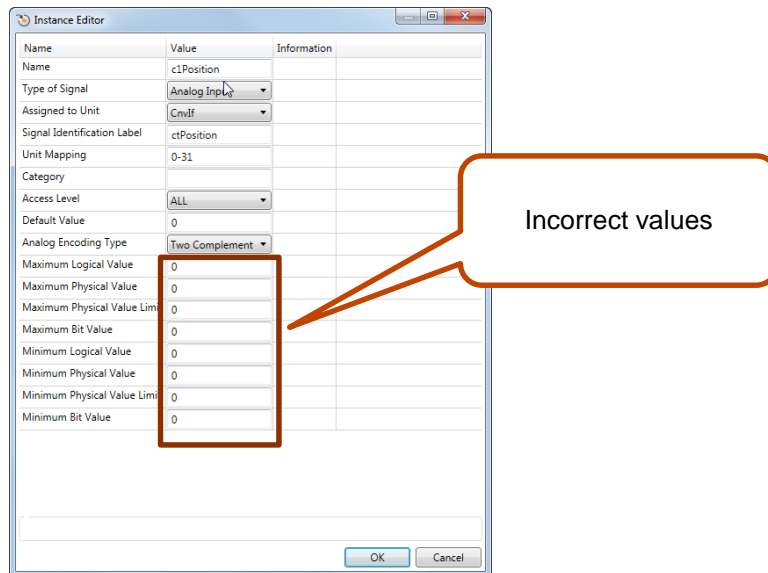
Workaround: Save the following lines to a CFG file named 'TEMP.CFG' or similar and load in the the virtual controller followed by a restart.

```
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
```

4.3.2 General

*TrueMove path visualization fails for customized zone data.

The TrueMove path visualization function only supports predefined zonedata. It will not work for user defined zonedata.

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

4.3.3 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.*

4.3.4 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*

4.3.5 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.*

4.3.6 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 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.

4.3.7 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.

4.3.8 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.

4.3.9 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.

4.4 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.

5 RobotWare Compatibility

5.1 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.

5.2 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.

5.3 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.

> ### ℹ️ 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

5.4 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.

5.5 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.

5.6 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.

5.7 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
```

5.8 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.

5.9 RobotWare 5.15 Compatibility

Signal Analyzer Online

The feature Signal Analyzer Online requires RobotWare 5.15.03 or later.

5.10 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.

5.11 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

5.12 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.

5.13 Support for future RobotWare versions

RobotStudio 6.03 supports all future minor revisions of RobotWare 6.03, but no future major releases. For example, RobotStudio 6.03 will support RobotWare 6.03.01 (if, and when available) but not RobotWare 6.04, or 6.05.