

# YASKAWA

## Release Notes for MotionWorks IEC

### Release 3.6.0

July 8, 2019

Critical Design Change		
Number	Summary	Release Notes
11404	MotomanSync byte order changed from little endian to big endian	The byte order for MotomanSync communication has been changed from little endian to big endian. This change requires a change in the robot controller's communication option. If using a MotomanSync controller, contact Yaskawa Technical Support before upgrading to 3.6.0.

New Features		
Number	Summary	Release Notes
6694	Hardware Configuration: Changing Option Base type without removing option cards from the configuration is now supported.	Option bases for MP3200iec and MP3300iec controllers can now be changed in Hardware Configuration without removing cards from the controller. Existing card modules in option bases will be automatically exchanged to new option base when possible. If cards for unavailable slots or incompatible cards are detected, the Hardware Configuration will ask whether to proceed with the change that would remove those devices.
6975	Node Numbers can be converted when changing from Mechatrolink-2 to Mechatrolink-3 controller	Hardware Configuration has improved handling of axes and servonet I/O nodes when changing controller type with a different servonet type. There is a new dialog that allows reassigning node numbers and alternative compatible devices when applicable, so servo devices do not need to be manually removed prior to changing controller type.
7042	Alt-F9 performs compile and download, then automatically enters debug mode	Download changes can complete in more cases for MP3200iec and MP3300iec, so there is less need to require download all. The Alt+F9 shortcut has been repurposed from the Patch POU menu function to the Download Changes menu function. Also any download that involves change will trigger MotionWorks IEC to automatically enter debug mode.
7897	Support Sigma 5-MD, 4, 8, 12 axis M-III drive for SGMMV motors	Hardware Configuration now supports Mechatrolink-III Sigma-5 MD (SGDV-MD) multi-axis drives. There are different models with 4, 8, and 12 axes. Use SigmaWin+ to set the station address setting at Pn880 before using Hardware Configuration to discover the hardware.  Note that axes can be disabled by changing the address values of Pn010 to Pn01B. Any axis slot can be disabled. The enabled axes can be in any order, but assigned address values must be contiguous. An axis is disabled by setting the address to a value greater or equal to the total axis count. Result of an address assignment error is every axis will be enabled by default.
11306	Compile time improved for large projects	The eCLR compiler performance has been improved to compile faster than before.
11314	CONTROLLER_INFO included in project templates	IEC controller project templates now include a CONTROLLER_INFO global variable named 'Controller'. The CONTROLLER_INFO data type provides properties of the controller hardware.
11548	X-Y plotting tool added	MotionWorks IEC now includes a new two-dimensional XY plotter called Advanced Plotting Tool that can plot from saved logic analyzer data files. Advanced Plotting Tool can be started from its associated toolbar button.

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## New Features

Number	Summary	Release Notes
11594	Support added for backplane JASRC-DMB01-E (MBU-SR0) for the SR200 controller	Hardware Configuration now supports option base part number JASRC-DMB01-E for MP3300iec controllers. This option base is for the SR200 robot controller. The required controller CPU variant is 1.2 GHz, and the required servonet communicate cycle is 1 ms.
11631	Toggle Boolean (TB) attribute to Variable Properties window.	The ability to toggle TB attribute has been added to the Variable Properties dialog in MotionWorks IEC.
11641	Ctrl-drag allows variables to switch between LD elements (contacts and coils) and FBD tags.	Dragging a coil or contact while holding down the combination of Ctrl+Shift keys will now drag-copy the variable as a tag. Existing behavior using only the Ctrl key is unchanged.
11658	Support added for Delta-2 kinematics	Hardware Configuration now supports configuring Delta-2 robot mechanism for axis groups.
15911	In Debug Dialog, Enter key performs "Overwrite" action instead of no action	MotionWorks IEC's default action of the Enter key for the Debug dialog has been changed from the Close button to the Overwrite button. This change will prevent unintended "no action" when Enter key is pressed.
11771 12172	More functionality available in Restricted Mode	Multiple instances of MotionWorks IEC in Restricted Mode now provide more read-only functionality: <ul style="list-style-type: none"> <li>• Right-click options under the resources are now available in Restricted Mode. Properties of these objects such as task times and priorities are now viewable.</li> <li>• Password can be entered in Restricted Mode. POU code that are locked can be opened and viewed.</li> <li>• Hardware Configuration tool can be opened in read-only mode to view the project configuration.</li> </ul>
11814	IP settings can be set as part of archive transfer	Hardware Configuration has a new option setting at controller's primary TCP/IP Settings to create a portable network override configuration file named network.xml. Disabling this setting will remove an existing network.xml file from the local project but not from the controller. This file will be included in when project archive is created if file exists.
11822	Modbus %M variables reset to initial values on Download Changes	MotionWorks IEC now warns during compile about setting an initial value to variables that are addressed at shared memory areas (%M variables). It is not possible to initialize shared memory variables.
11870 12361	Support added for M-III SLIO Bus Coupler	Hardware Configuration now supports the SLIO Mechatrolink-III I/O bus coupler, part number IM-053ML.
11874	Support added for augmented axes in groups	Augmented axes independent of the standard Cartesian and Polar world coordinates can now be added to axis group mechanisms in Hardware Configuration.
11882	Support added for PROFINET Slave 266IF-02	Configuration for the PROFINET slave card 266IF-02 has been extended with network node name, status variable, and I/O in the %I and %Q registers.
11910	Ability to "exclude POU" from build is added	MotionWorks IEC projects have a new user configurable setting to disable compiling for unused POUs. This setting is accessed by right-clicking on the project node then selecting the Properties option then selecting the Settings tab in the resulting dialog.
12039	Support added for SCARA kinematics	Hardware Configuration now supports configuring SCARA robot mechanism for axis groups.
12040	Support added for Mechatrolink-III inverter	Hardware Configuration now supports the A1000 inverter with SI-ET3 option for Mechatrolink-III.
12084	Buttons to launch WebUI in browser added to Hardware Configuration and main IDE.	There are new toolbar buttons in MotionWorks IEC and Hardware Configuration to launch web interface for the controller.

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## New Features

Number	Summary	Release Notes
12124 12208	Support added for SLIO external encoder slices (050-xxxxx)	External encoders for function modules of SLIO Mechatrolink-III bus couplers are now supported in Hardware Configuration.
12168	Multiple libraries can be added simultaneously	MotionWorks IEC can now select and insert multiple user libraries at the same time by holding down the Ctrl key when selecting libraries.
12296	List of configured groups available in AXES_GROUP_NAMES array	Hardware Configuration now creates and initializes a variable named AXES_GROUP_NAMES that is an array of the configured axis group names.
12528	Support added for SLIO modules	Hardware Configuration now supports the following SLIO modules: Supported by both Ethernet/IP and Mechatrolink-III bus couplers: 007-0AA00, 021-1BF01, 021-1DF00, 022-1BB90, 022-1DF00, 022-1HD1, 031-1CA20, 031-1CD35, 031-1CD45, 031-1PA00, 031-1PA10, 032-1CB40, 032-1CD40, 060-1AA00, 061-1BA00 Supported only by Ethernet/IP bus coupler: 031-1BF60, 031-1BF74, 040-1BA00, 054-1BA00, 054-1CB00, 054-1DA00

## Bug Fixes

Number	Identified Issue	Details
8042	218IF-Y1 option cards should not be available in MP3200iec configurations	Hardware Configuration no longer allows configuring MP3200iec controllers with a 218IF-Y1 Communication card, which is unsupported by the controller.
7152	Negative iteration through FOR LOOP using BY expression	MotionWorks IEC now allows negative numbers for iteration through FOR/LOOP. Previously negative iterator numbers would generate a compiler error.
10787	Debug mode with the wrong program says "debug mode not possible", but then goes into debug mode anyway	MotionWorks IEC will no longer mistakenly enter debug mode after dismissing an error message that says debug mode was not possible.
11482	Comments can be lost during due to handling of translation files	The translation management feature for comments has been disabled in MotionWorks IEC 3.6. If you have a project with comments displayed as (* N/A *), please contact Yaskawa technical support for instructions on how to restore comment to the correct text.
11577	Hardware Configuration experiences significant slowdown on Windows 10.	Shutdown time of Controller Configuration Utilities dialog in Hardware Configuration has been reduced significantly, most noticeably when operating in Windows 10.
11617	Bad file path causes Internal error! MSILv2ResManager.cpp(655)	Bug with eCLR compiler has been fixed for desktop project paths containing user name with dot character. Previously build settings 3.4.0 and higher would trigger a compiler error if project path is the desktop for user name with dot character in prior MotionWorks IEC releases.
11726	Canceling the SaveInvalidTasksDialog causes unhandled exception	Canceling the Missing Tasks assignment dialog in Hardware Configuration will no longer result in an exception.
11743	Modify Delta 3 to have parameters based on axis configuration	The platform offset value is now configurable in Hardware Configuration for Delta robot mechanisms without the Rz axis in the machine coordinate system. Previously the platform offset value was fixed and not configurable regardless which machine coordinate system was selected.
11766	IDE freezes if user tries to create VAR_GLOBAL from VAR_EXTERNAL due to unexpected compiler event	Bug has been fixed for multiple executions of the 'Create Global Variables from Externals' functionality or compiling after executing 'Create Global Variables from Externals' in the same session that may cause MotionWorks IEC to freeze. Previously MotionWorks IEC 3.5.0 needed to be killed and restarted to resume usage.

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Bug Fixes		
Number	Identified Issue	Details
11787	Software crash if collision occurs in SFC worksheet	Some collisions in SFC diagrams may cause MotionWorks IEC 3.5.0 to crash. This bug has been fixed.
11799	Hardware Configuration shows axis name is used when it is not in global variables	Bug has been fixed with phantom unsaved external encoder axis names being in use during certain conversion processes. The axis name of the removed external encoder could not be used in a newly added external encoder without reloading Hardware Configuration.
11809	Cross Reference goes to incorrect location of selected variable in ST worksheet if Debug is ON	Cross Reference now jumps to the correct location in an ST worksheet regardless of MotionWorks IEC's debug mode state. Previously, Cross Reference would only jump correctly to a structured text worksheet if debug mode was inactive.
11839	Data type mismatch can cause Internal error! MSILv2ResManager.cpp(655)	A connected variable that is a mismatched data type now returns a specific compiler error about assignment issue instead of an ambiguous compiler internal error.
11843	Add option to remove unused global variables from POU's	The 'Remove unused variables and FB instances' command in MotionWorks IEC now has more removal exclusion options. Previously there was only one option for excluding I/O variables. The new additional options are for excluding local variables and global variables.
11863	MULTIPROG crashes on second resource compile	Fixed a crash bug in MotionWorks IEC 3.5.0 for compiling some projects with a single controller resource more than once per IDE session or for compiling some multiple resource projects. Affected projects were dependent on the build settings greater than 3.3.0.
11908	HMI tag export function creates incorrect number of tags for array	HMI tag export now creates the correct number of tags for arrays beginning with zero index. Previously the array item at index 0 was neglected.
11912	Axes assigned to MPP3 device not displaying overridden parameter settings at Configuration tab	Bug was fixed in Hardware Configuration where axis parameter overrides for an axis assigned to a MPP3 delta robot mechanism may fail to display in the Configuration tab. This issue would occur if an axis was configured to rotary load type and was previously selected in Hardware Configuration prior to being assigned to the MPP3 delta robot mechanism. The position scale settings will now update correctly in the Configuration tab for these initial conditions.
11916	Simulated hardware mode for individual axes of multi-axis servo drives	Hardware Configuration now set simulated hardware mode individually per axis for multi-axis Servopacks. Previous versions automatically set all axes for multi-axis Servopacks to the same simulated hardware mode value.
11984	MotomanSync: Joint Torque updates coming over the option monitor update only at the rate of ~250 ms	Fixed, but requires certain firmware updates on robot controller: <ul style="list-style-type: none"> <li>• RM100: Firmware 1.30 or later</li> <li>• YRC1000: Firmware YAS2.58.00-00 or later</li> <li>• YRC1000micro: Firmware YBS2.01.00-00 or later</li> <li>• DX200: Not supported</li> </ul>
11988	Shift-Backspace doesn't work as backspace in ST worksheets	Behavior of the keystroke combination Shift+Backspace in ST worksheets have been modified to act as backspace similar to other applications. Previously Shift+Backspace did nothing.
11992	CompileExtension variable checks neglects POU's	Bug has been fixed in MotionWorks IEC where local POU variables were not being checked for invalid conditions such as retain setting when controller type does not support retain variables. This could cause project download to fail with an internal error. Previously only global variables were being checked for invalid conditions.
12001	Exception when connecting to controller through Hardware Configuration's "Online" menu	Bug has been fixed for connecting to controller via Hardware Configuration's Online menu's Online/Offline option when no device can be found at the input address. Previously an exception occurred.

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Bug Fixes		
Number	Identified Issue	Details
12023	Pasting Global Variables from Excel Can Overwrite Existing Globals	MotionWorks IEC's handling for creating variables by pasting copied spreadsheet data has been improved to avoid overwriting existing variables.
12047	Allow "Undo" paste if more than 100 lines are inserted in global variable worksheet.	MotionWorks IEC's Undo buffer size has been increased. For example, previously pasting large quantity of copied spreadsheet data could not be undone due to a low Undo buffer size.
12057	Fix addresses for "Create Variable Set"	Bug where extra zero character was inserted into the variable address during MotionWorks IEC's Create Variable Set command has been fixed. The usage model for defining the I/O addresses has changed as a result of this fix. Previously an address input of an address number followed by the # character coupled with a single digit start for the # character would increment multiple digits accordingly, but now it does not. The best practice now is to specify only the # character and leave out the address number in the I/O address field then specify a start with the entire first address.  Example: Create 8 INT output variables that begin at address %QW737920. In the I/O address box, the address field is %QW# without any part of the address number, and the start field is the first address <b>737920</b> with Increment <b>2</b> . Resultant variable addresses are from 737920 to 737934.
12096	Turkish language causes some invalid XML characters	Bug has been fixed in Hardware Configuration where the Windows locale setting caused the parsing of the xml configuration files to neglect some elements. For example, the Turkish locale has a dotless-i character, so Hardware Configuration previously used the dotless-i character instead of the common dotted-i character during parsing of a configuration file. Subsequent configuration saves would lose the neglected data.
12134	Hardware Configuration: SF2300R -> SF2300	The part number for the safety option card has changed to JAPMC-SF2300-ET1 in Hardware Configuration to match the similar change in controller firmware. The part number was previously JAPMC-SF2300R-E in 3.5.0. Projects created in 3.5.0 with the safety option card will automatically update to the new part number when configuration is opened in 3.6.0.
12178	Initialize Mechanism_ID for Mechatrolink axis groups	Hardware Configuration now also initializes the Mechanism_ID and Host_ID fields within the auto-generated AXES_GROUP_REF global variables for Mechatrolink axis groups. Previously these fields were only initialized for MLX axis groups and MotomanSync axis groups.
12229	Limit to the number of parallel contacts on a rung	Bug has been fixed in MotionWorks IEC ladder editor where adding too many consecutive parallel rungs would crash the application. The performance for adding many rungs has also improved.
12266	Do not set both Pn216 and Pn217 for Optimize axis for MP2600iec / Sigma7-Siec	Hardware Configuration no longer uses Pn216 as an optimization parameter for servo axes of MP2600iec and Sigma-7Siec controllers because setting both Pn216 and Pn217 would double the filter time. Only Pn217 remains as an optimization parameter.
12302	Add Pn002.3 (Full-Closed Encoder Selection) to "Dual Encoder" Tab	Pn002.3 (Full-Closed Encoder Selection) has been added to the Dual Encoder tab in Hardware Configuration for all servo drives that support this property setting. Previously it was only listed in the All Parameters tab.
12366	Drag/Drop library with resource open creates a renamed copy of the library and leaves original.	A bug has been fixed with unexpected behavior during library operations when the Project Control Dialog is opened. Previously library delete or reorder in project tree had issues such as creating a renamed copy of the library while maintaining the original one.
12379	STRING#'\$' causes compiler issue	Bug was fixed in the Structured Text compiler for string escape sequences where some were assigning an incorrect value to the string variable. For example, the IEC 61131-3 specification for the escape sequence to produce the apostrophe character is '\$', but previously the \$ character was assigned.

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## Bug Fixes

Number	Identified Issue	Details
12423	I/O address without bit datasize indicator X compiles but is ignored by HMI export	HMI tag export function no longer ignores BOOL variables defined without an X character in the address. Previously BOOL variable addresses must include the X character for variable to export. The X character for BOOL variable addresses is optional. For example, both %I12345.0 without X and %IX12345.1 are valid addresses.
12514	Movicon CSV Export - Swap Word and Swap DWord is required for 64 bit data tags in the Holding Registers	HMI tag export for Movicon now support byte swap setting for Modbus holding register variables in shared memory space (%M variables) of multiple-byted, basic data types. Byte swapping is not required for variables in %I and %Q registers because controller firmware will automatically handle this.
12646	Exiting Hardware Configuration without saving unsaved Modbus or EtherNet/IP slave persists status variable to next HC session	Bug was fixed in Hardware Configuration for unsaved EtherNet/IP or ModbusTCP status variable names that may become unavailable in a MotionWorks IEC session after deleting the unsaved device.
12691	MLX auto-generated variables are not removed when removed device is saved	The auto-generated I/O array variables for MLX and MotomanSync devices are now also removed when the associated device is removed. Previously the obsolete I/O array variables would be moved to the 'User Variables' group and remain in the project.

## Known Issues

Number	Known Issue	Details	Workaround
825	Project file name length is limited to 24 characters	File name length is limited to 24 characters which can cause issues when saving.	Use a filename with 24 characters or less.
875	Hardware Configuration does not run when launched by a user who did not install it and who does not have Administrator privileges	Administrative privileges are required to install on Windows Vista or higher	Login with Administrative privileges before installing.
1034	Cannot connect to the controller from the Hardware Configuration if DNS reverse and forward lookups contain mismatching entries	If the DNS reverse lookup for the controller IP address returns a host name that has a forward lookup to a different IP address, then connection with the Hardware Configuration will fail.	Use a different IP address for the controller or fix the DNS entries on the DNS server.
1165	Single Step debug does not always work	On MP2300Siec and MP2310 only, single step debug mode does not work if multiple instances of a function block exist. The editor will display the wrong instance with incorrect debug values.	If other instances are unused, delete those instances of function blocks before debugging. Otherwise, debugging can proceed if you click on the correct tab for the proper instance after each time the code stops at a breakpoint.
1516	Project source code stored on controller has wrong extension in express (ZipFile.zwt, should be .zwe)	Project source code is saved with wrong extension for MotionWorks IEC Express usage (ZipFile.zwt, should be .zwe) when downloading the source code to the controller.	After uploading from the project archive from the web interface, extract Zip File.zwt, change file extension to .zwe before opening it with MotionWorks IEC Express.
1693	Slow compilation when Symantec Antivirus is enables	Compiler runs slowly when Symantec Antivirus is enabled.	Exclude MotionWorks IEC file types from virus scan. File types: cic, dbd, dip, dit, diw, st1, sto

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## Known Issues

Number	Known Issue	Details	Workaround
5753	Logic Analyzer does not upload data when toolbar button "Stop recording values" is pressed.	Logic Analyzer will not upload data after pressing the stop recording value button. The log buffer must fill up first for the data to be transferred.	Use continuous trace data logging.
5833	I/O group address range does not match text in global variables I/O group name	Editing the name of EtherNet/IP or Modbus device, or adding and deleting devices with the same settings can cause a disconnect between I/O Groups and Variable Groups that can cause the variable addresses to be unrelated to I/O group address range.	Save the Hardware Configuration between deleting a device and reentering it.
6622	Project Wizard does not behave as expected.	In some circumstances, the Project Wizard will not create a new project.	For new projects, use the project templates instead of the Project Wizard.
6628	Continuous trace mode shows a value of -1.#QNANO if debugging mode is stopped and restarted	Continuous trace mode cannot guarantee that samples will not be dropped. When samples are dropped due to CPU overload or other reasons, a value of "-1.#QNANO" will appear when the data is exported.	For a more accurate trace use non-continuous mode.
6795	Unidentified Unicode text strings when using "Language for non-Unicode programs" setting	This occurs when the MotionWorks IEC language is set to Japanese or Simplified Chinese on an English language OS. There are some situations where the displayed text is unidentifiable; a series of question marks are displayed instead.	1. Using Windows Update, install all the Asian language packs. 2. Set the language for non-Unicode programs to Japanese: Settings→Control Panel→Region and Language→Administrative→Change my system locale Use Japanese formats: Settings→Control Panel→Region and Language→Formats
7052	After Communication Time out, Controller Utilities is Unavailable	When online, if communication to the controller is lost the Online Menu has items enabled and disabled as if the controller is still online.	This can be corrected by attempting to go online again. Using the invalid menu items does not produce any negative result.
9868	Occasionally all keystrokes in a POU will stop working after using Hardware Configuration	On some computers, interacting with the Hardware Configuration window will cause all keystrokes in MotionWorks IEC to be intercepted, causing the keyboard to become nonfunctional within the program. Not all computers are affected. The problem can occur in computers with .NET 4.0 and 4.5.	Updating to the most recent .NET 4.5.1 framework resolves this issue.
11452	IMEMCPY, MEMCPY, MEMSET firmware function blocks moved from PROCONOS firmware library to LegacyProConOS firmware library	The MEMCPY and IMEMCPY function blocks are replaced by the MEMORY_COPY function block which is more stable than the older version.  MEMSET function block is replaced with MEMORY_SET.	Replace old function blocks with MEMORY_COPY or MEMORY_SET FBs now in the PROCONOS library. (Alternately, include the firmware library LegacyProConOS in the project to continue using the older function blocks.)
11577	Hardware Configuration experiences significant slowdown on Windows 10 when using Controllers Configuration Utilities.	Closing the Controller Configuration Utilities box in Hardware Configuration takes several seconds longer when using Windows 10.	No workaround.

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Known Issues			
Number	Known Issue	Details	Workaround
11766	MotionWorks IEC sometimes freezes if user uses "Create Global Variables from Externals" function.	There is a bug with multiple executions of the 'Create Global Variables from Externals' functionality in the same session that may cause MotionWorks IEC to freeze. The application needs to be killed and restarted to resume usage.	Close and restart MotionWorks IEC before executing again 'Create Global Variables from Externals'.