



## Release Notes for MPiec controller firmware

Yaskawa America, Inc.

**MP2000iec release 3.2.0.175**

**MP3000iec release 3.2.0.178**

March 29, 2016

### 1. Important note for MP2300Siec and MP2310iec users

Firmware release v3.2.0 requires a significantly higher amount of flash memory than previous firmware versions. This is due to the new web interface that is included as part of the firmware package. Larger application programs may not execute due to memory limitations on MP2300 series controllers.

When updating to firmware v3.2.0 on MP2300 series:

1. Save the archive from the controller.
2. Delete all user files from the controller.
3. Perform the firmware upgrade.
4. Install the previously saved archive file.

If the archive fails to install properly due to a lack of flash memory, or if the user program experiences errors while operating, take one of the following actions:

- Using Internet Explorer, delete the new web interface and web applet from the controller and the classic web interface using the "Optional Components" menu option. This will free the flash memory used by the new web interface. After deletion, reload the saved archive file.
- Downgrade to the previous firmware version.

### 2. New Features

Number	Summary	Release Notes
n/a	Sigma 7 (SGD7) support	This version is the first to officially support Sigma 7 ServoPacks, except for 400 volt models.
7017	The 218IF-Y1 option card is now supported on MP3300iec.	
7282	Added <code>Y_DebugPrint</code> function block to <code>YDeviceComm</code> firmware library	A new function block <code>Y_DebugPrint</code> has been added to the <code>YDeviceComm</code> library. It takes an input string provided by the IEC application program, appends a timestamp, and writes to the controller's Debugging Output, which can be viewed from the WebUI.
7595	<code>Y_CamIn</code> has new ability to accept an absolute (non modularized) engage position	<code>Y_CamIn</code> can now be used with absolute (non-modulo) cam engage positions. Use the new <code>Y_EngageMethod#AtAbsolutePosition</code> to specify where the cam slave must start following the master.
8458	New web interface (WebUI)	The web interface (WebUI) now supports most major browsers (Chrome, Firefox, Safari, Internet Explorer) on multiple operating systems (Windows, MacOS, Linux, iOS, Android).  The original "classic" Web Server remains available and is displayed by default when using Internet Explorer v9 or older. With firmware 3.2 and newer, the appropriate web server will be displayed based on the browser used.

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Number	Summary	Release Notes
8472	Ethernet Settings for multihomed systems	It is now possible to set multiple IP address/subnet masks for each physical adapter (for multihomed systems).
9130	Cartesian motion planning with support for linear vs. rotational components	For multi-axis PLCopen Part 4 function blocks, motion limits (speed, accel, decel) are now resolved independently in linear Cartesian, angular, or N-space, by way of a parameter in the <code>MoveOptions</code> structure. This option is in effect only when the axes group has been configured with MotionWorks IEC Hardware Configuration v3.2.0 or later, and is only in effect when a coordinate system other than ACS is selected.
9216	<code>MoveOptions</code> VAR_INPUT added to MC <code>MoveLinear...</code> and MC <code>MoveCircular...</code> function blocks	A new <code>MoveOptions</code> input structure has been added to PLCopen Part 4 Move function blocks. This structure supports setting a robot pose, velocity units (linear or rotary) and will support additional features in future versions.
9367	Torque Feed Forward support for velocity mode using <code>Y_DirectControl</code> function block	<code>Y_DirectControl</code> now supports control mode 5: Velocity control with Torque Feed Forward. This feature is beneficial for winding applications.
9474	<code>AXES_GROUP_REF</code> structure changes	The <code>AXES_GROUP_REF</code> data type was changed to support Axis, Machine, and Tool Coordinate Systems. Previously, <code>AxesGroup.Axis</code> was defined as an array of <code>AXIS_REF</code> . The original element name was changed to <code>AxisRef</code> . Additionally, a new structure was added to <code>AxesGroup.Status</code> to report the servo power state for each axis in the group.
9287	New WebUI and Machine Operations Panel can be deleted from MP2000iec-series controllers	It is possible to delete the second generation WebUI (~500kb) and/or the Machine Operations Panel (~150kb) to increase flash and / or ramdisk space available for user programs. This capability was added because memory limitations on the MP2000iec may cause problems for larger applications when upgrading to firmware 3.2. This action can only be performed from the 'classic' Web Server, which runs only on Windows Internet Explorer v9 and older. It is only possible for MP2000iec-series controllers.  The deleted components will be restored when a firmware update is performed.

## 3. Bug Fixes

The following issues were identified and fixed for this release.

Number	Summary	Details
7799	MC <code>Power</code> stopped functioning after Mechatrolink goes into HBB state while the drive is enabled	V1000 series drives operated via Mechatrolink encountered this issue when the HBB signal into the VFD was asserted. NOTE: This change covers only V1000 series drives; A1000 series may continue to work incorrectly.
8879	MC <code>ReadStatus</code> had incorrect behavior when an <code>AxesGroup</code> was in motion.	MC <code>ReadStatus</code> now reports the correct axis state ( <code>SynchronizedMotion</code> ) when an axis is actively being controlled by an <code>AxesGroup</code> . Per the PLCopen specification, the axis remains in this state as long as the owning <code>AxesGroup</code> is active, regardless of whether the group is actually moving.
9200	<code>Y_CamIn</code> generated Error 61713 after executing <code>MC_GroupEnable</code>	This bug has been fixed.

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Number	Summary	Details
9206	Resource dialog window and the controllers Run LED report the IEC Application is running when controller has 2301 0026 alarm. (Insufficient CPU alarm)	Insufficient CPU Alarm (2301 0026) no longer allows the PLC to enter RUN mode.
9538	Ethernet/IP driver stops or fails to stop cleanly upon shutdown	In some cases, the Ethernet/IP service task became blocked and all Ethernet /IP communication stalled. This could be observed from the PLC via the communication task timing data structure COMM_TIMING_INFO.
9640	Ethernet/IP driver stopping, Too many Ethernet/IP connections error	When a large number of Ethernet/IP adapters (greater than 40) were configured on an MP3000iec, certain application load conditions caused the Ethernet/IP driver to stop and eventually all Ethernet communications to the controller stopped.

## 4. Known Issues

Number	Summary	Details	Workaround
9771	HTTP and FTP file transfer rates are diminished for some controllers.	Due to new features, file transfer rates are slower on MP2300Siec controllers with firmware 3.1 and up.	No workaround is available.
9413	New WebUI cannot be used with Safari Browser in Private Browsing mode on MacOS.	Using the WebUI may stop working if Private Browsing mode is enabled. This only affected MacOS versions of Safari.	Turn off the Private Browsing feature or use a different web browser.
9004	Java Plug-In is no longer supported by Chrome.	Due to restrictions of the Google Chrome browser, the Machine Operations Java applet can no longer be displayed inline.	The Machine Operations applet can be downloaded and launched manually from the Machine Operations page in the new WebUI interface.
8751	INIT switch on 218IF-Y1 card does not work.	The card cannot be set to the default IP address 192.168.1.1	Set IP address of the 218IF-Y1 card to an address other than 192.168.1.1.
8476	RAM available for applications on MP2300S firmware 2.6.0.152 and later is decreased.	There is less memory available due to enhanced controller functions. This does not affect the available size of user POU's or program data memory; however it may impact the ability to run certain applications which use very large numbers of function blocks.	
7609	Browser cache setting can cause connection issues to Java applet (Machine Operations) via the web interface.		See FAQ <a href="#">MTN-97PQWW</a> for information on solving this issue.
7606	MC_GroupEnable / MC_GroupDisable should not be used concurrently with Y_ResetMechatrolink.		Use interlocks to prevent these function blocks from running at the same time.
7576	After Mechatrolink-III communication errors, the MTD2310 remote I/O module does not reconnect.	Upon removing and reconnecting the Mechatrolink-III network connection, the MTD2310 remote I/O module shows a flashing red 'F'. Once in this state, the controller cannot read inputs or set outputs.	To clear this state, the MTD2310 must be powered cycled.
7574	MPiec as a Ethernet/IP slave disconnects from AB ControlLogix Master with outdated firmware.	The connection status is unstable when using older firmware in the Allen Bradley ControlLogix. Allen Bradley 1756-ENBT communication module requires fw 6.006 or higher.	Update firmware of Allen-Bradley communication module.
7505	The application and communication tasks and I/O drivers stop running after Y_ResetMechatrolink is executed.	The application and communication tasks and I/O drivers stop executing during the time when the Mechatrolink network is resetting.	There is no workaround. This will be fixed in a future release.

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Number	Summary	Details	Workaround
7448	MC_ReadParameter.Valid flickers when the web interface's Java applet "AxisParameters" tab is selected	When MC_ReadParameter_FB is used to read a parameter and AxisParams tab in the Machine Operations applet, MC_ReadParameters.Valid flickers multiple times. The FB behaves correctly because it says that the value is invalid when the wrong value is displayed.	Only read the parameter value when the Valid output is TRUE.
6712	MP3200iec CPU architecture is not reporting maximal floats as NAN (Not a Number) or INF (Infinite).	MP3200iec does not support IEEE 754. As a result, adding two floating points numbers that would normally cause an INF or NAN error, will report that maximum floating point result instead. Additionally, ENO will remain TRUE instead of normally becoming FALSE as when an overflow is detected.	User applications should check for overflow conditions.
6481	Different deceleration is used for MC_TorqueControl than for MC_MoveAbsolute (or similar) when a software limit has been exceeded.	When a soft position limit is exceeded, a position move (MC_MoveAbsolute, MC_MoveRelative, etc.) will be aborted and the axis will try to hold the last position, and consequently, the axis is brought to a stop using the maximum available torque. On the other hand, when a soft position limit is exceeded, MC_TorqueControl will be aborted and the axis will decelerate according to parameters Pn80D, Pn80E, Pn80F and Pn827.	If the axis does not decelerate quickly enough after exceeding a soft limit with MC_TorqueControl, then modify parameters Pn80D, Pn80E, Pn80F and Pn827.
6473	Sending archive file repeatedly can eventually cause archiving to fail without indication.	Sending an archive to a controller more than 20 times without rebooting can cause the controller to fail without warning or alarm messages being displayed. Debugging Output of the web interface displays the following message:  Error invoking web post request. FilteredZip Could not open specified archive.	Reboot the controller.
6343	Ethernet/IP Multicast only works correctly on Port A (CN11A) of the MP2600iec.	Multicast Ethernet/IP data will only be broadcast over Port A (CN-11A). Consequently, Port B (CN-11B) should not be used for Ethernet/IP communication.	Use Port A (CN-11A) for Ethernet/IP communication.
5965	Configuring an SGD Servopack to use /BK (brake) output on SO1 prevents IEC control of any Servopack outputs.	SGDV firmware was changed preventing Mechatrolink control over any outputs (SO1, SO2, SO3) if the /BK (brake) control function is assigned to SO1.	No workaround exists.
5948	CPU overload can occur on an MP2600iec under moderate load if I/O drivers are assigned to the Default task	A CPU overload can occur instead of the expected watchdog alarm if the Mechatrolink (dual port memory update) rate is set to 1ms and an application task is configured with a 2ms interval, with I/O drivers assigned to the default task.	Make sure no I/O drivers are assigned to the Default task or increase task rate for IEC scans to be faster than the Motion Update rate.
5915	Trying to enable the same axis with two MC_Power blocks at the same time results in internal motion kernel error.	Trying to enable the same axis with two MC_Power blocks at the same time results in internal motion kernel error.	Do not use multiple MC_Power blocks on the same axis at the same time. Yaskawa recommends that each axis have only one MC_Power block.

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Number	Summary	Details	Workaround
5724	PLC will enter the RUN state after finishing a test move in Hardware Configuration	When attempting to start a program using the Project Control dialog while running a test move through the Hardware Configuration, the controller correctly prevents the PLC from entering the RUN state, but still indicates that the controller is in the RUN state with the request to enter RUN mode pending. When the move finishes the PLC will enter the RUN state.	Do not RUN the PLC when Hardware Configuration is performing a test move.
5697	Slave axis cannot synchronize to a master axis that has S-curve filtering	Applications using camming and gearing will not follow a master axis that has the S-curve filter enabled.	Do not use an S-curve filter on any master axis unless the slave has an identical S-curve filter.
5686	MPiec Modbus server seems to stop communicating	Polling for data too often can overload the controller and break Modbus TCP/IP communication.	Add a 5ms timer between read and write queries.
5521	CPU utilization is not displayed accurately for MP2600iec when the IEC task time and motion engine cycle time are the same.	The CPU utilization always reports 0.1% when an IEC task runs at the same rate as the motion engine. To get more accurate utilization data, the scheduler must run more often than the user task and the user task must continue to execute over multiple scheduler cycles.	The individual task statistics <code>MinDuration_us</code> , <code>CurDuration_us</code> , <code>MaxDuration_us</code> stored in <code>PLC_TASK_1</code> (etc.) are reported in microseconds, which is more useful for determining watchdog timers for tasks running at the same rate as the motion kernel.
5373	Controller hangs at startup with two Sigma II drives at the same physical node address	The ERR and MTX light will display on the controller. (This problem does not occur with Sigma V drives.)	Ensure each Sigma II drive has a unique physical node address.
5264	MODBUS server outputs are not retained on MP2300Siec and MP2310iec	Outputs (%Q) variables are not being retained even if the RETAIN attribute is selected.	Please see application note AN.MPIEC.12 on <a href="http://www.yaskawa.com">www.yaskawa.com</a> .
5241	ProConOS communication task can use all available CPU with large OPC transfers (MP23xxiec controllers only)	With large OPC transfers, the ProConOS communication task can starve lower priority tasks, making communication with MotionWorks IEC difficult. OPC transfers are limited to 32KB.	Use smaller buffers and slower update rates.
5227	XML configuration files are cached via classic web server	When a project archive is deleted and a new one installed, the classic web interface appears to show the old version of user/config/startup/io.xml. The file has actually been updated, but the web browser has cached the old version.	Disable caching of XML configuration files in Internet Explorer.
4641	Booting up in supervisor mode shows extra menu options	When controller is started in supervisor mode, the web menu shows all menu options immediately even if the Admin user is not logged in. Some options will require login before they can be used.	Login with the Admin password in supervisor mode.
4395	Large positions will not be displayed to full precision in the web interface Java applet or Hardware Configuration.	Positions greater than 2147483648.0 are written in scientific notation and will lose some precision when displayed in the applet or Hardware Configuration. The position stored in the controller is not affected.	If possible, change the origin using <code>MC_SetPosition</code> or <code>MC_StepRefPulse</code> or change the position scale so that the full position can be seen.
4356	Axis state machine doesn't track superimposed moves	Executing <code>MC_MoveSuperImposed</code> without executing another motion block afterwards causes the axis to remain in the standstill state.	Executing another motion block after <code>MC_MoveSuperImposed</code> fixes the axis state.

## 5. Limitations

### Unsupported Card Modules

JAPMC-PL2300-E	Counter Module
JAPMC-PL2310-E	Pulse Output Module

### Unsupported Mechatrolink Devices

SGDH & NS115 with Linear Motor	
JEPMC-PL2900	Counter Device
JEPMC-PL2910	Pulse Output Device