YASKAWA

Release Notes for MPiec controller firmware

Yaskawa America, Inc.

Release 3.1.0 builds 124,125, and 127

Sept. 10, 2015.

This release includes an Ethernet-related bug fix (8809) for the MP2300Siec and MP2310iec controllers with rev C hardware only. To determine if the MP2300 controller has rev C hardware, look at the silkscreen of the CPU board as shown below.
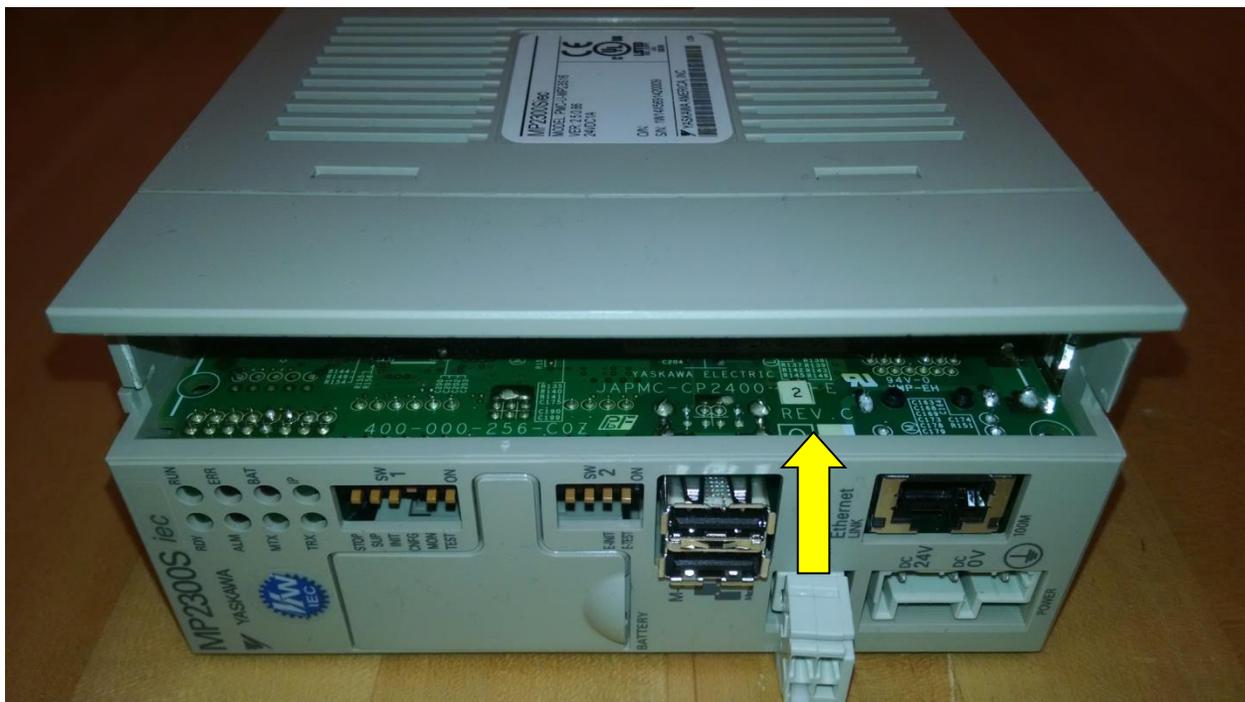
1. New Features

Number	Summary	Release Notes
8040	Java 7 security model prevents unsigned applets from running in the web server	The web server's Machine Operations page uses a Java applet which is now signed by a trusted certificate root. Previous versions of the firmware require adding 'Exception Sites' in the Java security settings, because their certificates are not signed by a trusted CA.

Number	Summary	Release Notes
8793	MC_MoveCircular: support for moves of exactly N * Pi using AuxPoint2	Circular moves of exactly 180 degrees or 360 degrees can now be completed with either expanded use of the direction input (If AxesGroup is configured as 2D) or use of the optional AuxPoint2 VAR_INPUT (If the AxesGroup is configured as 3D). For 2D Groups, the MC_CircleMode#Border method can be used to traverse a 180 degree arc, and in conjunction with clockwise / counterclockwise direction to traverse a 360 degree circle with diameter equal to the distance between the start / end point and the via point. The MC_CircleMode#Radius method can be used in conjunction with shortest / longest to complete a 180 degree arc, but not a 360 degree circle. The MC_CircleMode#Center method can be used in conjunction with clockwise / counterclockwise to traverse either a 180 or 360 degree arc. For 3D Groups, in all cases (except via / 180), an auxiliary via point (AuxPoint2) must be specified to define the plane of the arc. This point must be a point on the arc, and will define the arc in 3D space. The MC_CircleMode#Radius method places additional restrictions because the Auxpoint2 must lie within the plane already defined by the normal vector and the start / end point. The MC_CircleMode#Center method imposes an additional restriction that the AuxPoint2 must be the same distance from the center as the start / end points. For the "Center" method, it is possible to specify a degenerate circle if AuxPoint2 is at the 180 degree mark.

2. Bug Fixes

The following issues were identified and fixed for this release.

Number	Summary	Details and workarounds prior to this version
8517	Y_CamStructSelect shows Error 4635 then reports Done.	Prior to this firmware release, if Y_CamStructSelect had an error, the Error output would go on, then off, and the Done output would go on and remain on as long as Execute was on. **Resolution:** The behavior has been corrected.
8809	Impaired Ethernet performance on MP2300 Rev C hardware	When Ethernet communication is pushed to its limit on the MP2300Siec or MP2310iec controller (short communication interval with heavy CPU load) with rev C hardware, Ethernet communication can become sluggish. To determine if an MP2300Siec controller has rev C hardware, view the silkscreen on the CPU board by looking into the first empty slot in the rack just to the left of the Ethernet connector (see photo at the top of this document). **Resolution:** This bug can be avoided by changing the firmware to one of the following versions: 2.5.3.1, & 2.6.3.1 or 3.1 (and up).
8843	Y_CamScale outputs wrong velocity data, doesn't match position differential	Y_CamScale adjustments cause an adjustment to the absolute position scale, which can result in an unintuitive velocity profile. **Resolution:** This release fixes a bug in the feedforward velocity calculation so that it correctly matches the differential position.
8845	MC_TransitionMode#TMCornerDistance causes motion to jump	This problem manifested when an extremely short motion was attempted to be blended with longer motion via the corner distance method. **Resolution:** This behavior has been corrected.

Number	Summary	Details and workarounds prior to this version
8955	MC_GroupDisable allows transition directly from Moving state and does not clear motion queue	Per the PLCopen Part 4 specification, MC_GroupDisable can only be called when the AxesGroup is in a "Standby" state. This means that the function block should report an error if the group is in the Moving, Stopping, or ErrorStop states. In version 3.0.3, this was not implemented correctly. MC_GroupDisable would unconditionally transition to the disabled state. When doing so, it did NOT clear the pending motion queue for the group, though it did stop executing motion. Active motion function blocks such as MC_MoveLinearAbsolute, MC_GroupDirectControl, or MC_Stop will not report 'Done' if MC_GroupDisable is called while those function blocks are active. Calling MC_GroupEnable subsequently may have unpredictable results, possibly including sudden restart of motion function blocks which were active when the group was disabled. Firmware 3.0 Users are advised to call MC_GroupStop and check the Done and Error outputs prior to calling MC_GroupDisable. **Resolution:** In firmware 3.1.0, the standby-state requirement is enforced for MC_GroupDisable. A new ErrorID 8976 was added to indicate that MC_GroupDisable has failed because the group is not in the Standby state. However, after review, it was determined that requiring MC_GroupReset prior to MC_GroupDisable, when the group is in an ErrorStop state, is unintuitive. Therefore, the MC_GroupDisable function block is allowed in both the Standby and ErrorStop states, and will transition to the Disabled state. This deviates from the PLCopen part 4 specification.
9019	Y_DirectControl in position mode on MP3300iec causes spikes in velocity profile	Y_DirectControl produced small discontinuities in trajectory generation at regular intervals in some situations. **Resolution:** This behavior has been corrected.
9029	MC_MoveCircular was not supported on MP2300 platform in firmware v3.0.3.	MC_MoveCircular function blocks were not supported on MP2300 platform in firmware v3.0.3. The function blocks reported ErrorID 57617. **Resolution:** MP2300 controllers now support MC_MoveCircular
9128	MP3200 fails to connect to Sigma 7 drives consistently	MP3200 controllers could not connect with Sigma-7 drives (which were not officially supported). **Resolution:** Corrected in v3.1.0

3. Known Issues

Number	Summary	Release Notes	Workaround
4395	Large positions will not be displayed to full precision in the Web Server Java applet or the Hardware Configuration.	Positions greater than 2147483648.0 are written in scientific notation and will lose some precision when displayed in the applet or the Hardware Configuration. The position stored in the controller is not affected.	If possible, change the origin using MC_SetPosition or MC_StepRefPulse or change the position scale so that the full position can be seen.
4641	Booting up in supervisor mode shows extra menu options	When controller is started in supervisor mode, the web menu shows all of the supervisor options immediately. Some options will require login before they can be used.	Login with the Admin password in supervisor mode.

Number	Summary	Release Notes	Workaround
5227	XML Config files are cached via web server	Deleting a project archive and uploading a new project appears to show user/config/startup/io.xml not updated to the new version. Actually it is updated, however the web browser has cached the old version.	Disable caching of XML config files in Internet Explorer.
5241	ProConOS communication task can use all available CPU with large OPC transfers	With large OPC transfers, the ProConOS communication task can starve lower priority tasks, making communication with MotionWorks IEC difficult. We have also noticed a 32KB limitation on OPC transfers.	Use smaller buffers and slower update rates.
5264	MODBUS server outputs are not retained on MP2300Siec and MP2310iec	In MotionWorks IEC, the Global Variables table contains a column labeled "Retain". Selecting a check box within this column causes the corresponding variable to be allocated in SRAM, however, for outputs (%Q), this feature is not working.	Please see this application note AN.MPIEC.12 on www.yaskawa.com Keyword search: 'retain'
5373	Controller hangs at startup with two Sigma II drives at the same physical node address	The ERR and MTX light will come on. This problem does not occur with Sigma V drives.	Ensure each Sigma II drive has a unique physical node address.
5521	CPU utilization is not accurate for MP2600iec when the IEC task and motion engine cycle 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 MinDuration_us, CurDuration_us, MaxDuration_us stored in PLC_TASK_1 (etc.) are reported in microseconds, which is more useful for determining watchdog timers for tasks running at the same rate as the motion kernel.
5686	MPiec Modbus server seems to stop communicating	A modbus master can overload the controller and break Modbus/TCP communication if polling for data too often.	Adding a 5 ms timer between Read / Write queries avoids the issue.
5697	Slave cannot synchronize to a master with S curve applied	Cam and Gear applications will not follow another servo 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.
5724	PLC will enter the RUN state after a test move finishes in the 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. In this case the resource dialog still shows the PLC in the RUN state as the request to enter RUN mode is pending. When the move finishes the PLC will enter the "RUN" state.	Do not RUN the PLC when the Hardware Configuration is performing a test move.
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 enable multiple MC_Power blocks on the same axis at the same time.

Number	Summary	Release Notes	Workaround
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 a watchdog if the Mechatrolink (dual port memory update) is set to 1 mSec and an application task is configured with a 2 ms interval, and I/O drivers assigned to the default task.	Make sure no I/O drivers are assigned to the Default task. Other options: Change the high speed task to 3ms, change the motion update to 2ms, or change the lower priority tasks to a longer period.
5965	If the SGDV is configured to use the Brake output on SO1, then none of SO1, SO2 or SO3 can be controlled over Mechatrolink.	SGDV firmware was changed	No workaround exists.
6343	EIP Multicast only works correctly on Port A (CN11A of the MP2600iec.	Multicast Etherent I/P data will only be broadcast over Port A (CN-11A). Consequently, Port B (CN-11B) should not be used for Ethernet I/P communication.	Use Port A (CN-11A) for Ethernet I/P communication.
6473	Repeated archiving operations eventually breaks archiving	Typically, the controller is rebooted immediately after sending the project archive, but if an archive project is sent to the controller more than 20 times in a row, then the controller starts failing semi-silently. There is no alarm or warning, but the Debugging Output starts to print the following error: [2011-07-07 15:39:39.210] error invoking web post request. FilteredZip Could not open specified archive	Reboot the controller.
6481	Different deceleration is used for MC_TorqueControl than for MC_Move... when a software limit has been exceeded.		If the axis does not decelerate quickly enough after exceeding a soft limit with MC_TorqueControl, then modify parameters Pn80D, Pn80E, Pn80F and Pn827.
6712	MP3200iec CPU architecture is not reporting maximal floats as NAN or INF	On the MP3200iec, the hardware floating point unit does not support IEEE 754. This means adding two floating points numbers that would normally cause an INF or NAN, will instead result in a maxFloat result. Example: 1.5e38 + 3.0e38 gives 3.4028235e38. In addition, in EN/ENO is enabled, ENO will remain "1" instead of normally becoming "0" when an overflow is detected.	User applications should check for overflow conditions.
7017	218IF-Y1 communication card is not supported on the MP3200iec	Planned for future release.	
7081	MIN, MAX and LIMIT with 64 bit data types when using EN/ENO are not supported on MP2600iec and MP3200iec		Create custom functions in ST or use functions from the Yaskawa and Math Toolboxes.

Number	Summary	Release Notes	Workaround
7448	MC_ReadParameter.Valid flickers multiple times when the web server's Machine Operations page > AxisParameters tab is selected	When MC_ReadParameter FB is set to read Prm 1311 and the user navigates to the web server and opens the AxisParams tab in the machine operations page, the various parameters are displayed, however at this point, 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 on.
7505	Attach PLC and other tasks to a secondary interrupt to ride through Mechatrolink Reset (Y_ResetMechatrolink)	The Mechatrolink interrupt is the main driver for all lower priority tasks in the MPiec controller. 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 is scheduled to be fixed in future releases.
7574	MPiec as a Ethernet/IP slave disconnects from AB ControlLogix Master	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.
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.
7606	MC_GroupEnable / Disable should not be used concurrently with Y_ResetMechatrolink		Use interlocks to prevent these function blocks from running at the same time.
7609	Applet (web Server) cant connect to Machine Operations page (Cache settings issue)		Check www.yaskawa.com for FAQ MTN-97PQWW for information on solving this issue.
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 POUs or program data memory, however it may impact the ability to run certain applications which use very large numbers of function blocks.	
8751	INIT switch on 218IF-Y1 card does not work	The card cannot be set to the default IP address 192.168.1.1	
8881	MC_MoveLinearAbsolute / Relative results in ErrorID 61713 if MCS coordinate system is specified.	MC_CoordinateSystem: MCS and PCS are not supported.	

4. 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