



# Release Notes for MPiec controller firmware

## Release 2.5.0 build 86

Yaskawa America, Inc.

As a result of discontinuance of key parts and ongoing product improvements, Yaskawa Electric Corporation will be releasing a new revision to the CPU board in the MP2300Siec and MP2310iec controllers. Yaskawa America, Inc. expects to start shipping this new revision by late summer 2013. The hardware change improves Ethernet circuitry design, but will not change the performance of the controller.

One important side effect of this change is a firmware downgrade restriction.

- 1) Controllers shipped from the factory will be marked with a sticker indicating 2.5.0 firmware was installed. These units cannot be downgraded to a version prior to 2.5.0.
- 2) Controllers originally shipped from the factory with firmware 2.4.0 or older can be upgraded to 2.5 and then downgraded again. A hard power cycle is required the first time after the web interface reports downgrade success and prompts for reboot. If a soft reboot via the web interface is instead performed, the controller will boot but will be unresponsive to the web interface. A hard power cycle will restore network functionality in this case.

Yaskawa America strives to minimize firmware compatibility issues, therefore we expect no issues should arise for applications running on version 2.5.0 firmware. However, if you have standardized on a particular firmware version, please plan to evaluate 2.5.0 for consistency with your existing application.

## 1. New Features

Number	Summary	Release Notes
7538	Prevent downgrading from 2.5 to 2.4 or lower	There is a new revision of the MP2300Siec and MP2310iec hardware coming in 2013, which previous firmware versions cannot support. Consequently, MP2300Siec and MP2310iec controllers manufactured with firmware version 2.5.0 cannot be downgraded to an earlier firmware version.
7509	Ethernet debugging utilities and resource limitation alarms	To enhance debugging of Ethernet communication problems, the controller has a new PLC data structure, DIAGNOSTICS_INFO, showing the free memory, total memory, file descriptors in use and the maximum number of file descriptors. Additionally, the same information is displayed on the Diagnostics tab in the Machine Operations applet. To further aid in debugging Ethernet communication problems, the Debugging Output web page has a "Print Network Debugging Info" button which prints the file descriptor table, the mBuf system and data pools, the routing table, and the state of all sockets. The user can select to automatically print this information every minute, and if using a 218IF-Y1 card with the TEST switch ON, then this information will be sent to the serial port. There is also a new alarm when the number of file descriptors reaches 80% of the maximum number of file descriptors.
7508	M-System's transmission length must be set to 64 bytes-- alarm reported in web server if not set to 64 bytes.	The M-System I/O has switches that allow the user to select 16, 32, 48 and 64 byte communication on M-III. Only 64 byte communication is supported by the MPiec controller. If another setting is used, the Hardware Configuration will not connect to the controller.

Number	Summary	Release Notes
7486	Support simultaneous latches on Mechatrolink SGD V using MP3200iec	<p>Mechatrolink-III supports capturing and transmitting two latches simultaneously. On the MP3200iec, two MC_TouchProbe function blocks can be executed simultaneously by using the ID field in TRIGGER_REF to select a latch circuit.</p> <p><b>Important Note:</b> Prior to firmware 2.5, the TRIGGER_REF.ID element was not used by the controller and any value would be accepted. In 2.5, the TRIGGER_REF.ID field must be a zero for MP2600iec and MP2300iec. In older help documentation, an example showed this field set to 1 and many users set TRIGGER_REF.ID to 1 in their projects, which causes ErrorID 4630 when using firmware 2.5 or higher. The solution is to leave the value at zero which will work for all firmware versions. Only on the MP3000iec controllers can another value be used for the case of multiple latches on the same axis.</p>
7481	Reboot the controller from the IEC Application	Added Y_RebootController function block to the YMotion firmware library. On the MP2600iec, this feature can be used to clear servo alarms like A.CC0 (multi-turn mismatch) that require a power cycle on the drive. The function is available on all controller platforms; however it is most useful on the MP2600iec, which does not have a Mechatrolink network.
7118	Encoder resolution for feedback option card	The Sigma-5 Encoder Option Card is supported on both Mechatrolink-II and Mechatrolink-III servopacks.
7068	Support new MP2300Siec / MP2310iec hardware (Rev C)	Added support for new Rev C hardware which includes a different Ethernet physical layer, but the behavior is the same. Rev C controllers shipped from the factory will include a sticker on the side indicating 2.5.0 firmware. These units cannot be downgraded to a version prior to 2.5.0. Rev C hardware will start shipping late 2013.



## 2. Bug Fixes

The following issues were identified and fixed for this release.

Number	Summary	Details and workarounds prior to this version
7542	Initialization of the 64 bit position when using the fully closed configuration	Previously, the full 64 bit position data was not read correctly at startup for linear scale and fully-closed applications
7501	Ethernet/IP connections not getting cleaned up	<p>Fixed two issues that could occur when a client closed the connection.</p> <p>(1) Previously, when a client closed the connection, the controller set the SO_LINGER to 0 which caused the controller to reply with a RST packet instead of a FIN,ACK packet.</p> <p>(2) The controller could call close() twice in certain situations resulting in the client re-establishing multiple connections.</p> <p>Improved detection of abandoned connections. The EIP TCP connection activity timeout now handles the condition where a remote client connects but never sends any data. In this case a 120 second idle timeout is used to send an EIP 'NOP' message to probe the other side to see if it's still alive. If UDP IO data is being successfully received, the 120 second idle timeout is inhibited, so this should result in no net change to existing connections behaving well. Improved state tracking while the connection is being established. If a client connection is never properly established, then it will be cleaned up.</p>
7492	MP2300S, MP2310 SH2 CPU can fail to boot in cold temperatures	A power up procedure could fail on specific controller units exposed to cold temperature. The power on logic was changed to bypass this issue.
7443	No Ethernet ARP on power up or link state change	The controller now sends out a gratuitous ARP packet
7352	LIO card external encoder does not work at Mechatrolink-III setting of 250 uSec.	The maximum sampling rate for the external encoders on the LIO-01/02 and LIO-06 option cards is 2000 Hz (500 uSec.) If the Mechatrolink-III update rate is set faster, the option cards will be sampled at 2000 Hz rather than at the Mechatrolink-III update rate.
7022	Encoder Feedback Option Card: Support reading encoder resolution and type	Support was added for reading encoder resolution and type from the SGD V when a fully closed serial (Hyperface) encoder is attached.
6849	Y_CamIn.CommandAborted, InSync, and Active go TRUE simultaneously if EngageData.StartMode.Immediate is used	The output behavior was not according to the PLCopen specification.

### 3. Known Issues

Number	Summary	Release Notes	Workaround
7915	ServPack outputs controlled via MPiec are turned off during SVON (typically 42ms)	ServoPack outputs controlled via MP2300Siec and MP2310iec are turned off during SVON (typically 42ms) then resume to their previous state. This will cause issues for outputs that are used to control something asynchronously with the SVON status. Outputs used only after the servo is already enabled are not affected.	For devices that must not be interrupted during servo enable, use another output source such as an LIO card.
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	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.
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.
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.
7069	Applet cant connect to Machine Operations page (Cache settings issue)	Under certain circumstances, the Webservers machine Operations page will not work. See FAQ MTN-97PQWW for details on disabling the cache.	See FAQ MTN-97PQWW on <a href="http://www.yaskawa.com">www.yaskawa.com</a> for details on disabling the cache.
7017	218IF-Y1 communication card is not supported on the MP3200iec	Planned for future release.	
6922	MP3200 processes data using big-endian format	The MP3200iec uses a big endian processor, but Ethernet/IP and Modbus/TCP use a little endian data format on the wire. For native data types, such as INT, UINT, DINT, UDINT, LREAL, etc., the MP3200iec will correctly byte swap the data.	For user defined data types such as arrays and structures, the user must perform byte swapping in the IEC application. Tip: Use the BUF_TO_ function blocks from ProConOS firmware library.

Number	Summary	Release Notes	Workaround
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.
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, modify parameters Pn80D, Pn80E, Pn80F and Pn827.
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.
6343	EIP Multicast only works correctly on Port A (CN11A) of the MP2600iec.	Multicast Ethernet 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.
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.
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.
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.
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.

Number	Summary	Release Notes	Workaround
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.
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.
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.
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.
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.
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.

## 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

MP3200iec does not support the JAPMC-218IF-Y1 card.