YASKAWA

Release Notes for MPiec controller firmware
Release 3.6.0
May 30, 2019

Critical Behavioral Change		
Number	**Summary**	**Release Notes**
11286	PLC no longer forces a cold start at boot up if a warm start is not possible	With this release the MPiec controller will not automatically perform a cold start at power up if a warm start is not possible. To perform a cold start and initialize retain memory, use MotionWorks IEC project control or WebUI.

New Features		
Number	**Summary**	**Release Notes**
5697	Cam/Gear slave value now based on is based on master value pre-S-curve	Beginning in FW 3.6.0, cam and gear relationships use pre-filtered master data rather than post-filtered master data. To achieve filtered results on slave axes, projects should be updated to configure separate filters on the slave axis.
7308	PLC control in WebUI	Firmware 3.6.0 adds the ability to stop and cold/warm start the PLC from WebUI.
7478	Motion.Done set to TRUE only when until commanded S Curved motion is complete	Beginning in firmware 3.6.0, S-curve filters on individual axes and MCS motion will be accounted for in motion function blocks Done output, e.g. MC_MoveLinearAbsolute.Done. This also includes MC_Power.Status output. The Done/Status output will not turn TRUE until all filters are completed and no additional moves are queued. Previously, the Done output was set TRUE when the pre-filtered motion was complete, regardless of filtered position. This change may introduce some timing delays in existing projects which use axis S-curve filters.
8761	Support for Mechatrolink-III Inverter added	FW 3.6.0 adds support for Mechatrolink-III A1000 series inverters using the SI-T3 card.
9477	Yaskawa logo can be replaced with cus tomer supplied image in WebUI	Firmware 3.6.0 adds support for a customer-specific logo to replace the Yaskawa logo on the controller WebUI.
10825	Support added for Delta-2 kinematics	Firmware 3.6.0 adds support for Delta-2 mechanisms.
11199	TransitionMode#TMMaxCornerDistance implemented for blending	FW 3.6.0 adds a new TransitionMode, TMMaxCornerDistance (ENUM value 11), to PLCopen Part 4 blending operations. It will limit the maximum corner distance, but allow smaller corners if acceleration and velocity will allow.
11224	User-defined messages on MP3300 LED display	Y_Write7LEDMessage is a new function block in the YMotion library which allows a text message to be written to the front-panel 7-segment LED display on the MP3300 controller.
11400	Full-Closed Loop card supported for Sigma-7Siec controller	Firmware 3.6.0 adds support for the fully-closed loop encoder option card on Sigma-7Siec.
11615	MP3200: Add support for alternate flash memory chips	Add support for Macronix flash (JEDEC ID)

New Features

Number	Summary	Release Notes
11666	WebUI allows IP settings to be set as part of archive transfer	In firmware 3.6.0, a new feature is added to the Program Archive in WebUI. The controller's IP address may be optionally transferred to the archive zip file and installed on a destination controller. A checkbox is present in WebUI to select this option. Note: proper operation first requires an online save from MotionWorks IEC version 3.6.0 or later to place the correct file on the controller file system.
11765	Support Mechatrolink-III SLIO bus coupler (053-1ML00) autodiscovery	Firmware 3.6.0 adds support for Yaskawa SLIO Mechatrolink-III bus coupler module 053-1ML00.
11820 11821	Save/Restore retain variables with Web UI	Firmware 3.6.0 adds support for saving and restoring retain variables from WebUI. The PLC program must be stopped to perform these operations.
11877	User alarm functionality added	Y_PostUserAlarm is a new function block in the YMotion library which allows the user program to post an alarm code to the system.
11883	Support added for PROFINET slave option card 266IF-02	Firmware v3.6.0 adds support for the 266IF-02 PROFINET Slave option card.
12010	Support added for SCARA kinematics	Firmware 3.6.0 adds support for SCARA mechanisms.
12093	Support added for SR200 multi-axis Mechatrolink-III node	Firmware 3.6.0 adds support for SR200 multi-axis servo node
12160	Support added for SR200 2xDual IO node	Firmware 3.6.0 adds support for SR200 IO node
12363	Added Italian, Czech, and Russian language support to WebUI	Firmware 3.6.0 adds support for Italian, Russian, and Czech locale translations.

Bug Fixes

Number	Identified Issue	Details
9430	MC_Power does not show Error when three phase amp is wired as single phase	In FW 3.5.0 and earlier, MC_Power did not show an error when 3-phase Servopacks were wired as single-phase, despite the Servopack reporting alarm A.F1. In version 3.6.0 the correct error code is returned.
9533	WebUI performance improvements when controller is disconnected	In firmware version 3.5.0 and earlier, the WebUI may cause excessive CPU utilization on the host PC browser when the controller is not available. This is fixed in version 3.6.0.
10800	Combining PathMode = TRUE and TransitionMode = TMNone now better handles non-collinear segments	Beginning with FW 3.6.0, for certain PLCopen Part 4 blending scenarios, the value of PathMode can be overridden from '1' (continue to next segment at speed) to '0' (stop at the end of segment). This can occur if the corner angle is not colinear with the previous segment AND there is no blend-mode specified
10690	MotomanSync unable to restart and continue with buffered moves after an abort	MotomanSync behavior with buffered moves is improved
11089	MC_GroupReadStatus shows Standby/Moving states toggle when used with blending segments	In MPiec firmware 3.4 and earlier, calling MC_MoveLinearAbsolute or MC_MoveLinearRelative with any combination of inputs to BufferMode and TransitionMode which cause corner blends to be produced will incorrectly result in MC_GroupReadStatus transitioning from the Moving state to Standby state until the next motion function block becomes active.
11505	Axes in simulated mode resets real axis offset	Beginning in firmware version 3.6.0, when configuring an axis in [Simulated] mode, the axis offset will no longer be reset to 0 after switching back to non-Simulated mode on subsequent reboot.

Bug Fixes

Number	Identified Issue	Details
11756	MC_MoveLinearAbsolute FB does not use the deceleration input value in Aborting Buffer Mode	In FW 3.5.0 and earlier, MC_MoveLinearAbsolute.Deceleration input was not correctly used when BufferMode = Aborting. This is fixed in version 3.6.0.
11875	PLC Hot Start resets internal state (e.g. Y_CamStructSelect Cam table ID)	In controller firmware version 3.5 and earlier, the PLC 'Hot Start' feature does not work correctly: It is incompatible with PLCopenPart4 AXES_GROUP_REF structures. A PLC I/O driver error with unrecognized error 257 will be reported if attempting hot start. All internal function block state is incorrectly reset some user resources such as cam tables (Y_CamStructSelect, etc) and open sockets/serial ports from YDeviceComm library will be incorrectly released and invalidated This is fixed in version 3.6.
12043	LIO high-speed output drift when rotary and non-integer cycle.	In firmware version 3.5.0 and earlier. using an external encoder such as on LIO-01, LIO-02, LIO-06, LIO-Y1 card, or MP2600iec causes a drifting error in the following conditions: • Gear ratio resulting in non-integral number of encoder ticks per output cycle (encoder ticks do not divide evenly into gear ratio) • Rotary load • Setting the High Speed Output (COIN) parameters 1052 or 1053 cyclically This combination can result in small incremental drift of the resulting position with each cycle. The fractional encoder ticks were incorrectly being discarded. This is fixed in version 3.6.0
12062	Split axis gantry reports internal motion kernel error 61713 for moves in MCS	In version 3.6, gantry groups with split ("prime") axes can now be used with MCS coordinate system moves.
12123	Modbus/TCP buffer overrun when receiving certain requests from client causes communication loss, memory corruption, or crash	In controller version 3.5 and earlier, a vulnerability in the Modbus/TCP subsystem was found which can allow certain client messages to crash the controller, cause communication loss, or otherwise corrupt the controller memory. This is corrected in version 3.6
12500	PCS moves with conveyor tracking get stuck Busy when a group's axis has a filter installed	When using S-curve filters on a conveyor axis in conjunction with MC_TrackConveyorBelt, the Busy output could get stuck in the TRUE state regardless of actual tracking function. This is fixed in firmware 3.6.0.

Known Issues

Number	Known Issue	Details	Workaround
4356	Axis state machine doesn't track superimposed moves	Executing MC_MoveSuperImposed without executing another motion block afterwards causes the axis to remain in the standstill state.	Executing another motion block after MC_MoveSuperImposed fixes the axis state.
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 *MC_SetPosition* or *MC_StepRefPulse* or change the position scale so that the full position can be seen.
4641	With classic web server, 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.

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Known Issues

Number	Known Issue	Details	Workaround
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.
5460	`Y CamOut.DisenageData.End Mode=Immediate` is not supported	Disengage mode is not supported and will result in error 4400 – unsupported disengage mode.	Implement the same behavior by using the current master position as disengage position.
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 `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	If a Modbus Master polls for data from the MPiec too often, the controller can be overloaded and slow Modbus TCP/IP communication.	On the Modbus Master, add a 5ms (or longer) timer between read and write queries.
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.
5703	MP2600iec can get watchdog alarm and bad CRC on restart	To reboot, the controller sends a software reset command to the ServoPack. Since the ServoPack is rebooting, it does not acknowledge the command.	Ignore these alarms in the alarm history.
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.
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.
5965	Configuring a SERVOPACK to use a pre-configured output prevents IEC control of any SERVOPACK outputs	If a ServoPack function such as /BK brake control is assigned to any of the ServoPack outputs (SO1, SO2, SO3), The MPiec controller is prevented from controlling any of the outputs.	No workaround exists.
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.

Known Issues

Number	Known Issue	Details	Workaround
6712	MP3200iec and MP3300iec CPU architectures are not reporting maximal floats as NAN (Not a Number) or INF (Infinite)	MP3200iec and MP3300iec do not support IEEE 754. As a result, adding two floating point numbers, which would normally cause an INF or NAN error, will report the maximum floating point value instead. Additionally, ENO will remain TRUE instead of becoming FALSE which is expected when an overflow is detected.	User applications should check for overflow conditions.
7234	BOOL value from comparison stays on for two scans	BOOL result from some function blocks (AND, for example) can stay on for an extra scan.	If EN/ENO connections are used somewhere in the LD network then this bug will not occur as the compiler will take another path. If you don't connect EN/ENO then the compiler will take the path with the bug. If at least one EN/ENO is connected in each network then the good path will be taken by the compiler.
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.
9703	MPiec on Sigma-7 does not have battery backed RAM and is dependent on SRAM	For the Sigma-7Siec platform there are the following differences in the hardware platform: 1) Position offset for absolute encoders is stored in the flash file system. If the customer uses an absolute encoder and sets the offset continuously, then the flash could wear out. Do not continuously reset the offset if absolute encoders are used. 2) PLC retain memory is not supported. 3) RTC clock is not backed up. The clock will reset to January 1, 2000 on reboot. 4) Modbus variables cannot be retained. 5) Alarm history is not stored across power cycles.	No workaround exists.
9927	Y_CamIn with Y_EngageMethod#AtAbsolutePosition doesn't run multiple times without MC_Stop.	When using Y_EngageMethod#AtAbsolutePosition, the cam shift must be unwound to zero between executions of Y_CamIn. This can be done with either MC_Stop or Y_CamShift.	Use an MC_Stop between successive Y_CamIn blocks (use EndOfProfile to trigger) OR Execute Y_CamShift with the previously used CamEngage Position after every cycle (use EndOfProfile to trigger).
10351	Slowdown in STRING_TO_XXX functions when stack check is enabled	Stack check verifies that memory is allocated correctly on the controller. However, it will reduce performance, especially for the string conversion functions. String conversion functions operate 2 to 3 times slower when stack check is enabled. It is recommended to use the stack check during development, but not when the system is deployed.	Deactivate stack check before final project deployment.

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10662	When using MC_TorqueControl function block, an unexpected initial velocity or torque value maybe be caused when TorqueRamp input values are small.	When using MC_TorqueControl with a small value applied to the TorqueRamp input, the Servopack may first briefly apply torque in the reverse direction before continuing with torque in the correct direction.	Increasing the TorqueRamp input value can reduce or eliminate this behavior.
10670	Some axis alarms (A.D00) on Sigma-7 ServoPacks cannot be cleared from controller	On Sigma-7, Servopack alarm A.d00 may not be clearable at speeds around 6000rpm.	If you believe you have this problem, please contact Yaskawa support for details on how to work around this problem.
11214	Confusing method of adding Auxiliary IP addresses	The process for adding an auxiliary IP address is confusing.	Click the + sign in line with Auxiliary IP to begin the process. The + symbol will turn into a x. Fill out the fields for Address and Subnet Mask and press the + symbol in line with the Address field. Finish by pressing Save to save the results.
11439	Re-initializing PCIe communication during Mechatrolink reset causes RM100 card to stop responding	The RM100 card is not yet supported by MPiec controllers.	Y_ResetMechatrolink cannot be used successfully when an RM100 option card is installed.

Limitations

Unsupported Card Modules
JAPMC-PL2300-E   Counter Module
JAPMC-PL2310-E   Pulse Output Module
218IF-Y1   Serial Communicaiton card not supported on MP3200iec

Unsupported Mechatrolink Devices
JEPMC-PL2900   Counter Device
JEPMC-PL2910   Pulse Output Device