Release Notes for MP2000iec controller firmware

Release 2.0.0 Build 255

Yaskawa America, Inc.

May 31,2011

1. New Features

Number	Summary	Release Notes
4919	Function block to read multiple axis parameters at once. (Y_ReadMultipleParameters)	For increased performance, and reduced scan rates, added Y_ReadMultipleParameters to the Y_Motion firmware library that comes with MotionWorks IEC v2.0. This block is used in the ReadAxisParameters of PLCopen Toolbox v022.
4989	Disallow selecting "disco" configuration in webserver interface	In the controller web interface, the auto-discovery configuration 'disco' is read-only and no longer selectable as a valid user-specified startup configuration.
5041	VFD (Inverter) support for PLCopenPlus	Limited support for VFD via Mechatrolink is available. Contact Yaskawa for application details.
5889	Y_ProbeContinuous FB to support Continuous Latch Mode	Added new functionality to take advantage of the Sigma-5 feature which will automatically re-arm to capture latches as often as every Mechatrolink scan.
5996	Date/Time settable via new Function Block (Y_SetRTC)	New function block Y_SetRTC allows the application program to set the controllers real time clock using a structure containing Year, Month, Day, Hour, Minute, Second. This function is available in the YMotion firmware library that is supplied with MotionWorks IEC 2.
5997	Add support for Y_ReadStringParameter	It is now possible to read string parameters. The two currently available are AmplifierModel (1819) and MotorModel (1823).
6007	Support for position compensation tables	Added support for compensation tables. This feature allows individual machines to be calibrated for ultra high precision. A simple csv file relates commanded position and compensation values. (All values are user units.) The controller will do a linear interpolation between the points, and the compensation values are added to the command position. The post-compensation command position value is available in parameter 1020, Processed Command Position. Compensation is initially off by default at startup, and the user must enable compensation with MC_WriteBoolParameter with ParameterNumber:=1308 while the servo is off.
6285	Prevent old firmware downgrade to newer MP23xx-E hardware with new flash chip	MP2300Siec and MP2310iec hardware was updated with flash hardware from a different vendor. Downgrade to earlier firmware versions is not possible on newer controller hardware shipping after mid 2011. Users needing to downgrade to older firmware to run on the new hardware should contact Yaskawa for support.
6289	Numonxy flash support for MP23xx BSP	New flash chip on MP2300Siec and MP2310iec shipping after mid 2011.

2. Bug Fixes

Number	Summary	Release Notes
1241	LREAL_to_DINT incorrectly truncated on MP2300Siec/MP2310iec	Previous Behavior: The LREAL_To_DINT function block truncated values, even though the online help said that values will be rounded. New Behavior in version 2.x.x for MP2300Siec/MP2310iec: Values are rounded. Any application written for the prior behavior of LREAL_TO_DINT should be evaluated / modified for this change.
1791	Refiring Y_CamIn while engaged with one way and two way cam caused jump and loss in synchronization	If Y_CamIn was executed three times with EnageData.StartMode:=Y_EnageMethod#AtPosition, on the third instance the position will jump because the second instance was aborted incorrectly.
4855	Download changes failed when FILE_OPEN function block is used	If the FILE_OPEN function block from the ProConOS firmware library generated ErrorID 2 (too many files open) or ErrorID 4 (file already open) subsequent 'download changes' were blocked and could not be performed until the PLC was restarted.
5202	Cam engages a Mechatrolink scan after entering engage position	When the master crossed the engage position, the controller prepared the slave for camming, but the actual processing did not occur until one Mechatrolink cycle later, when all the axes are processed at the same time. This did not cause a phase lag error, but one missed motion command, which would only be noticeable if there were significant slave motion at the very beginning of the cam table.
5513	Reboot into supervisor mode yields missing axis/io alarms	In supervisor mode, the controller does not connect to drives and network I/O leading to missing axis and I/O alarms.
5801	MC_StepRefPulse.SetPosition retained a previous offset	If the function found a C channel while still on a limit switch, the search was incorrectly aborted, resulting in an additional offset being applied on the next execution of the function.
5831	A91 servo overload warning prevented motion from being commanded the first time after controller power up	New motion commanded when the servopack shows an A91 warning yields ErrorID '4370:Motion Prohibited' the first time after a power up of the controller. The initial axis state was not differentiating between alarms and warnings.
5834	Order of summand is critical for calculation to result in correct answer.	For example var1 := var1 (type: LREAL) + LREAL#0.5. If var1 is the first summand, it calculates the result OK. However if LREAL#0.5 is the first summand and var1 is the second, the ADD operation will not execute when EN is true. This issue also applied to SUB functions, and affected both LD and ST implementations.
5940	Setting Pn522 in web server Axis Parameters s tab caused error. (MP2600iec only)	Setting Pn522 on MP2600iec in Axis Params tab in the web server Java applet caused data size disagreement error.
5992	Y_CamIn generates ErrorID 61713 upon executing if the engage position window check was outside of MachineCycle.	The root cause of the problem was that the position window check for Y_CamIn was throwing an error. The modularized cam in position was being computed outside the MachineCycle.
6045	Y_ResetMechatrolink cleared parameters 1310 and 1311 back to default after executing.	Y_ResetMechatrolink cleared parameters 1310 and 1311 back to default after executing.
6060	Y_CamIn while in HBB / error stop state created master/slave relationship, which cannot be cleared.	Calling Y_CamOut on an axis in HBB state had unpredictable outcome. A workaround was to make sure Y_CamOut executed before HBB was active. This scenario is possible of the e-stop circuit has a settable delay so that a signal can be sent to the controller that an HBB estop is coming.
6075	Code changes after 1.2.2.9 release broke MC_FinishHoming.	Changes for SCR #5369 changed MC_FinishHoming to poll the current state of the axis. If, after Done was set, another FB initiates a move, MC_FinishHoming would report busy again.

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6083	MC_TorqueControl set the aborted output if execute was re triggered	
6127	MP2600iec would not do a cold start if a warm start was not possible	On the MP2600Siec, if a warm start was not possible the IEC application would not start. This situation could occur if there are retain variables in a IEC application and the SRAM was initialized. Now, if warm start fails, the controller will post an alarm and then cold start the IEC application.
6157	Alarm LED on 2600 stayed on even if no alarms were present	
6169	The system variable PLC_TICKS_PER_SEC had an incorrect DataType in MP2600.	The MP2600iec template should be declare PLC_TICKS_PER_SEC as "INT" at the address %MW1.2000. The previous release incorrectly had the data type as DINT and the address as %MD1.2000.
6204	MC_MoveAbsolute had erratic motion if exe re fired every other scan	For rotary axes, the modularized MC_MoveAbsolute.Position might incorrectly lead to an additional revolution due to numerical rounding. For example, if the command position was initially at 10 degrees, and MC_MoveAbsolute was commanded to 10 degrees, there was a chance the axis would move to 370 degrees. MC_MoveAbsolute now uses the axis resolution to compare the current command position and the desired command position.
6208	MC_TouchProbe.RecordedPosition sometimes reported previous latch position	External encoder problem only. Condition resolved by rearranging the firmware code.
6294	MC_MoveAbsolute.Done bit does not become TRUE on a rotary axis if Execute is continuously fired every other scan and motion is complete	Because of a wrapping calculation, the length of the move was $3.55271e{-}15$. For comparison, Epsilon is $4.94065645841247E{-}324$, and the min resolution is 0.00034332275390625. Changed the firmware such that any move less than 1000x smaller than the encoder resolution will be ignored. As a consequence, repeatedly calling MC_MoveRelative with extremely small moves will not result in any motion.
6342	EIP multicast output failed on MP2600 CN11b	Ethernet/IP slave I/O output in multicast mode was only supported on the primary interface of multiple interface controllers. As a workaround, use point-to-point mode for Ethernet/IP traffic addressed to other interfaces. For example, on the MP2600iec, multicast slave Ethernet/IP is supported on CN11A. Use point-to-point mode if Ethernet/IP connectivity is desired on CN11B.
6398	MC_StepRefPulse does not find the c pulse location if fired multiple times from the c pulse location	If the axis is at its c pulse location, and the MC_StepRefpulse function block is executed, there is a chance that the axis starts moving and misses the c pulse within one revolution of the motor shaft. If this happens, motion will continue until the time limit input of the MC_StepRefPulse block is reached.

3. Known Issues

Number	Summary	Release Notes	Workaround
4395	Large positions will not be displayed to full precision in the 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.

Number	Summary	Release Notes	Workaround
4641	starting in supervisor mode shows extra web 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.
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.
5282	MC_Power.Status shows High (Enabled) even after Mechatrolink is down	When the Mechatrolink cable is disconnected or the drive is powered off, the controller cannot communicate with the drive, and it generates an controller watch dog alarm (0x23010001). The drives response to this same event it to generate an A.E50 alarm and disable. Since communication has been lost, the controller does not detect that the drive has disabled, so MC_Power.Status is still high.	The axis is in the ErrorStop state as it should be, so motion is prohibited, and MC_ReadAxisError shows the communication error. If the communication cable is inserted again, the MC_Power.Status will be FALSE.
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.
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.
5764	Removing non-existent device results in "Initializing I/O driver failed!"	Adding a non-existent device offline, saving offline, and then attempting to run the program leaves the controller in a state that will not allow programs to start until the controller is rebooted.	Reboot the controller and the problem is cleared
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.

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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.
5977	Modbus/TCP does not respond to messages for unit 0	The controller fails to respond to messages with the Modbus/TCP unit ID of 0.	Do not use unit ID 0. Use unit ID 1.
6036	Y_CamShift.Error remains high after Execute goes low	Y_CamShift Error and ErorrID remain outut after Execute goes low.	
6174	Motion FBs get error 4370 if run immediately after MC_FinishHoming.Done	Calling MC_MoveRelative immediately after MC_FinishHoming by connecting the Done output to Execute causes a 4370 (motion prohibited) error. The axis state is StandStill.	Adding a one-scan delay after MC_FinishHoming.Done=TRUE avoids this issue.
6206	MC_GearOut occasionally does not report Done if GearOut.Execute is held high for one scan only		Hold MC_GearOut.Execute high until function block completes.
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.
6398	MC_StepRefPulse does not find the c pulse location if fired multiple times from the c pulse location	If the axis is at its c pulse location, and the MC_StepRefpulse function block is executed, there is a chance that the axis starts moving and misses the c pulse within one revolution of the motor shaft. If this happens, motion will continue until the time limit input of the MC_StepRefPulse block is reached.	
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.
6312	Setting a breakpoint in a MP2600iec project causes a watchdog	Single step debug is not supported on the MP2600iec yet.	
6383	MC_StepRefPulse: If triggered multiple times while at c pulse position with a valid distance limit input gives invalid distance error ID or 61713	IF axis is at the c pulse location and the MC_StepRefPulse is fired, once every 3 or 4 times, it gives an error ID 2 (for distance exceeded). The error is incorrect as the distance limit parameter is valid (for example: > 1 rev of the axis).	
6413	Controller can only handle absolute position at power up for motor revs < 4096.	If the absolute encoder position is greater than the pulses that can be stored in a 32 bit integer, the absolute position after power up will be incorrect.	Contact Yaskawa for a user library function block that can support up to 65535 revs.

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
JEPMC-AN2900   Analog Input Device
JEPMC-AN2910   Analog Output Device