

Subject: Troubleshooting A.9F with MotionWorks+

Using the data watch, monitor system variable mError_CPU.

1. If mError_CPU=256, the MP940 has a **User Math Error**.
 - a. Check the program for "divide by zero" errors.
 - b. Check the program for "overflow" errors.
 - i. Integer variables cannot exceed ± 32767 .
 - ii. Float variables cannot be bigger than $\pm 3.402E+38$ or smaller than $\pm 1.175E-38$.
 - iii. Long integers cannot exceed $\pm 2,147,483,648$
 - c. May also be caused by a motion parameter (i.e. acceleration, velocity, etc.) that is out of range.
2. If mError_CPU=512, the MP940 has a **LIO Error**.
 - a. If mError_Analog_Input=1, the MP940 has an error with your analog input. This may be caused by a synchronized communication error (A.E2).
 - b. If mError_Analog_Output=1, the MP940 has an error with your analog output. A/D adjustment may need to be performed.
 - c. If mError_Digital_Inputs=1, the MP940 has an error with the digital inputs. If this error occurs, call a Yaskawa Application Engineer at 1-800-YASKAWA.
 - d. If mError_Digital_Outputs=1, the MP940 has an error with the digital outputs. The digital output fuse may be blown.
3. If mError_CPU=4096, the MP940 has an **SVA error**.
 - a. A servo alarm may cause this error. If there is a servo alarm, fix it first and verify that this error persists.
 - b. If mError_Parameter_Settable=1, you have an error in one of your settable motion parameters. mError_Parameter_Number will tell you the parameter number, and a Yaskawa Application Engineer can help you determine a solution. This usually means that you are setting a motion parameter (acceleration, velocity, position etc.) out of range. Also make sure that your sLimit_Torque value is set accurately and as a negative number.
 - c. If mError_Parameter_Fixed=1, you have an error in one of your settable motion parameters. mError_Parameter_Number will tell you the parameter number, and a Yaskawa Application Engineer can help you determine a solution.
 - d. If mPosition_Error_Exceeded = 1, the motor failed to follow the move profile within the pLimit_PositioningError. This bit may go on and off as the position drifts in and out of the error window.
 - i. May need to do a data trace to detect this bit changing. To correct: verify that the system is tuned, verify there are no move profiles that exceed the speed or torque of the motor, check to verify that the sLimit_Speed_Positive and the sLimit_Speed_Negative are set correctly.
4. If mError_CPU=8192, the MP940 has a **CNTR Error**.
 - a. If the MP940 is configured to use an external encoder, but no encoder is found, you will get this error.
 - i. Make certain that your I/O connector is firmly plugged in.
 - b. This error may also occur if an overflow error occurs while using the gearing function.
5. If mError_CPU=16384, the MP940 has a **Communication Error**.
 - a. mError_Network_A will show the status of stations 0-15 in decimal. If you manually convert the decimal value to a binary value, you will see a 0 (no error) or 1 (error) for each axis. Station 0 is the least significant bit (farthest to the right of the binary number).
 - b. mError_Network_B will show the status of stations 16-31 in decimal.
 - c. mError_Network_C will show the status of stations 32-47 in decimal.
 - d. mError_Network_D will show the status of stations 48-63 in decimal.
 - e. Note: Mechatrolink will use station 0 for the master and stations 1-29 for slave units. Stations 1-6 have a 1ms update rate, stations 7-14 have a 2ms update rate, stations 15-29 have a 4ms update rate.

If mError_CPU is another number, it's probably a combination of two or more of the above errors. If there is more than one error, the code for mError_CPU is the sum of the individual error codes. For example, if mError_CPU=768, then you have a User Math error (code 256) and an LIO error (code 512) because $768=256+512$.

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