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Energy In Motion™

MotionSuite™ MP930 Multi-Axis Machine Controller: Q&A

Following are some commonly asked questions about the MP930:

Q. What is the maximum number of axes that can be controlled?

A. Up to 14 stations can be controlled with one MP930 machine controller. (A station can be either a servo or I/O unit.)

Q. What series of Yaskawa servo drives is connectable to the MP930?

A. Yaskawa Sigma network servo drives are connectable to the MP930.

Q. What is the allowable wiring distance between the MP930 and the servo amplifier?

A. A maximum distance of 50 meters is possible.

Q. Is the servo network interface isolated?

A. Yes, it is isolated.

Q. In addition to servos, can inverters and stepper motors be used?

A. No. Inverters and stepper motors are not connectable to the MP930.

Q. Is absolute positioning possible using an absolute encoder?

A. Yes, it is possible to use absolute encoders.

Q. What does *scan time* mean?

A. Scan time is the time required from input, through logical operation, to output.

Q. What is the advantage of a fast scan time?

A. The faster the scan time, the finer the control.

Q. Is it possible to capture the position of the servo motor during scanning at the instant a signal enters?

A. Yes. This is possible if the external latch input signal is used on the 1CN connector on the network series servos. The response time of this input is 50 microseconds.

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Q. What is the scan relationship between the MP930 and the servo amplifiers?

A. The MP930 scan time is set in integer multiples of 2 milliseconds. This scan time and the ServoPack processing scan are synchronous.

Q. Does the MP930 use a 100VAC or 200VAC input power source?

A. Neither. The input power voltage is 24VDC. An external 24VDC power supply must be supplied by the customer.

Q. What is the current rating of the MP930 output?

A. The outputs are rated at 50mA each.

Q. Is a noise filter necessary?

A. Yes. A noise filter should be applied to the AC power lines.

Q. What is the MP930 noise resistance?

A. A maximum of 1500V_{p-p} for 1 microsecond noise spike is allowable.

Q. Are there any momentary power loss countermeasures?

A. Yes. There is a 3V lithium battery backup. Also, a parameter may be set to establish the maximum number of scan cycles permitted prior to the power loss being considered a true power loss.

Q. Is it possible to follow an external encoder?

A. No. There is no external encoder input connection.

Q. What is interpolation?

A. Interpolation is a function which allows movement along a designated line or curve between the current position and a designated end position. (Linear and circular interpolation are common; helical interpolation is rare.)

Q. How many axes can be interpolated?

A. Up to 14 axes can be interpolated linearly. Helical interpolation is available in any 3 axes; circular interpolation is available in any 2 axes. (Positioning can be done with any or all of the 14 axes.)

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Q. What is a group?

A. A group is the combination of axes into bundles to avoid influence on any other axes that are outside the group.

Q. Is it possible to interpolate between groups?

A. No. Groups are independent from one another; each group operates as if it had a separate controller. Therefore, interpolation is not possible between groups.

Q. What type of movement occurs when positioning is designated for all 14 axes (for example: MOV [X],[Y],[Z],[S]. . .)?

A. Each axis moves independently according to its individual parameters and designated speed. Therefore, the path will not result in a straight line such as in linear interpolation.

Q. Is it possible to change the end position in the middle of a positioning move?

A. No. A move must be finished before the next end position can be assigned.

Q. What is rotary mode?

A. During rotary mode, position is controlled by continuous rotation in a single direction. (This is unlike linear mode positioning in which there is repeated motion back and forth within the range of a stroke.)

Q. Is it possible to perform positioning in rotary mode?

A. Yes. Rotary mode positioning may be set up using the parameters. As a result, the feedback position will repeat over the range set in the parameter (for example: 0~ 360 degrees).

Q. How are the MP930 and the I/O350 units mounted in the cabinet?

A. They can be mounted either on a DIN rail or with mounting screws in the four corners.

Q. How are acceleration and deceleration controlled?

A. A function has been provided for fast and smooth acceleration and deceleration to meet the needs of each machine type. During positioning motion, linear or S-curve acceleration/deceleration is possible. During interpolation motion, linear, S-curve, or separate acceleration/deceleration is possible.

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Q. How many motion programs can be executed simultaneously?

A. No more than four groups can be executed simultaneously; therefore, 4 motion programs can be executed at one time.

Q. What programming software is used?

A. MotionWorks™ programming software is used on a PC which has Windows 95/NT. A minimum of 32Mbytes of RAM and 100Mbytes of free hard disk space are required.

Q. Do you need separate software for motion programming and for ladder logic programming?

A. No. There is no need for separate software. The programming software, MotionWorks™, operates on a PC (with Windows 95/NT). Simultaneous editing and managing of motion programs, ladder logic programs, operating parameters, etc. is possible.

Q. Which motion programing language does the MP930 use?

A. The MP930 uses the Yaskawa motion language (for example: MOV = positioning command; MVS = linear interpolation command). Complex operation is possible with commands for variables, math functions, conditionals for branching and looping, etc.

Q. Is the ladder language of the MP930 interchangeable with that of the Yaskawa CP series?

A. It is the same as the CP series language.

Q. Can G-codes be used?

A. No.

Q. Can ServoPack user parameters be set from the MP930?

A. Yes. They are set using MotionWorks™ software.

Q. What is a *function*?

A. Program subroutines are called functions. Subroutines created by the user are user functions. Similarly, subroutines created within the system by Yaskawa are called system functions.

Q. Is it possible to hide a function from other users?

A. Yes. Functions may be hidden by changing the privilege numbers associated with the function. The high scan drawings (H) and low scan drawings (L) can also be password protected using privilege numbers.

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Q. What is a # (sharp) register?

A. A # (sharp) register is a dedicated data register for an individual drawing. Because the register can only be referenced within a specific drawing, it must be referenced with each drawing. The actual utilization range is designated in MotionWorks™ by the user.

Q. Can the same 24VDC power supply be used for both the MP930 and the I/O350 units?

A. Yes. However, the current requirements must be met. The MP930 requires 1.0 amp and each I/O350 unit requires 0.5 amp.

Q. Are the I/O points optically isolated?

A. Yes.

Q. What happens to programs when the power is turned off?

A. There is a battery backup which protects both motion programs and ladder logic programs.

Q. Is there a teach mode or a dedicated teach pendant?

A. No. A dedicated teach pendant is not available. However, a teaching function can be written as needed by the application.

Q. How many I/O points exist in the I/O350 unit?

A. The I/O350 unit has a total of 128 I/O points. There are 64 inputs and 64 outputs, all 24VDC.

Q. Are there any other I/O modules?

A. No.

Q. Does the MP930 have A/D and D/A conversion?

A. No.

Q. Is there a serial communication port?

A. There are 2 RS-232 serial communication ports.

Q. What is the communication protocol of the serial ports?

A. The communication protocol is Memobus.

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Q. What is the baud rate of serial communications with Memobus?

A. The maximum baud rate is 19200bps.

Q. What kind of peripheral devices can be connected through the serial communication port?

A. Memobus protocol-compatible devices can be connected. MotionWorks™ programming software is connected to serial port 1. Various touch-type graphic control panels can be connected to serial port 2.

Q. Is multi-station (1-n) communication possible on the serial communication port?

A. Yes. It can be done using RS-422; an RS-232 to RS-422 converter is necessary.

Q. Can other communication networks (Ethernet, for example) be connected?

A. No. There is no Ethernet connection, nor is there any other bus connection available.

Q. Can standard analog drives be used with the MP930?

A. No. Only Sigma network servo drives can be used.