



PRESS RELEASE

New addition to Mitsubishi Electric's drives products Independent Multi-axis Motion Controller for Demanding Motion Applications

See Mitsubishi Electric at SPS/IPC/Drives: Hall 7, Booth 380

Ratingen, 24 November 2009. Mitsubishi Electric has added a powerful new multi-axis model to its line of independent motion controllers for factory automation applications. The new controller can handle complex motion sequences with up to 16 axes simultaneously. Designed for use with the latest generation of the company's highly dynamic servo drives, the new multi-axis controller is ideal for applications requiring both high precision and economy. The motion controller can be deployed both as a stand-alone device and in combination with all current controllers and features an encoder input for synchronisation with the drive systems of upstream processes. Typical applications for these compact drive systems include high-speed machines and systems with interpolated or synchronized axes like those found in modern packaging and printing plants. Mitsubishi Electric is launching the new multi-axis motion controller at the SPS/IPC/Drives 2009 trade show in Nuremberg.

The new Q170MCPU multi-axis motion controller combines PLC and motion control functionality and a power supply unit in a single compact housing. Measuring just 178 x 52 x 135mm, it has all the functions, ports and programming functions you need. It can be used both as an independent controller for compact machines and easily integrated in larger systems with their own controllers.

Fast program cycle times

The finely-tuned control technology of the servo drives makes it possible to control up to 16 axes for maximum system speed, along with the added benefits of simultaneous sequential control and motion control functionality processing. The motion controller is designed for use with powerful servo amplifiers of the MR-J3-B series. You connect drives via the high-speed optical SSCNET III servo system controller network, the current version of which supports bidirectional data transfer rates of 50 megabits per second, getting new data records to all connected servo amplifiers in just 0.44 milliseconds. This Plug & Play network enables the motion controller to drive the servo motors for the controlled axes with high speed and precision, while synchronising the movements with an external master encoder or a virtual axis.

In addition to point-to-point positioning, the controller can also handle complex motion sequences with multiple interpolated or synchronised axes. Features for control tasks include an encoder input and four high-speed digital inputs for registration mark sensors. Other connections and expansion options make it easy to integrate the controller in a wide variety of machines and systems. For example, the integrated Ethernet port enables open communication with other controllers and automation components using the open Mitsubishi Communication (MC) protocol. Standard equipment also includes a serial port (RS-232) and a USB port for connecting a computer. A variety of expansion units are available for applications requiring additional interfaces or functions. Currently the Mitsubishi Electric range includes over a hundred I/O, special function and networking modules, making it possible to configure the controller precisely for your individual application's requirements.

Graphical programming

Multi-axis motion systems are planned and programmed with the standard Mitsubishi Electric MT-Developer2 programming software package, which supports all the company's motion controllers. It provides a full-featured development environment with a user-friendly graphical interface and powerful tools for programming, configuring, monitoring, maintaining and troubleshooting motion control systems, including servo amplifiers and servo motors.

A few mouse clicks are all it takes to select and configure your motion controller, synchronous encoder, servo amplifiers and servo motors and integrate them in the system. Both simple and complex motion sequences can be planned quickly and easily on the computer screen. Former mechanical components like electronic couplings, gearboxes, differentials and cams can be integrated in the mechanical models as graphical symbols on a master axis. You can also program a line shaft with cams using this quick and simple graphical method. Up to 256 selectable electronic cam discs for motion control are included in the standard features and can be stored in the motion controller's internal memory. Once you have set up your system you can then test it immediately with the digital oscilloscope included in the programming package.

Function blocks for specific requirements

You can also program the controller with the intuitive SFC (Sequential Function Chart) language, which displays the motion sequences in a clear flow diagram format. You select the instructions for the individual steps and transition conditions in a menu dialog. The hierarchical structure of the program makes it easy to document and display every single step in detail. Ready-to-use applications help machine designers to build efficient drive systems quickly and efficiently. A comprehensive library is included, with application function blocks for tasks like flying saws, rotating blades and labellers. These blocks enable fast and economical

programming of high-quality movement applications, for example for machining operations or tasks in the printing and packaging industries.

Advanced control technology

The high precision and speed of this autonomous motion control system are made possible by the advanced control technology in Mitsubishi Electric's latest generation of servo drives. Functions like automatic motor identification, real-time autotuning and integrated vibration suppression all make it much easier to plan and install high-precision motion systems with minimum rise times. For example, real-time autotuning continuously adjusts the control parameters to the current mechanical conditions during operation, enabling very dynamic control even in systems with fluctuating loads. Vibration suppression automatically attenuates power-wasting vibrations in the drive train and also prevents the development of resonant vibrations in the system as a whole.

The perfectly-matched family of components for the motion control system are rounded off by four series of servo motors for a variety of different application requirements. The standard equipment of all these motors includes a high-resolution 18-bit absolute value rotary encoder that delivers over 260,000 position values per rotation.

Comprehensive drive systems programme

Mitsubishi Electric's first autonomous motion controller for plant and machinery automation without a PLC was the single-axis MR-MQ100, which was introduced in 2008. The new Q170MCPUCPU complements this with multi-axis capability for up to 16 axes. Together with the company's wide range of servo drives and frequency inverters and iQ Platform, the high-performance, modular, multi-processor controller system, the company now offers a full range of precisely-configurable industrial drive solutions covering

everything from simple point-to-point control with one axis to complex, fully-synchronised systems with up to 96 axes.

Caption:

A compact controller for multi-axis applications: The Q170MCPU motion controller from Mitsubishi Electric is a lean and efficient solution for controlling up to 16 axes, with or without additional PLCs.

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