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A Strategic Step Toward the Future of Manufacturing with MX Controller

As Mitsubishi Electric Factory Automation Systems, we respond to the rapidly evolving and increasingly complex needs of manufacturers on their digital transformation journey with the MX Controller. As the newest member of our MELSEC product family, we position this platform as an integrated control approach that shapes the future of manufacturing. Featuring high-precision motion synchronization, cybersecurity and integrated control capabilities, the MX-R and MX-F models in the MX Controller series represent some of the most advanced industrial controllers we have developed to date.

Our MX-R and MX-F controllers combine sequential control, motion control and network communication within a single module, delivering significant simplification in manufacturing infrastructures. By reducing hardware requirements, streamlining system architecture and accelerating engineering processes, this structure enables compact control panels, simplified wiring and easier maintenance.

A Strong Approach Built on Four Core Capabilities

We designed the MX Controller with high system continuity at its core. With built-in diagnostic mechanisms and automatic fault-logging capabilities, the system enables rapid and effective intervention in unexpected situations. In developing the MX Controller, we focused on four key capabilities at the heart of manufacturing: engineering precision, intelligent integration, cybersecurity and reliability. In today's manufacturing environment, high-speed systems alone are no longer sufficient. Integrated, flexible and secure control infrastructures are required. The MX Controller addresses this need by combining high-speed PLC functions, precise motion control, IO/OT integration and advanced cybersecurity features within a single platform.

The MX-F and MX-R models in the series support control capacities of up to 256 axes, addressing a wide range of applications. The MX-F model stands out in production environments where space limitations and cost sensitivity are key considerations, such as packaging lines, labeling machines and pick-and-place applications. The MX-R model, on the other hand, delivers superior performance in complex applications where multi-axis synchronization is critical, including battery production lines, semiconductor facilities and high-precision cutting systems.

Thanks to our advanced synchronous control functions, we can replace mechanical components such as gears, shafts, transmissions and cams with software, significantly simplifying system architectures. With CC-Link IE TSN technology, we provide high speed, high precision and low vibration performance simultaneously. At the same time, the MX Controller offers an open and secure communication infrastructure compliant with international standards.

The MX Controller is supported by advanced debugging and analysis capabilities that enhance efficiency in engineering processes. While strengthening program analysis capabilities, including motion control, the Dashcam function enables fast and accurate identification of the root causes of system errors.

With digital twin support, the MX Controller integrates with various simulation tools to enable optimization during both design and operation phases. This allows production lines to be tested in a virtual environment before commissioning, reducing commissioning time, minimizing risks and helping lower the total cost of ownership.



A Single Platform for All Control Needs

We have brought together our expertise in programmable controller technology within the MX Controller platform. By integrating sequential control, motion control and network control into a single structure, we deliver a faster, more precise and more reliable control infrastructure. We will continue to enhance this platform with new capabilities in the future.