M-series MX Controller

- Right-sized controllers
- Easy to use
- Has the flexibility to meet your needs
- Designed to support legacy migration

Introduction

The MX Controller provides communication and control between the field devices and the other nodes on the control network. Control strategies and system configurations created on earlier DeltaV™ systems can be used with this powerful controller. The MX Controller provides all the features and functions of the MD Plus Controller, with twice the capacity.

The control languages executed in the controllers are described in the Control Software Suite product data sheet.

Benefits

Right-sized controllers

The MX controller complements the existing MD/MD Plus and MQ controllers by providing a larger-capacity controller for those applications that need more control capacity:

- 2X the control capacity
- 2X user-configurable memory
- 2X the DST count

Late changes. You can easily upgrade an MD/MD Plus, or MQ controller to an MX to handle project scope changes late in the project. The MX installs in the same footprint as the MD/ MD Plus or MQ Controllers but delivers twice the performance. Simply replace the MD/MD Plus or MQ with the MX and all existing configuration, documentation and hardware design remain the same — *forgiving.*

The DeltaV™ MX Controller and the DeltaV I/O subsystem make rapid installation easy.

Redundant architecture. The MX controller supports 1:1 redundancy for increased availability. Existing MD/MD Plus or MQ controllers can be upgraded online — *robust!*

Increases productivity

Self-addressing. The DeltaV controller is unique in its ability to automatically identify itself to the DeltaV control network. When the controller is powered up, it is automatically assigned a unique address—no dip switches, no configuring—just *plug and play!*

Self-locating. A controller's physical location is easy to find. LEDs on the face of the controller can be made to flash, providing a *strong visual clue*.

Automatic I/O detection. The controller can identify all I/O interface channels located on the subsystem. As soon as an I/O interface is plugged in, the controller knows the general characteristics of the field devices managed by that I/O interface. This reduces the no value engineering associated with configuration — *easy!*

DELTAV

EMERSON
Process Management

Easy to use

Powerful control. The DeltaV controllers manage all control activities for the I/O interface channels as well as all the communication functions to the area control network. Continuous control function block diagrams, sequential function charts and phase logic provide powerful control structures that are further augmented by user-defined structured text algorithms. Time stamping for alarms and events is performed in the controller for accurate sequence of event recording. The controller executes your control strategy as fast as every 100 ms, and can communicate up to 4000 exception values per second.

Data protection. All online changes made to control parameters are automatically stored for later upload into the engineering database. This way, the system always retains a complete record of all the data that has been changed online.

Cold restart. This feature provides automatic restart of the controller in case of a power failure. The restart is completely autonomous because the entire control strategy is stored in NVM RAM of the controller for this purpose. Simply set the restart state of the controller to current conditions.

The MX Controller

Has the flexibility to meet your needs

Advanced operations. The MX Controller is equipped to handle the DeltaV Batch option, as well as advanced control functions.

The MX controller uses the same I/O subsystem as the MD Plus or MQ Controller, but provides more CPU and memory capacity. It is primarily intended to allow the configuration of a large unit in a single controller node, where previously two MD Plus or MQ Controllers were required, due to CPU, memory or DST constraints, to be consolidated into a single controller.

You can also use advanced control functions such as Neural and Model Predictive Control on the MX controller.

Data pass-through. The controller is equipped with the ability to pass smart HART® information from field devices to any workstation node in the control network. This means you can take advantage of applications, such as Asset Management Solutions, that enable you to remotely manage the HART information contained in your HART or FOUNDATION fieldbus equipped devices.

Prepares you for the future. As your system grows, you can expand your software license to increase the number of device signal tags (DSTs) allocated to the DeltaV controller. Begin with 50 and expand to 1500 DSTs. Control strategy complexity and control module scan rates determine overall controller performance and application size.

Mounting. This plug-and-play system structure provides modular system growth from a single controller up to 100 controller nodes in a single DeltaV system. Each controller's I/O subsystem can be expanded online and can be mounted in a Class 1, Div 2 or ATEX Zone II environment[1]. Refer to the System Power Supplies and I/O Subsystem Carriers product data sheets for additional information.

Designed to support legacy migration

Advanced operations. The MX controller provides the DeltaV platform to migrate even the largest of PROVOX SRX controllers, and also supports the PROVOX and RS3 Migration I/O interfaces.

The combined CPU capacity and DST count provides sufficient resources for our largest SRX controller configurations to be migrated on a one-for-one basis with DeltaV MX Controllers. The existing PROVOX I/O remains in place using the migration I/O interface to PROVOX with support of up to 1500 real I/O signals. Serial datasets are migrated to DeltaV serial cards and all virtual I/O are no longer required due to the direct module references possible in the DeltaV system.

RS3 system migrations to the DeltaV system were fully supported with MD Plus Controllers and the migration I/O interface for RS3. The MX controller can also be used in these projects as necessary.

[1] *Refer to Zone 2 installation instructions (12P2046) and/or Class 1 Division 2 installation instructions (12P1293) for details.*

Specifications

Power, Mounting, and Memory	
Power requirement	Supplied by System Power Supply through 2-wide Power/ Controller Carrier
Fuse protection	3.0 A, non-replaceable fuses
Power dissipation	5.0 W typical, 7.0 W maximum
Mounting	On right slot of power/controller carrier
User Memory	96 MB
Primary Control Network	8-pin RJ-45 connector
Redundant Control Network	8-pin RJ-45 connector
LED Indicators (ON Status)	
Green – Power	Indicates DC power is applied
Red – Error	Indicates an error condition
Green – Active	Indicates that the controller is operating as the primary controller
Green – Standby	Indicates that the controller is operating as a backup controller (reserved for future use)
Yellow flashing – Pri. CN	Indicates valid primary control network communication
Yellow flashing – Sec. CN	Indicates valid secondary control network communication
All except Power flashing	Visual identification of controller initiated from user interface software by *ping* command
All except Power flashing, alternating even and odd	Firmware upgrade in progress
Environmental	
Operating temperature	-40° to 60°C (-40° to 140°F)
Storage temperature	-40° to 85°C (-40° to 185°F)
Relative humidity	5 to 95%, non-condensing
Airborne contaminants	ISA-S71.04-1985 Airborne Contaminants Class G3 Conformal coating
Shock (normal operating conditions)	10 g ½-sine wave for 11 ms
Hazardous area/location Refer to Zone 2 installation instructions (12P2046) and/or Class 1 Division 2 installation instructions (12P1293) for information on installing in hazardous areas.	ATEX EEx nA IIC T4 Class 1, Div 2, Groups A, B, C, D, T4
Vibration (operative limit)	1 mm peak-to-peak from 5 Hz to 16 Hz, 0.5 g from 16 Hz to 150 Hz

Ordering Information

Description	Model Number
MX Controller	VE3007

Prerequisites

- MX controllers are supported on version 10.3 or later DeltaV systems.
- For each controller you will need to select the mounting carrier. Please refer to the I/O Carrier product data sheet for details.
- Each controller requires a dedicated system power supply. Please refer to the Power Supplies product data sheet for details.

Emerson Process Management

Asia Pacific: 65.6777.8211
Europe, Middle East: 41.41.768.6111
North America, Latin America:
+1 800.833.8314 or
+1 512.832.3774

www.EmersonProcess.com/DeltaV

©2015, Emerson Process Management. All rights reserved.

The Emerson logo is a trademark and service mark of Emerson Electric Co. DeltaV is a mark of one of the Emerson Process Management family of companies. All other marks are the property of their respective owners.

The contents of this publication are presented for informational purposes only, and while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available on request. We reserve the right to modify or improve the designs or specifications of our products at any time without notice.