

M-series FOUNDATION™ Fieldbus Series 2 Plus I/O



Use DeltaV™ state-of-the-art FOUNDATION Fieldbus Series 2 Plus redundant I/O for your process control system.

- Delivers four ports to provide increased input/output per card
- Takes advantage of all smart device capabilities
- Facilitates multi-drop 16 devices on one port
- Features secure uninterrupted control
- Provides third-party device support
- 1:1 redundancy for M-series FOUNDATION Fieldbus Series 2 Plus I/O
- Autosense of redundant I/O
- Automatic switchover

Introduction

Are you looking for an efficient, yet robust, I/O subsystem? M-series FOUNDATION Fieldbus Series 2 Plus I/O is a modular subsystem that communicates digitally with field devices, increases your input/output capacity, and gives you access to more information about your process than conventional I/O subsystems.

If you want an efficient, economical, and secure process control system, use DeltaV™ M-series FOUNDATION Fieldbus Series 2 Plus Redundant I/O. It greatly enhances device diagnostics that affect your control strategy and alerts operators to device malfunctions.

The modular design of M-series FOUNDATION Fieldbus Series 2 Plus I/O offers flexibility during installation. M-series FOUNDATION Fieldbus Series 2 Plus I/O is equipped with function and field-wiring protection keys to ensure that the correct I/O card is always plugged into the corresponding terminal block. Modularity, protection keys, and increased input/output capacity providing 4 Ports per card make M-series FOUNDATION Fieldbus Series 2 Plus I/O a smart choice for your process control system.

Benefits

Increases input/output. Use M-series FOUNDATION Fieldbus Series 2 Plus I/O instead of Classic I/O to increase information flow. Take advantage of FOUNDATION Fieldbus digital communications to access additional information from your smart devices. Get more information over one wire than over multiple wires, as with Classic I/O.

Takes advantage of all smart device capabilities. Increase your ability to communicate with your devices using DeltaV M-series FOUNDATION Fieldbus Series 2 Plus I/O; field device status is updated continuously. For multi-variable devices, all process variables are available on the single fieldbus connection.

Facilitates multi-drop 16 devices on one port. Save on wiring expenditures by installing M-series FOUNDATION Fieldbus Series 2 Plus I/O. Multi-dropping up to 16 devices on one port reduces your wiring expenses substantially. The integrated design of the M-series Foundation Fieldbus Series 2 Plus I/O can eliminate the need for marshalling panels. This saves you even more time and money.

Features secure uninterrupted control. A DeltaV system offers back-up link active schedule (LAS) to ensure secure control when upgrading a card or in the case of card failure. LAS control is automatically transferred to the backup device when upgrading or experiencing card failure. Control is automatically transferred back to the H1 Interface Card when the system detects a new card. This process requires no user interaction.

Provides third-party device support. The DeltaV system provides third-party device support for devices that have successfully passed rigorous testing by Emerson. This testing ensures reliability and safety and allows you to benefit from the open fieldbus architecture when selecting field devices.

1:1 Redundancy for M-series FOUNDATION Fieldbus Series 2 Plus I/O cards. You can easily add redundancy to an existing system. DeltaV redundant M-series FOUNDATION Fieldbus Series 2 Plus I/O uses the same Series 2 Plus I/O cards as non-redundant I/O. This allows you to leverage your investment in installed I/O and in I/O spares. No additional configuration is required.

Autosense of redundancy. DeltaV autosenses redundant I/O, which greatly simplifies the task of adding redundancy to the system. The redundant pair of cards are treated as one card in the system tools.

Automatic Switchover. Should a primary I/O card fail, the system automatically switches to the “standby” card without user intervention. The operator is given clear notification of a switchover at the operator display.

Increase your process control system’s level of sophistication using M-series FOUNDATION Fieldbus Series 2 Plus I/O. You are already aware of the increased input/output capabilities and improved communication with your smart devices. Now go one step further and use AMS Device Manager with your M-series FOUNDATION Fieldbus Series 2 Plus I/O— from the control room or maintenance shop. Using AMS Device Manager, you can access all of the necessary information to configure, commission, monitor, and troubleshoot all your FOUNDATION Fieldbus smart devices.

Using AMS Device Manager you can also access status and diagnostic data from smart devices and monitor their performance. Increase product quality and minimize unplanned downtime with this dynamic application. Improve the productivity and profitability of your process control system.

Product Description

The I/O card is enclosed in a DeltaV-designed common form factor that plugs into the I/O interface carrier. The housing is clearly labeled with the enclosed I/O card type. Clearly visible LEDs on the top of the I/O card display the power, error, and status of the four ports in the I/O card.

The Fieldbus I/O Card meets ISA G3 corrosion specifications by using superior electronic components and conformal coating.

Redundancy Made Easy. The active and standby I/O cards are connected to the field at the redundant terminal block. When a fault is detected, the system automatically switches to the backup I/O card. The reliability rating of the terminal block is greater than the high reliability of the I/O cards.

The controller scans each card of a redundant pair. Incremental controller loading is a function of the number of redundant cards. In addition the redundant cards have dedicated communication between the pair and the backup card monitors the health of the active card.

An alarm on the integrity error for the primary notifies the operator of a switchover. The backup card is also monitored for integrity alarms. Events that can cause a switchover include:

- Hardware failure within the active card
- Communications failure between the active card and the controller
- Removal of the active card from the carrier
- Detection of a fault in the field wiring

A switchover may also be initiated from the diagnostics explorer, and the health and status of both cards and their channels are available in the diagnostics explorer.

The system automatically commissions a new standby card. Failed cards can be replaced under power in safe areas. The M-series FOUNDATION Fieldbus Series 2 Plus I/O subsystem includes:

- H1 4-port interface card and simplex terminal block, or
- 2 H1 4-port interface cards and redundant terminal block.



FOUNDATION Fieldbus Series 2 Plus I/O.

Hardware Specifications

Environmental Specifications	
Operating Temperature*	-40 to 70°C (-40 to 158°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Relative Humidity	5 to 95%, non-condensing
Protection Rating	IP 20
Airborne Contaminants	ISA-S71.04-1985 Airborne Contaminants Class G3 Conformal coating
Shock	10 g ½-sine wave for 11 ms
Vibration	1 mm peak-to-peak from 5 to 13.2 Hz; 0.7 g from 13.2 to 150 Hz

*Operating any electronics at the higher end of its temperature range for long periods of time will shorten its expected lifetime, see **Effects of Heat and Airflow Inside an Enclosure White Paper** for more information.

Specifications for H1 card, 4-Port, FOUNDATION Fieldbus Series 2 Plus I/O	
Number of Channels (ports)	4
Number of Field Devices	16 per port (dependent on device power consumption – an IS requirement)
Isolation	Each channel is isolated from the system and from each other and factory tested to 1000V DC for 2s
Nominal Signal Range (span)	Fieldbus FOUNDATION IEC 61158-2
Localbus Current per Card (12V DC nominal)	200 mA typical, 300 mA maximum
Field Circuit Power per Card	9 TO 12V DC, 12 mA per channel
Standards	IEC 1158 data link layer
Airborne Contaminants	ISA-S71.04-1985 Airborne Contaminants Class G3 Conformal coating

Certifications

The following certifications are available for M-series 4-port FOUNDATION Fieldbus I/O (see actual certificates for exact certifications):

- **CE:**
EMC: EN 61326-1
- **FM:**
FM 3600
FM 3611
- **CSA:**
CSA C22.2 No. 213
CSA C22.2 No. 1010-1
- **ATEX:**
EN60079-0
EN60079-7
- **IEC-Ex:**
IEC60079-0
IEC60079-7
- **Marine Certifications:** IACS E10
ABS Certificate of Design Assessment
DNV Marine Certificate

Hazardous Area/Location

The M-series 4-port FOUNDATION Fieldbus I/O card can be installed and used based on the following standards (see actual certificates for exact product markings):

- **FM (USA):**
Class I, Division 2, Groups A, B, C, D, T4
- **cFM (Canada):**
Class I, Division 2, Groups A, B, C, D, T4
- **ATEX:**
II 3G Ex ec IIC T4 Gc
- **IEC-Ex:**
II 3G Ex ec IIC T4 Gc

*Regarding the Installation instructions please refer to the following Documents:
Class 1 Division 2 Installation Instructions DeltaV M-series 12P1293
Zone 2 Installation Instructions DeltaV M-series 12P2046*

Ordering Information

Description	Model Number
Simplex H1 Fieldbus Interface Series 2 Plus, Four Segments, Standard Termination Block	VE4019P0
Redundant H1 Fieldbus Interface Series 2 Plus, Four Segments, Two-Wide Standard Termination Block	VE4039P0
H1 Fieldbus Card Series 2 Plus, Four Segments	KC3030X1-BA3
Termination Block for Simplex H1 Fieldbus Interface Series 2 Plus, Four Segments	KC4011X1-BL1
Termination Block for Redundant H1 Fieldbus Interface Series 2 Plus, Four Segments	KC4011X1-BF1

Prerequisites

- A fieldbus power supply is required for each bus segment.
- Each fieldbus segment must be terminated at both ends. A fieldbus brick and terminator for each segment are recommended.

Compatibilities

- M-series FOUNDATION Fieldbus Series 2 Plus I/O requires DeltaV v13.3.1 or higher

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