

# M-series AS-i Interface Card



- Offers freedom to choose appropriate bus for application
- Supports standard device-level busses
- Reduces wiring costs
- Features native controller level interface
- Enables mix-and-match bus technologies to meet application requirements

## Introduction

The DeltaV™ M-series actuator sensor interface (AS-i) is a field-proven interface for discrete actuators and sensors. It is easy to install, reliable, and simple to use.

The DeltaV M-series AS-i interface uses an automatic addressing system via the bus connection. This smart design gives each field device a specific tag name that identifies the device for configuration and diagnostic purposes. The DeltaV system auto-senses AS-i devices and provides smooth activation of new devices.

## Benefits

### Offers freedom to choose appropriate bus for application.

The DeltaV system supports sensor, device, and fieldbus technologies. Choose the most efficient and effective DeltaV interface for your needs, based on your operating philosophy and plant constraints.

**Supports standard device-level busses.** The DeltaV system gives a seamless interface with CENELEC or IEC standard device busses. Our support of standards ensures your freedom to use the devices you prefer.

**Reduces wiring costs.** The DeltaV M-series AS-i interfaces decrease the number of wiring diagrams and cable and clamp labeling needed. The modular designs reduce network creation time. And, it takes less time to install and test the DeltaV M-series AS-i cards than Classic I/O for the equivalent number of discrete signals.

**Features native controller-level interface.** DeltaV M-series AS-i cards communicate directly to the controller, without the need for a serial interface and other intermediate converters. This greatly simplifies the configuration and maintenance. You can rely on DeltaV M-series AS-i cards to provide real-time, consistently accurate inputs and outputs. As the network of field devices grows, maintenance remains constant.



*The DeltaV™ M-series AS-i Interface Card provides the solution for interfacing to discrete actuators and sensors.*

### Enables mix-and-match bus technologies to meet application requirements.

The DeltaV system makes it easy to configure and activate the devices. For devices not in the library, users can add devices and customize signal labeling according to specific plant standards.

AS-i bus, Profibus DP, DeviceNet, FOUNDATION fieldbus, HART, and traditional I/O can be easily intermixed on an I/O card basis on the same DeltaV controller. The same configuration, diagnostic, and operator interface techniques are used to configure the system.

## Product Description

The Actuator-Sensor Interface (AS-i) is a digital, serial, bi-directional communications protocol and bus system that interconnects simple binary on-off devices such as actuators, sensors, and discrete devices in the field. The AS-i standard is now defined by CENELEC standard EN 50295. DeltaV implements AS-I 2.0, supporting 31 basic digital devices per segment, 62 devices per card.

The two-conductor AS-i bus cable supplies both power and data for the field devices. The AS-i bus is designed to operate over distances of up to 100m (more if extenders or repeaters are used). No terminators are needed anywhere on the AS-i bus.

The AS-i bus requires use of a special AS-i power supply that provides electrical isolation from the data signals. For convenience, a special AS-i yellow bus cable that provides a simple cabling and connection method to most AS-i devices can be purchased. This cable has a mechanical profile that provides foolproof, correct connections via insulation displacement connection (IDC) technology built into the AS-i devices. This cabling method ensures fast connection and disconnection. Conventional round profile cable can also be used with AS-i devices, since many vendors supply screw terminal options. Black (for DC) and red (for AC) color-coded cables are also available for field devices that require external power connections. Many low- or medium-powered devices are simply powered off the AS-i yellow cable and do not require external power. The DeltaV M-series AS-i card has two AS-i master ports. It controls communications on the AS-i network by polling the network devices, issuing commands, and receiving and processing replies from the network devices.

Temperature and certification specifications are the same as other DeltaV I/O. The Common Environmental Specification table for all I/O Carriers and Power/Controller Interfaces appears below.

Each AS-i network can include up to 31 slave devices. Each slave can connect up to four conventional non-smart inputs and four non-smart outputs, meaning that up to 124 inputs and 124 outputs can be involved in each AS-i network. Network topology can include branches and stars (using passive splitters or hubs). The only limit is that the total length of AS-i cable anywhere between extenders or repeaters is limited to 100 meters. Repeater generally require a separate AS-i power supply on the far side of the repeater.

It should be noted that signals connected to the controller through the AS-i bus interface are not as fast as signals that are directly wired to DeltaV discrete I/O cards.

In DeltaV v12 and later, signals referenced for each connected AS-i device will count at most 1 DST. The DST type counted will be the most valuable type used to reference a signal for each device. For example, a device with 1 DI signal reference and 1 DO signal reference will count as 1 DO DST. For DeltaV versions prior to v12, each signal referenced from a connected AS-i device will count as 1 DST each.

## System Compatibility

M-series AS-i Interface Specifications Series 2	
Category	Specifications
Storage Temperature	-40 to 85 °C (-40 to 185 °F)
Operating Temperature*	-25 to 70 °C (-13 to 158 °F)
Relative humidity	5 to 95%, non-condensing
Airborne contaminants	ISA-S71.04-1985 Airborne Contaminants Class G3 Conformal coating
Protection rating	IP 20
Shock	10 g ½-sine wave for 11 ms
Vibration	1 mm peak-to-peak from 5 to 16 Hz; 0.5 g from 16 to 150 Hz
Number of ports	2
Isolation	Each AS-i port is optically isolated from each other and the system and factory tested to 1500V DC

\*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.

## Certifications

The following certifications are available for M-series AS-i Interface:

- **CE:**
  - EMC: EN 61326-1
- **FM:**
  - FM 3600
  - FM 3611
- **CSA:**
  - CSA C22.2 No. 213-M1987
  - 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-GL Marine Certificate

## Hazardous Area/Location

M-series AS-i Interface Cards can be installed and used based on the following Standards (see actual certificates for exact product markings for each product):

- **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
Actuator Sensor Interface Card	VE4009

**Emerson****North America, Latin America:**

☎ +1 800 833 8314 or

☎ +1 512 832 3774

**Asia Pacific:**

☎ +65 6777 8211

**Europe, Middle East:**

☎ +41 41 768 6111

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