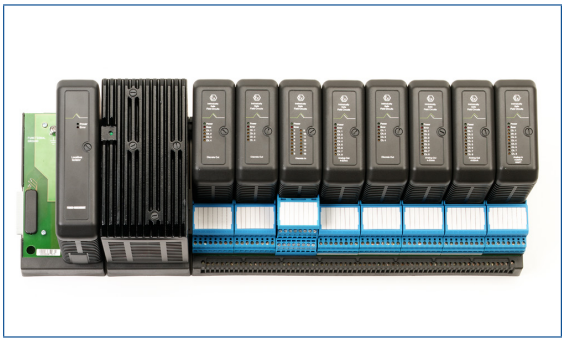
DeltaV Distributed Control System

Product Data Sheet
July 2023

M-series Intrinsically Safe I/O

- Features full system modularity
- Reduces system footprint
- Decreases installation time and expense
- Plug-and-play installation saves money
- Phased installation saves time
- Easy to use
- This fail-safe design enables you to initially install I.S.
- Real-time, online equipment additions



DeltaV™ M-series Intrinsically Safe I/O makes your I.S. installations easy and compact.

Introduction

DeltaV™ M-series Intrinsically Safe Input/Output (I.S. I/O) provides the perfect solution to the precarious situation of running I/O in hazardous areas. DeltaV I.S. I/O is a distributed I/O system capable of withstanding Class I Division 2 and Zone II environmental conditions. The I.S. I/O subsystem connects field circuits and field devices to the DeltaV system. Intrinsically safe field circuits and field devices can enter Class I Division 1, Zone 1, and Zone 0. The DeltaV I.S. I/O supports industry-standard AI, AO, DI, and DO, applications.

Benefits

Features full system modularity. The I.S. I/O subsystem was designed to optimize your automation investment. All components are fully modular and installable under power. You add I/O interface carriers and I/O interfaces in groups of 8 channels, as you need them. The modular design enables you to buy the exact amount of I/O cards and power/controllers that you need. Add more DeltaV I/O as your system grows.

Reduces system footprint. The state-of-the-art form factor design of the DeltaV I/O components enables you to mount the I/O interface carrier in a junction box in the field. You significantly reduce the footprint of your equipment and free up valuable control room space for other uses.

Decreases installation time and expense. DeltaV Intrinsically Safe I/O are native DeltaV I/O cards that are part of the controller's I/O subsystem. This eliminates the need for third party barriers or interface mapping. Save even further on wiring expenses by installing I.S. I/O in the field, close to the actual field devices. Mounting the controller with the I/O further reduces your wiring expenditures by eliminating the need for long runs of multi-cores.

Plug-and-play installation saves money. The I.S. I/O subsystem is easy to use. All I.S. I/O components plug into the I/O interface carrier. You can install the I/O interface carriers to manage anticipated growth, without purchasing the I/O interfaces until you're ready to install your additional field devices.

Phased installation saves time. Mount the I/O interface carrier and you are ready to begin installing the field devices. I/O terminal blocks plug directly onto the I/O interface carrier—there's no need to have the I/O cards installed.

Easy to use. I.S. I/O interfaces and terminal blocks have I/O function keys. These keys ensure that the correct I/O card is always plugged into the corresponding terminal block—easy!

DELTAV™

EMERSON

This fail-safe design enables you to initially install I.S. I/O quickly and efficiently. When you need to replace an I/O card the function key design ensures that you will always install it correctly. DeltaV I.S. I/O—easy to install and maintain.

Real-time, online equipment additions. Online addition of new I/O interfaces means your process does not get interrupted. As new equipment is added, DeltaV Explorer acknowledges it and assigns it basic configuration.

Product Description

A variety of analog and discrete I/O cards are available to meet your specific requirements. All I/O cards are enclosed in a common form factor that plugs into the I/O interface carrier. The housing is clearly labeled with the I/O card type. Clearly visible LEDs on the top of the I/O card display the power, error, and status to the channels included in the I/O card. (It is important to note that, when connecting standard I/O carriers to I.S.I/O carriers, more standard I.O. carriers may not be added after I.S. carriers—the I.S.I/O carriers must always be mounted last in line.)

Hardware Specifications

Common Environmental Specifications for all I/O Interfaces	
Category	**Specifications**
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
Protection Rating	IP 20
Hazardous Area/Location*	I/O Interfaces: Zone 2, IIC T4 Hazardous Area Class 1, Div 2, Groups A, B, C, D T4 Hazardous Locations Field Circuits: Zone 0, IIC Hazardous Area Class 1, Div 1, Groups A, B, C, D Hazardous Locations
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
Dimensions	H 10.7 cm (4.2 in.) W 4.1 cm (1.6 in.) Depth 10.5 cm (4.1 in.)

*Refer to Zone 0 installation instructions (12P1990) for information on installing in hazardous areas.

Intrinsically Safe Analog I/O Cards

Specifications for DeltaV I.S. I/O AI, 4 to 20 mA with HART	
Number of Channels	8
Isolation	LocalBus to Any Channel: 60V AC Between Channels: None I.S. Channel to Non-I.S. Rail: 250V AC
Nominal Signal Range (span)	4 to 20 mA
Full Signal Range	2 to 22 mA
LocalBus Current (12 VDC Nominal) per Card	600 mA
Line Fault Detection Short Circuit Current Open Circuit Current	 >21.5 mA < 0.5 mA
Resolution	16 bits
Calibration	None Required
Optional Loop Disconnect	Yes
Voltage to Transmitter @ 20 mA	15 V (min)
Temperature Stability	±0.006% of Span per °C

Specifications for DeltaV I.S. I/O AO, 4 to 20 mA with HART	
Number of Channels	8
Isolation	LocalBus to Any Channel: 60V AC Between Channels: None I.S. Channel to Non-I.S. Rail: 250V AC
Nominal Signal Range (span)	4 to 20 mA
Full Signal Range	1 to 22 mA
LocalBus Current (12 VDC Nominal) per Card	630 mA (typical)
Open Circuit Detection Threshold	0.7 mA ±0.2 mA
Resolution	12 bits
Calibration	None Required
Optional Loop Disconnect	Yes
Voltage to Load	13 V (min) @ 20 mA
Load Resistance	650 Ω max.
Temperature Stability	±0.006% of Span per °C

System Compatibility

M-series I/O cards are not compatible with S-series Controllers and Carriers.

Ordering Information

Description	Model Number
8-channel AI, 4-20 mA with HART with I/O Term Block with Loop Disconnect Term Block	 VE4012S2B1 VE4012S2B2
8-channel AO, 4-20 mA with HART with I/O Term Block with Loop Disconnect Term Block	 VE4013S2B1 VE4013S2B2
16-channel DI, Switch/Proximity Detector	VE4010B1
4-channel, DO, Solenoid Driver, IIC Gas Groups with I/O Term Block with Loop Disconnect Term Block	 VE4011B1 VE4011B2
8-wide Carrier without Carrier Extension Cable with Carrier Extension Cable	VE4060C0 VE4060C1
24 VDC Input I/O Module Supply and Carrier	VE5010
LocalBus Isolator and Carrier	VE4070

Contact Us
www.emerson.com/contactus

DELTAV™

EMERSON™

GLOBAL INDUSTRIAL AUTOMATION SOURCING

Ready to source this part?

Ask for availability, pricing and delivery options.

Request a fast quote

Include the product title and any required part number or quantity.

EMAIL

info@apterpower.com

PHONE

+86 18106909650

CHAT ON WHATSAPP >

SCAN TO CHAT ON WHATSAPP

PRODUCT: VE4012S2B1 / Emerson DeltaV M-series 8-Channel Intrinsically Safe Analog Input Card