

# S-series FOUNDATION™ Fieldbus I/O



Use DeltaV™ state-of-the-art S-series FOUNDATION fieldbus I/O for your process control system.

- Increase I/O capacity while reducing wiring
- Maximize smart device capabilities
- Redundant H1 cards provide increased availability
- Provides synchronized control

## Introduction

Are you looking for an efficient, yet robust, I/O subsystem? FOUNDATION™ fieldbus 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™ FOUNDATION fieldbus I/O. It greatly enhances device diagnostics that affect your control strategy and alerts operators to device malfunctions.

FOUNDATION fieldbus I/O modular design offers flexibility during installation. It's designed to be installed in the field, close to your devices. Foundation fieldbus 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 make FOUNDATION fieldbus I/O a smart choice for your process control system.

## Benefits

**Increase I/O capacity while reducing wiring.** Use FOUNDATION fieldbus I/O instead of Classic I/O to increase the I/O density and quality of information of your field devices. Take advantage of FOUNDATION fieldbus digital communications to access additional information from your smart devices. Get more information over one wire with up to 16 Ff devices per H1 segment, and 2 segments per card for up to 32 devices per H1 card.

**Maximize smart device capabilities.** Increase your quality and throughput by taking advantage of the added diagnostics of FOUNDATION fieldbus I/O devices. Field device status is updated continuously using FOUNDATION fieldbus I/O. For multi-variable devices, all process variables are available on the single fieldbus at the cost of a single Device Signal Tag.

**Redundant H1 cards provide increased availability.** The DeltaV system offers redundant H1 interfaces. The two H1 interfaces are connected with a redundant terminal block to provide back-up link active schedule (LAS) capability that also maintains communication with the host system. Transfer to the standby card is automatic and requires no special configuration. Ongoing diagnostics ensure the standby H1 card is available on demand. *This process requires no user interaction.*

**Provides synchronized control.** The DeltaV system provides the ability to assign DeltaV function blocks to run in the DeltaV FOUNDATION fieldbus H1 card. The assigned function blocks are included in the fieldbus macro cycle, and their execution is fully synchronized with function blocks running in fieldbus devices on the segment. They supplement the available function blocks of the devices to provide powerful algorithms tightly coupled with the field device function blocks. Even if communication with the DeltaV controller is interrupted, the H1 assigned function blocks continue to execute within the segment macro cycle.

## Product Description

The FOUNDATION fieldbus S-series H1 card supports two Ff H1 segments, each supporting up to 16 Ff devices. Each segment runs an independent scheduler that controls the order of execution of each function block configured on the segment. DeltaV control modules provide a function block structure that defines the order of execution of each block on the segment, making it easy for each loop to be sequenced for efficient loop execution.

Each field device commissioned on the segment consumes a single DST license and provides access to all its I/O data, including diagnostic parameters. This greatly increases the value of multi variable transmitters as well as their facilitating access to their diagnostic features.

Signals referenced for each connected FOUNDATION Fieldbus 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 AI signal reference and 1 AO signal reference will count as 1 AO DST

The FOUNDATION fieldbus H1 interface is packaged in a small form factor enclosure and installs on any I/O slot of the S-series horizontal carriers. The interface uses a separate terminal block to which the segment wires are connected. A single interface is used with the 1 wide terminal block in a simplex installation. Two H1 interfaces can be mounted in adjacent slots using the 2-wide redundant terminal block. The DeltaV controller recognizes the presence of redundancy and presents both cards as a single pair within the system. There is no additional user configuration required to set up the redundant H1 hosts.

Segment Power is provided using third party Ff power supplies that also provide segment physical layer diagnostics. The H1 interface segment wires connect to these power conditions while a separate segment trunk wire connects to the field devices.

The S-series H1 interface provides local LED indicators to assist in trouble shooting:

- 2 Yellow LED's: One per port Indicating the port is enabled and communicating with devices
- Fault LED: Indicates internal fault with the H1 card
- Power LED: Indicates available LocalBus power



S-series H1 Fieldbus I/O Interface Card.

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

One of the most powerful features of FOUNDATION fieldbus devices is their diagnostic data. Using AMS Device Manager, you can access all the necessary information to configure, commission, monitor, and troubleshoot all your FOUNDATION fieldbus smart devices. Improved device diagnostics can lead to increased product quality and minimize unplanned downtime. Improve the productivity and profitability of your process control system with FOUNDATION fieldbus.

Fieldbus devices not manufactured by Emerson Process

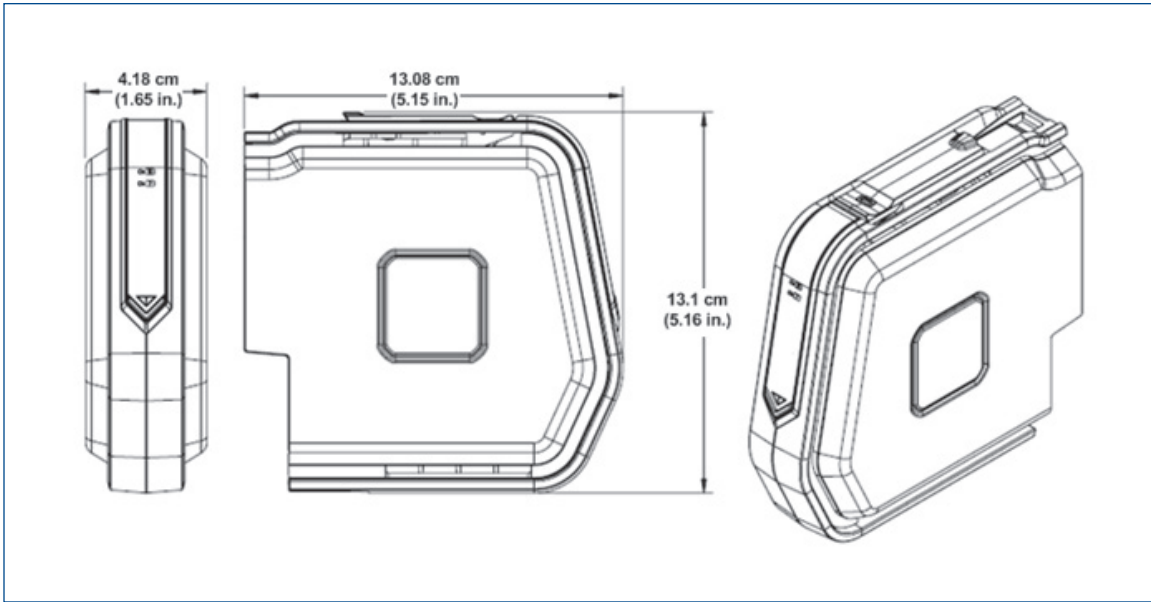
Management divisions are categorized as third-party devices. The DeltaV system provides third-party device support for devices that have successfully passed rigorous testing by Emerson Process Management and are registered by the Fieldbus Foundation. This allows you to benefit from the open fieldbus architecture when selecting field devices.

**Listed Fieldbus Devices on the DeltaV System.** For current fieldbus device information, including device downloads and a list of 3rd-party devices that have been tested for interoperability with the DeltaV system, please refer to [www.emerson.com/deltaV](http://www.emerson.com/deltaV) and click on *Fieldbus Device Downloads*.

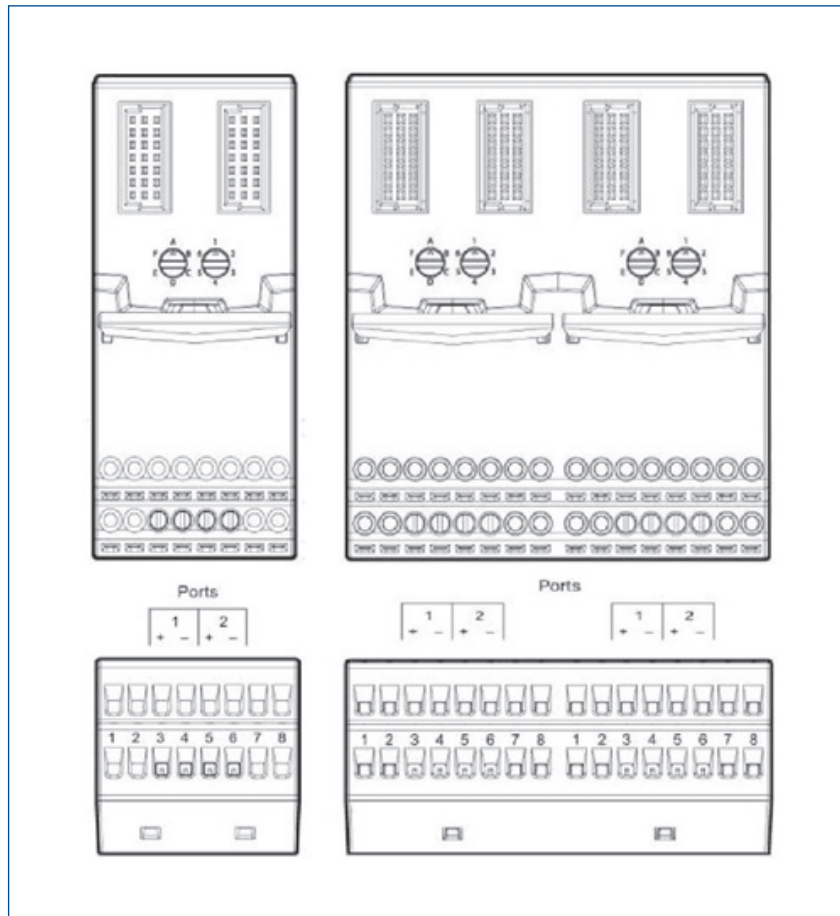
## Hardware Specifications

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;

\*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.



S-series H1 interface dimensions



S-series H1 Terminal Blocks

Specifications for S-series H1 card, 2 channels, FOUNDATION Fieldbus	
Number of segments (ports)	2
Number of field devices:	16 per port (dependent on device power consumption – and IS requirements)
Number of Ff function blocks	96 per card (64 fieldbus and 32 standard DeltaV)
Isolation	Each channel is isolated from the system and from each other and factory tested to 1500 VDC.
Nominal signal range (span)	Fieldbus FOUNDATION IEC 61158-2
LocalBus current per card (12 VDC nominal)	200 mA typical, 300 mA maximum
Fieldbus power (Series 2 card)	9 to 32 VDC, 12mA per channel
Standards	IEC 61158 data link layer
Airborne contaminants	ISA-S71.04-1985 Airborne Contaminants Class G3 Conformal coating

## Certifications

The following certifications are available for the S-series Foundation Fieldbus I/O Card:

- **CE:**  
EMC- EN 61326-1
- **FM:**  
3600  
3611
- **CSA:**  
CSA-C22.2 No. 213-M1987  
CSA-C22.2 No. 1010-1
- **ATEX:**  
ATEX 94/9/EC  
EN 60079-0  
EN 60079-15
- **IEC-Ex:**  
EN 60079-0  
EN 60079-15
- **Marine Certifications:** IACS E10  
ABS Certificate of Design Assessment  
DNV-GL Marine Certificate

## Hazardous Area/Location

The S-series Foundation Fieldbus I/O Card can be installed and used based on the following Standards:

- **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 nA IIC T4 Gc
- **IEC-Ex:**  
II 3G Ex nA IIC T4 Gc

*Regarding the Installation instructions please refer to the following Documents:  
Class 1 Division 2 Installation Instructions DeltaV S-Series (12P5402)  
Zone 2 Installation Instructions DeltaV S-Series (12P5404)*

## Ordering Information

Description	Model Number
S-series H1 I/O Interface Card and Terminal Block (includes 1 Interface Card and a simplex Terminal Block)	SE4017P0
Redundant S-series H1 I/O Interface Card and Terminal Block (includes 2 Interface Cards and a redundant Terminal Block)	SE4037P0

## 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.
- Contact your local sales office for more information on complementary Fieldbus components.

### Emerson

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🌐 [www.emerson.com/deltav](http://www.emerson.com/deltav)

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