S-series H1 I/O Card with Integrated Power

Use DeltaV™ state-of-the-art S-series H1 I/O Card with Integrated Power 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
- Integrated segment power and diagnostics
- Segment Diagnostics

Introduction

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. DeltaV™ FOUNDATION fieldbus I/O 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 allows DeltaV function blocks to run in the DeltaV FOUNDATION fieldbus H1 card. The assigned function blocks are scheduled in the fieldbus macro cycle, and 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.

**Integrated segment power.** The integrated power eliminates external 3rd party Fieldbus power supply products saving valuable cabinet installation footprint and wiring and associated FAT activities. Each isolated segment power supply provides up to 400 mA to the segment while short circuit protection is built in. Typical 24 VDC bulk power supplies connected through the 8-wide I/O carrier provide the power for the integrated power supply. Segment power diagnostics are integrated into the DeltaV Hardware alerts.

**Segment Diagnostics.** The DeltaV S-series H1 interface with integrated power provides individual segment power diagnostic to complement existing hardware alerts and segment communication statistics. Possible faults detected now include power conditioner faults, like under voltage conditions and short circuit faults. Individual device and segment communication statistics provide additional diagnostic tools to isolate most installation issues.

More advanced diagnostics of a segment can be performed as needed using an external tool connected to the segment via the terminal block.

**Product Description**

The **FOUNDATION fieldbus S-series H1 I/O card with integrated power** 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 medium 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 supplies are integrated into this H1 card, greatly simplifying installation design, reducing footprint and improving segment diagnostics. The terminal block includes a fixed segment terminator, eliminating external wiring to fieldbus power supplies and their terminators. Redundant H1 cards provide redundant power to the segments for increased availability.

The S-series H1 with integrated power 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
- **2 Red LED’s:** One per port indicating to health of power supply as well as monitoring voltage or short circuit faults on the physical layer.
- **Fault LED:** Indicates internal fault with the H1 card.
S-series H1 I/O Card with Integrated Power

Power LED: Indicates available LocalBus power

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 of 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 third-party devices that have been tested for interoperability with the DeltaV system, please refer to http://www2.emersonprocess.com/en-us/documentation/deviceinstallkits/Pages/deviceinstallkitsearch.aspx and click on Fieldbus Device Downloads.

Hardware Specifications

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S-series H1 interface with integrated power dimensions

S-series H1 with Integrated power Terminal Blocks
## Hardware specifications

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<th>Specifications for S-series H1 with integrated power, FOUNDATION Fieldbus</th>
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<tr>
<td><strong>Number of segments (ports)</strong></td>
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<td><strong>Number of field devices:</strong></td>
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<td><strong>Number of Ff function blocks</strong></td>
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<td><strong>Voltage provided per segment</strong></td>
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Certifications

The following certifications are available for S-series H1 card with integrated power:

- **CE:**
  - EMC: EN 61326-3-1:2006
  - LVD: EN 61010-1:2001

- **FM:**
  - FM 3600, 1998
  - FM 3611, Dec. 2004
  - FM 3810, Jan 2005
  - ANSI/ISA 60079-0, Oct 2009
  - ANSI/ISA 60079-15, Jul 2009

- **CSA:**
  - CSA C22.2 No. 157, 1992
  - CSA C22.2 No. 61010-1, 2004 (Reaffirmed 2009)
    - CAN/CSA-E60079-0, 2007

- **ATEX:**
  - ATEX 94/9/EC
  - EN60079-0: 2009
  - EN60079-15:2010

- **IEC-Ex:**
  - IEC60079-0:2007
  - IEC60079-15:2010
Certifications

S-series H1 card with integrated power will be submitted for the following certifications

- **Marine Certifications:**
  
  IACS E10:2006 Rev.5 Control, Protection & Safety; DNV 2.4:2006
  
  - ABS Certificate of Design Assessment
  - Bureau Veritas Certificate
  - DNV Marine Certificate
  - Lloyds Register

- **GOST Hazardous Area certification Zone 2 (Russian)**
  
  - POCC US.ГБ05.В03564

- **EAC Hazardous Area certification Zone 2 (Russian, Belarus, Kazakhstan)**
Hazardous Area/Location:

S-series H1 card with integrated power can be installed and used based on the following Standards:

- **FM (USA):**

  **Installation and Field Circuits:**
  
  Class I, Division 2, Groups A, B, C, D, T4

- **cFM (Canada):**

  **Installation and Field Circuits:**
  
  Class I, Division 2, Groups A, B, C, D, T4

- **ATEX:**

  **Installation and Field Circuits:**
  
  II 3 G Ex nAc IIC T4

- **IEC-Ex:**

  **Installation and Field Circuits:**
  
  Ex nAc IIC T4

Regarding the Installation instructions please refer to the following Documents:

- **Class 1 Division 2 Installation Instructions DeltaV S-Series** 12P5402 Rev. C
- **Zone 2 Installation Instructions DeltaV S-Series** 12P5404 Rev. C.
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Ordering Information

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<tr>
<th>Description</th>
<th>Model Number</th>
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<tr>
<td>S-series H1 I/O Card with Integrated power and Terminal Block</td>
<td>SE4017P1</td>
</tr>
<tr>
<td>(includes 1 Interface Card and a simplex Terminal Block)</td>
<td></td>
</tr>
<tr>
<td>Redundant S-series H1 I/O Card with Integrated power and Terminal Block</td>
<td>SE4037P1</td>
</tr>
<tr>
<td>(includes 2 Interface Cards and a redundant Terminal Block)</td>
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Prerequisites

- Each fieldbus segment must be terminated at both ends. The H1 with integrated power terminal block includes a segment terminator for each segment. Additional terminators are purchased separately.
- Contact your local sales office for more information on complementary Fieldbus components.

To locate a sales office near you, visit our website at:  

Or call us at:  
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

For large power, water, and wastewater applications contact Power and Water Solutions at:  
www.EmersonProcess-powerwater.com

Or call us at:  
Asia Pacific: 65.6777.8211  
Europe, Middle East, Africa: 48.22.630.2443  
North America, Latin America: +1 412.963.4000

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