# S-series DC to DC Power Supply

*The DeltaV™ S-series DC/DC system power supplies are modular, easy to install, and secure*

- Easy to use
- Flexible and cost-effective
- Secure
- Simplified system power

## Introduction

Power—your system won't operate without it. DeltaV™ system power supplies offer you the *most efficient and reliable power solution* for your money.

The DeltaV S-series DC/DC power supply connects to your bulk 24VDC power to provide power to the system electronics including the controller and associated I/O cards. This is all the power required for your DeltaV system.

## Benefits

**Easy to use.** The SE5009 DC/DC system power supplies are plug-and-play components. They fit into S-series power supply/controller carriers that contain internal power buses to both the controller and I/O interfaces, eliminating the need for external cabling. The carrier mounts easily onto a T-type DIN rail—*easy!*

**Flexible and cost-effective.** The SE5009 DC/DC system power supply accepts 24 VDC input power. The modular architecture and the power supply's load-sharing capabilities enable you to add more power or provide power redundancy to your system.

**Secure.** Your I/O is always accurate because the I/O subsystem and controller always receive a consistent and accurate 12- or 5-VDC power supply. The power supplies are compliant with EMC and CSA standards; they provide immediate notification of power failure; system and field power provisions are completely isolated.

**Simplified system power.** The SE5009 system power supply delivers more current to the 12-VDC I/O interface power bus and eliminates the need for injected power supplies. Now, all your controller and I/O power can be sourced from plant 24-VDC bulk power supplies.

## Product Description

The S-series SE5009 DC/DC system power supply is used to power the DeltaV controllers and I/O interfaces from 24 VDC bulk power. It can be mounted next to the controller on a Power/Controller carrier and provide the 5 VDC required by the controller. It also provides up to 8 Amps of 12 VDC power to the I/O interfaces.

**Plug-and play components.** The system power supply components fit into any power supply slot of any DeltaV power/controller carrier. This makes system design easy and the interchangeability reduces spares inventory.[1]

**Rail mounted.** Power supply installation is simple. Mount the power/controller carrier into place on a T-type DIN rail. Then plug the system power supplies into the carrier.

**Internal power bus.** The power/controller carrier contains *internal power buses.* You don't need to use external cabling to connect the system power supply to the DeltaV controller and the I/O interface carriers.

**Modular power.** You know your power requirements today, but what about the future? Lay a solid foundation now and build on it later. The modular power structure allows you to install additional power to the controller and I/O subsystems.

**Accurate output.** The SE5009 system power supplies accept a variance in the input 24 VDC of +/- 20% and still generate accurate power output.

**Power redundancy.** DeltaV system power supplies can be redundant at 1-to-N versus 1-to-1 in other systems. This provides an economical solution to creating system redundancy.

**Fault detection.** Both under and over-voltage conditions are detected and recorded to protect the controller and I/O subsystem, and to enable automatic cold restart of the controller in case of bulk power supply failures.

**Standard compliance.** The power supplies are compliant with EMC and CSA standards. Their design meets the new European "power factor correction" standards.

**Immediate notification of power failure.** Internal relay outputs change status and alert the user if the incoming voltage fails or if the system power supply fails. Also, the LED on the power supply housing displays the power status.

**System and field power isolation.** The system power supply provides isolation between the system power and field power when both are powered from the same 24 VDC bulk power supply system.

**Power supply removal.** System power supplies are easy to remove/replace. Bulk power wires are attached to S-series carrier power terminals.

[1] **Refer to Zone 2 installation instructions (12P2046) and/or Class 1 Division 2 installation instructions (12P1293) for details.**

## 24-VDC System Power Supply

The SE5009 system power supply eliminates the need for bulk 12 VDC power supplies by delivering up to 8 amps to the LocalBus. System power is isolated from the 24 VDC field power.

| Description | 24 VDC System Power Supply Specifications |
|---|---|
| Input | 24 VDC ± 20% at 6.1A |
| Inrush (soft start) | 20 A peak maximum for 5 ms over 24 VDC input range (including 12 VDC output) |
| Output Power Rating -40-60C | +12 VDC at 8.0 A (24 VDC Input)<br>+5 VDC at 2.0 A<br>(10 W total for combined outputs of +5 VDC) |
| Output Power Rating 60-70C | +12 VDC at 6.0 A (24 VDC Input)<br>+5 VDC at 2.0 A<br>(10 W total for combined outputs of +5 VDC) |
| Input protection | Internally fused, non-replaceable |
| Overvoltage protection | Output protected at 110% to 120% |
| Hold-up time | Output: remains within 5% of nominal at full load and minimum input voltage for 5 ms (excluding 12 VDC current with 12 VDC input) |
| Operating temperature | -40 to 60 °C (-40 to 140°F) without de-rating<br>60 to 70 °C (140 to 158°F) with de-rating |
| Storage temperature | -40 to 70 °C (-40 to 158 °F) |
| Relative humidity | 5 to 95%, non-condensing |
| Airborne contaminants | ISA-S71.04-1985 airborne contaminants class G3 |
| Shock | 10 g ½-sine wave for 11 ms |
| Vibration | 1 mm peak-to-peak from 5 Hz to 13.2 Hz, 0.7 g from 13.2 Hz to 150 Hz |
| Mounting | On either slot of 2-wide power/controller carrier, power slot of VerticalPlus 4-wide carrier, any slot of 4-wide power carrier. |
| **LED Indicators:** | |
| Green—DC Power | Input DC power is applied and internal fuse/diode is sound. |
| Red—Error | The +5 VDC outputs are out of tolerance. |
| **External connectors:** | |
| Primary power | DC input, 2-wire |
| Alarm contact | 2-wire normally open relay; relay is closed when 3.3 and 5 VDC outputs are within ±4% of nominal; 2.0 A at 30 VDC, 2.0 at 250 VAC |

## Power Calculations

One SE5009 system power supply provides up to 8.0 amps. Refer to the DeltaV hardware installation manual for details on system power calculations and how to inject additional I/O interface power.

## Certifications

The following certifications are available on the S-series DC/DC System Power supply.

- **CE:**

  - EMC- EN 61326-1:2006
  - LVD- EN 61010-1:2001

- **CSA:**

  - CLASS 2252 05 - PROCESS CONTROL EQUIPMENT:

    *CAN/CSA-C22.2* No. O-M91 General Requirements- Canadian Electrical Code, Part II
    *CAN/CSA-C22.2* No. 61010-1-04 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part 1: General Requirements

The following certifications have been submitted for Hazardous Locations and for Marine applications. Please verify with the appropriate certifying agency for a specific list of approved components

- **CENELEC Zone 2 ATEX/IEC EX**

  EN 60079-15:2005
  Certifying agency: Nemko
  Certificate Number: TBD

  Refer to document TBD
  *"DeltaV ™ Scalable Process System Zone 2 Installation Instructions"*

- **FM Approval**

  **Class 1 Division 2 Hazardous Locations**

  Certifying agency: FM Approvals
  Certificate Number: TBD

  Refer to document TBD
  "*DeltaV ™ Scalable Process System Class 1 Division 2 installation Instructions"*

- **Marine Certifications:**

  IACS E10:2006 Rev.5 Control, protection & Safety

  - ABS Certificate of Design Assessment
  - Bureau Veritas Certificate
  - DNV Marine Certificate
  - Lloyds Register

- **GOST Hazardous Area certification Zone 2 (Russian)**

Other country specific certifications may also be available. Verify with your local Emerson sales office to confirm any certification requirements not listed here.

Complies with NAMUR NE21 per DeltaV Digital Automation System NAMUR NE21 Installation Instructions 12P2822.

## Ordering Information

| Description | Model Number |
|---|---|
| 24VDC System Power Supply | SE5009 |

## Prerequisites

- DeltaV v11.3 or later.
- Compatible with S-series Horizontal carriers.

**To locate a sales office near you, visit our website at:**
**www.EmersonProcess.com/DeltaV**
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