

M-series DC to DC Power Supply Enhanced



The DeltaV™ M-series Enhanced 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 power supply suite provides power to the system electronics and to the field. This is all the power required for your DeltaV system.

Benefits

Easy to use. The DC/DC system power supplies are plug-and-play components. They fit into any power supply carrier, both horizontal 2-wide and vertical 4-wide carriers. These carriers 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 DeltaV DC/DC system power supply accepts both 12 VDC and 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; there is immediate notification of power failure; and system and field power provisions are completely isolated.

Simplified system power. The VE5009 system power supply delivers more current on the 12-VDC I/O interface power bus and eliminates the need for 24- to 12-VDC bulk power supplies. Now, all your controller and I/O power can be sourced from plant 24-VDC bulk power supplies.

Product Description

The DC/DC system power supply is used to power the DeltaV controllers and I/O interfaces from either 12 or 24 VDC bulk power. The VE5009 can be mounted next to the controller on a Power/Controller carrier and provide the 5 and 3.3 VDC required by the controller. It also provides 12 VDC power to the I/O interfaces and supplies up to 8 Amps when powered from a 24 VDC Bulk power supply.

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 system power supplies accept a wide range of power inputs and translate the inputs into 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 an easy mount connector rather than screw terminals.

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

24/12-VDC Enhanced System Power Supply

The VE5009 system power supply eliminates the need for bulk 12 VDC power supplies by delivering up to 8 amps down the LocalBus when powered by 24-VDC bulk power supplies. It supports both 12- or 24-VDC input power for compatibility with VE5008 system power supplies. System power is isolated from the 24 VDC field power.

Description	24/12 VDC System Power Supply Specifications
Input	12 VDC (-4-+5%) at 14.8 A 24 VDC $\pm$ 20% at 6.1A
Inrush (soft start)	12 A peak maximum for 5 ms over 12 VDC input range (excluding 12 VDC output) 20 A peak maximum for 5 ms over 24 VDC input range (including 12 VDC output)
Output Power Rating -40 to 60 °C	+12 VDC at 13 A (12 VDC Input) +12 VDC at 8.0 A (24 VDC Input) +5 VDC at 2.0 A +3.3 VDC at 2.0 A (10 W total for combined outputs of +5 VDC and +3.3 VDC)
Output Power Rating 60 to 70 °C	+12 VDC at 10 A (12 VDC Input) +12 VDC at 6.0 A (24 VDC Input) +5 VDC at 2.0 A +3.3 VDC at 2.0 A (10 W total for combined outputs of +5 VDC and +3.3 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 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 $\frac{1}{2}$ -sine wave for 11 ms
Vibration	1 mm peak-to-peak from 5 Hz to 16 Hz, 0.5 g from 16 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 and +3.3 VDC outputs are out of tolerance.
External connectors:	
Primary power	DC input, 2-wire

Description	24/12 VDC System Power Supply Specifications
Alarm contact	2-wire normally open relay; relay is closed when 3.3 and 5 VDC outputs are within $\pm 4\%$ of nominal; 2.0 A at 30 VDC, 2.0 at 250 VAC
Environmental Rating:	FM Class 1 Div 2; Cenelec Zone 2 A, B, C, D T4 Hazardous loc., ATEX 3 G IIC T4 -nC

Power Calculations

One VE5009 system power supply provides up to 8.0 amps, which is the maximum rating for horizontal I/O interface carriers. Refer to the DeltaV hardware installation manual for details on system power calculations and how to inject additional I/O interface power. The VE5009 System power supply is more efficient than the VE5008 and can therefore replace the VE5008 unit without the need to recalculate your Bulk Power supply requirements. If you are upgrading your VE5008 supplies to VE5009 because you are adding I/O cards to the system, be sure that your Bulk Power supplies are able to meet the increased demand resulting from the additional I/O cards

Ordering Information

Description	Model Number
24/12-VDC Enhanced System Power Supply	VE5009

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

www.EmersonProcess.com/DeltaV

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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Process Management

KJ1501X1-BC3 System Dual DC Power Supply

KJ1501X1-BC4 System Dual DC Power Supply

Hazardous Atmosphere



II 3G Ex nA nC IIC Gc
Nemko 07ATEX3058U

Power Specifications

Input rating	12 VDC at 14.8 A
	24 VDC at 6.1 A
Output rating	12 VDC at 13 A (12 VDC input)
	12 VDC at 8 A (24 VDC input)
	5.1 VDC at 2.0 A
	3.4 VDC at 2.0 A
Output Power	10.2 W (total from +5.1 VDC and +3.4 VDC)

Environmental Specifications

Ambient Temperature	-40°C to +70°C
Shock	10g ½ Sinewave for 11msec
Vibration	1mm Peak to Peak from 2 to 13.2Hz; 0.7g from 13.2 to 150Hz
Airborne Contaminants	ISA-S71.04 –1985 Airborne Contaminants Class G3
Relative Humidity	5 to 95% Non-Condensing

Note: Refer to the product label for serial number and location and date of manufacture.

Warning: This product has specific instructions for installation, removal and operation in hazardous areas. Refer to document 12P2046 *"DeltaV™ Scalable Process System Zone 2 Installation Instructions"*. Other installation instructions are

available in the *"DeltaV™ S-Series and CHARMs Hardware Installation"* manual.

The voltage source to this power supply in 12 VDC passthrough mode must not generate or contain in normal operation, a source of potential in excess of 12.6 VDC and supply no more than 16 A maximum.

Removal and Insertion

This unit cannot be removed or inserted with system power energized.

Maintenance and Adjustment

This unit contains no user serviceable parts and should not be disassembled for any reason. Calibration is not required.

Other Safety Approvals



CL. 1 Div. 2
GP. A,B,C,D
HAZ. LOC.
TEMP. Rating T4

