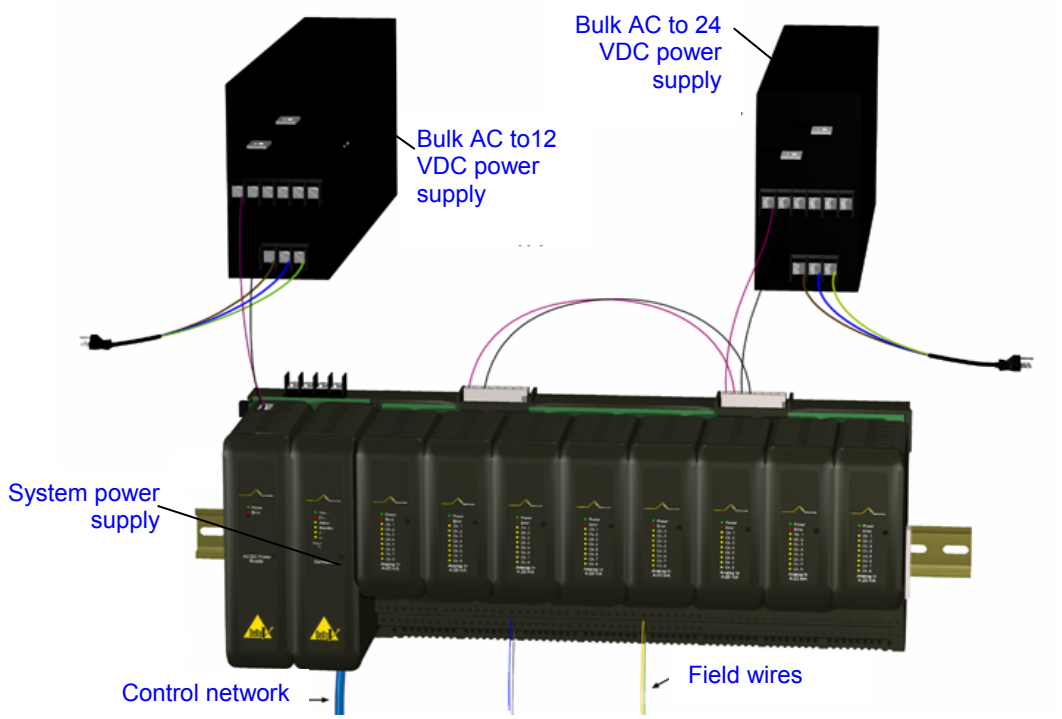
DeltaV Power Supplies



The DeltaV power supplies are modular, easy to install, and secure.

- Easy to use
- Flexible and cost-effective
- Secure

Introduction

Power—your system won't operate without it. DeltaV 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 system and passthrough power supplies are plug-and-play components. They fit into either position on the 2-wide power/controller carrier. This carrier contains internal power buses, eliminating the need for external cabling to connect the system power supply to the DeltaV controller and I/O interfaces. The carrier mounts easily onto a T-type DIN rail—*easy!*

Flexible and cost-effective. The DeltaV power supply suite is modular. Add power to the field, controller and I/O subsystems as you need it. The power supplies' 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.

Product Description and Specification

Two DeltaV system power supplies are available for use in your plant: the 115/220 VAC AC to DC system power supply and the 12/24VDC DC to DC system power supply.

Plug-and play components. The system and passthrough power supply components fit into either position on the 2-wide power/controller carrier. This interchangeability means you can expand or replace power components. Just pull out one power supply component and snap in the other. [1]

Rail mounted. Power supply installation is simple. Mount the 2-wide power/controller carrier into place on a T-type DIN rail. Then plug the system or passthrough power supplies into the carrier.

Internal power bus. The 2-wide 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. A modular power structure allows you to simply snap on additional power to the field, controller, and I/O subsystems. You can add 2-wide power/controller carriers as you need them and install additional system power supplies.

Accurate output. The system power supplies accept a wide range of power inputs and translate the inputs into accurate power output.

Field power distribution to I/O interfaces. If multiple I/O modules in the same I/O subsystem need the same VDC to the field, you can wire the I/O modules together, creating a single power connection to the I/O interface carrier.

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.

No power overload. Distribution prevents power overloading on the I/O and 2-wide power/controller carriers. No more than 8 A can be carried on the backplane to the controller and the I/O subsystem.

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

No power degradation. The power supplies provide consistent power to the system and the field devices. No de-rating to the power supplies occurs when the temperature is within defined specifications.

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 and field power provisions are completely isolated. For example, if the Bulk AC to 24 VDC power supply providing power to the field fails, the system power supply (AC/DC) is unaffected.

Power supply removal. You don't need to unscrew connections to remove the system power or the system passthrough power supplies. Simply unplug the connectors.

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

AC/DC system power supply

The system power supply directs DC power to the controller and I/O subsystem. It resides on either slot of the 2-wide power/controller carrier. Power is isolated from the field. Refer to Zone 2 installation instructions (12P2046) and/or Class 1 Division 2 installation instructions (12P1293) for information on installing in hazardous areas.

Description	AC/DC System Power Supply Specifications
Input	85 VAC to 264 VAC, 47 Hz to 63 Hz, single-phase
Inrush (soft start)	35 A peak maximum for one cycle or less at 230 VAC input
Output power	25 W total at 60 °C
Output voltages	+12 VDC at 2.1 A maximum +5 VDC at 2.0 A maximum +3.3 VDC at 0.5 A maximum Combined 5 VDC and 3.3 VDC output = 10 W maximum
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 155 VAC input for 20 ms
Operating temperature	0 to 60° C (32 to 140 °F) without derating
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 G2
Hazardous areas	Class I, Div. II approval
Shock	10 g ½-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
LED indicators	
Green—AC power	Input AC power is applied and internal fuse is sound
Red—Error	Outputs are not within ±4% of nominal (normal conditions).
External connectors:	
Primary power	AC input: 3-wire
Alarm contact	2-wire normally open relay; relay is closed when outputs are within ±4% of nominal; 2.0 A at 30 VDC, 2.0 A at 250 VAC

AC/DC load-sharing or redundancy system power supply.

24/12 VDC System Power Supply

This power supply accepts 12 or 24 VDC power and passes it to the 2-wide power/controller carrier. It resides on the power/controller carrier. System power is isolated from the field power supply.

Description	24/12 VDC System Power Supply Specifications
Input	11.4 to 12.6 (12 VDC Input) 21.6 to 26.4 (24 VDC Input)
Inrush (soft start)	12 A peak maximum for 5 ms over 12 VDC input range (excluding 12 VDC passthrough output) 20 A peak maximum for 5 ms over 24 VDC input range (including 12 VDC output)
Output power	10 W total at 60 °C (combined outputs of 5 VDC and 3.3 VDC)
Output voltages	13 A max (12 VDC Input) 12 VDC @ 4.5 A Max (if converted from 24 VDC) 2.0 A at +5 VDC 2.0 A at +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	0 to 60 °C (32 to 140°F) without derating
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 16 Hz, 0.5 g from 16 Hz to 150 Hz
Mounting	On either slot of 2-wide power/controller 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
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
Environmental Rating:	FM Class 1 Div 2; Cenelec Zone 2 A, B, C, D T4 Hazardous locations ATEX 3 G IIC T4 -nC

Bulk Power Supplies

The system bulk power supply provides a centralized power supply and distributes power to passthrough power supplies in various areas. The DeltaV bulk AC to 24 VDC power supply comes in a 300 W version. It converts 120/230 VAC power to 24 VDC power. The 24 VDC power provides power to the field devices via power distribution.

Purchase off-the-shelf bulk power supply from Emerson Process Management. Or, use your own 12 VDC distribution network. One I/O interface carrier provides four power-input pairs for bussed field power. Refer to the I/O Interface Carrier product data sheet for specifications.

Description	Bulk AC to 24 VDC Power Supply and Bulk AC to 12 VDC Power Supply Specifications
AC input	120/230 VAC nominal, 90 VAC to 264 VAC range, 47 Hz to 63 Hz, single-phase
DC output voltage	24 VDC nominal 12 VDC nominal
DC output power options	300 W at 60°C
Inrush current	100/40A maximum (hot/cold start)
Hold-up time	20 ms (from 90 to 264 VAC input)
Output Overvoltage protection	125% (± 5%)
Power factor	0.98 at full rated load
Fuse protection	10 A, 250 VAC 3AB or equivalent, non-replaceable fuse
Operating temperature	0 to 60 °C (32 to 140 °F) at 300 W and altitude = 914 m (3000 ft)
Storage temperature	-55 to 85 °C (-67 to 185 °F)
Relative humidity	5 to 95%, non-condensing
Airborne contaminants	ISA-S71.04-1985 airborne contaminants class G2
Shock	MIL-STD-810D Method 516.3, Procedure III
Vibration	MIL-STD-810D Method 514.3, Category 1, Procedure I
Approvals	CSA certified to C22.2 No. 234-950 UL recognized to UL 1950 TUV licensed to IEC 950, EN60950, FCC, VDE (Level B) CE certified to EN50081-1, EN50082-1 Meets IEEE 587 for input transients
Dimensions	
Depth	39.37 cm (15.5 in.)
Width	12.70 cm (5 in.)
Height	6.35 cm (2.5 in.)
Weight	2.63 kg (5.79 lb)
Mounting options	Wall mount or panel mount

Power Calculations

System Power Supplies

One AC/DC system power supply is sufficient for most DeltaV installations. The power supply provides 1.25 A. This is enough for:

- 20 discrete I/O cards
- 10 analog I/O cards
- Any combination of two discrete I/O cards to one analog I/O card to the limits listed above.

One new 12/24-volt or one 12-volt DC/DC system power supply is sufficient for the maximum DeltaV subsystem size.

Bulk Power Supplies for System Power

The bulk AC to 12 VDC power supply and the bulk 24 VDC to 12 VDC power supply have the capacity to supply power to any single DeltaV system. However, if you are using the bulk power supply to provide power for more than one DeltaV system or for other equipment, please refer to the I/O card specifications.

Bulk Power Supplies for Bussed Field Power

The bulk AC to 24 VDC power supply provides power to field devices. In general, AI cards, AO cards, and dry contact DI cards use small amounts of current. The bulk AC to 24 VDC power supply provides enough power for approximately 40 of these types of I/O cards. If you are supplying power to I/O cards with high side switches, you must evaluate the power requirements carefully. Please refer to the manufacturer's specification for your field devices to determine the load.

Ordering Information

Description	Model Number
115/220 VAC AC to DC System Power Supply	VE5001
24/12 VDC DC to DC System Power Supply	VE5008
Bulk AC to 24 VDC Power Supply	VE5003
Bulk AC to 12 VDC Power Supply	VE5004
Bulk 24 VDC to 12 VDC Power Supply	VE5005

To locate a sales office near you, visit our website at: www.EasyDeltaV.com/reach

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