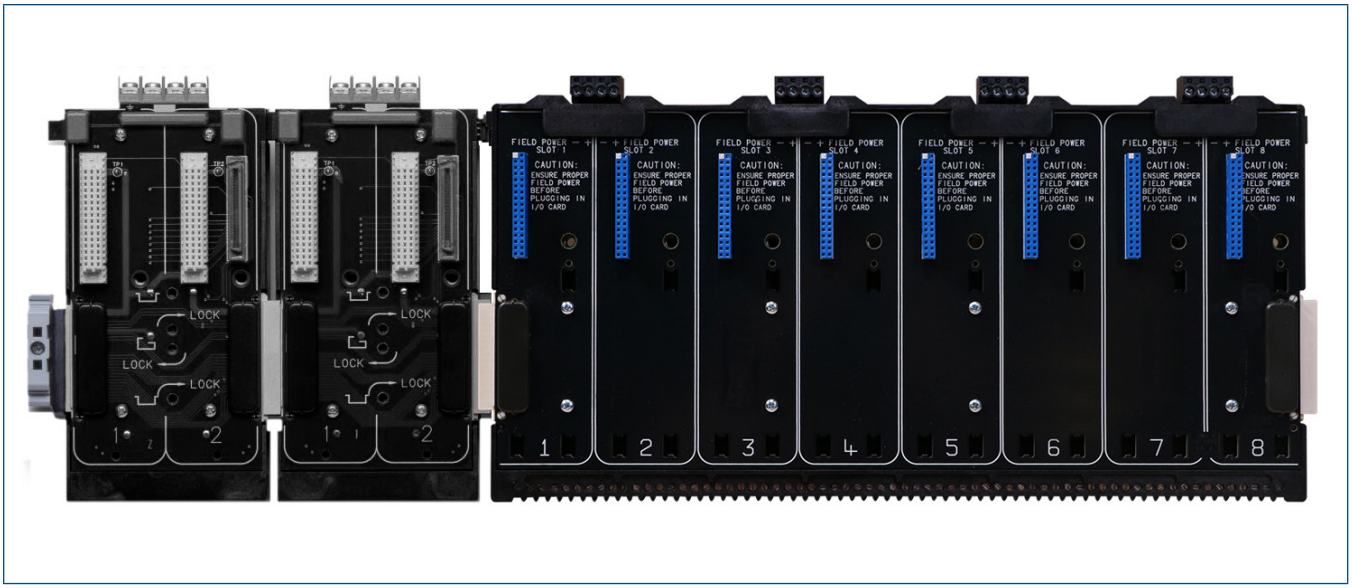
DeltaV™ M-series I/O Subsystem Horizontal Carriers



The DeltaV™ modular I/O subsystem is easy to install and maintain.

- Modular design allows flexible installation
- Allows you to expand online
- Integrated power distribution

Introduction

Get your I/O subsystem up and running efficiently with the DeltaV™ horizontal mount I/O carriers. 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.

The power/controller and I/O carriers are modular. Purchase only what you need but be assured that as your system grows you can add plug-and-play carriers—Easy!

Benefits

Modular design allows flexible installation. A T- type DIN rail is all you need to mount the power/controller carrier into place. The I/O interface carrier plugs on to the power/controller carrier. Simply plug your I/O terminal blocks into the carrier. The DeltaV system's modular design approach allows you to add I/O carriers as you need them.

Allows you to expand online. Additional 8-wide carriers may be added online as desired. Carrier extenders give you the flexibility to install I/O carriers in multiple rows with 1,2, 3 or 4 carriers per row.

Integrated power distribution. Controller and I/O interface power distribution is integrated into the carriers to reduce and simplify power and grounding. Carriers also have integrated shield ground bar to isolate and drain field noise away from system power.

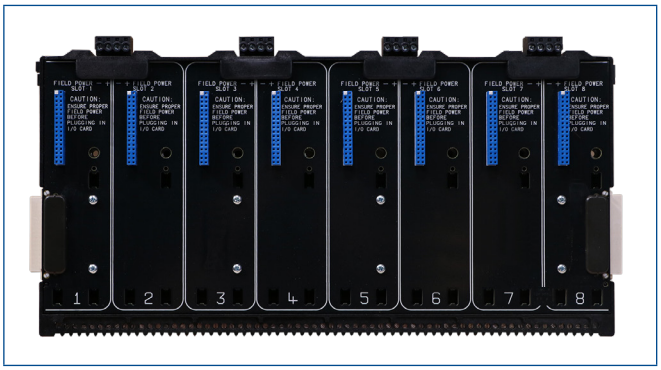


The DeltaV horizontal-mount carriers provide plug-and- play ease for your I/O subsystems.

Product Description

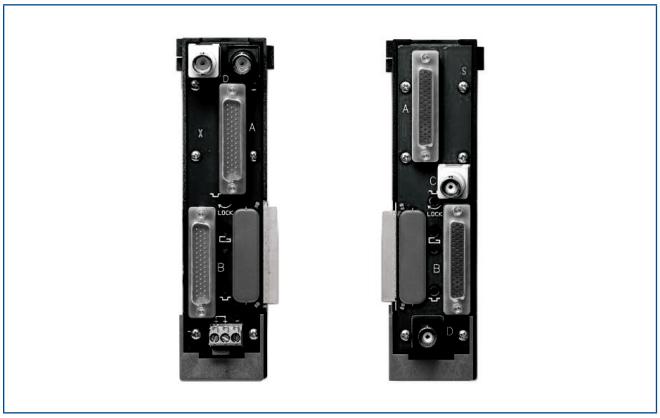
The I/O interface carrier plugs on to the power/controller carrier. The power/controller carrier supplies the system power and communications between the I/O interfaces and the controller. The controller processes the I/O interface information. An additional power/controller carrier is required for use with redundant controllers.

Mount your interface carrier on a T-type DIN rail. The I/O interface carrier includes the connections for the bulk 24 V DC field instrument power, I/O interfaces, and terminal blocks. Each I/O interface carrier is equipped with a connector that allows an additional I/O interface carrier to be plugged on to it. Up to 64 I/O interfaces on eight 8-wide I/O interface carriers are supported by a single I/O subsystem. For the horizontal-mount solution, 1-wide local bus extenders allow you to continue the I/O bus on a different row of carriers. There are two types of 8-wide I/O interface carriers available. They both have connectors for field power on the top of the carrier. The original carrier connects each set of field power terminals to two I/O cards, and the other option have individual field power per card slot and is ideal if separate field power is required for redundant I/O cards.



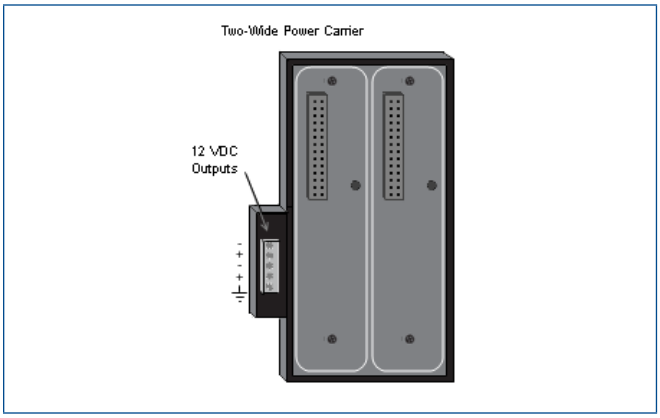
The DeltaV horizontal-mount 8-wide I/O interface carrier with individual field power per I/O card.

With the introduction of DeltaV SIS the left one-wide and right one-wide dual carrier extenders have two, 44-pin D- Shell connectors which supports dual cables for a fault tolerant configuration. The A and B connectors are in parallel so either port may be used. The new dual carrier extenders are a pre-requisite for DeltaV SIS as these also provide extension of the redundant safety bus used by the Safety Logic Solvers. The VerticalPLUS mount carriers also support dual cables and can be used with DeltaV SIS. Refer to the new VerticalPLUS Carrier Product Data Sheet for more details on these new carriers.



Front view of dual carrier extenders.

The horizontal carrier family also offers a 2-wide power carrier. Use this carrier, along with one or two system power supplies to provide 12 V DC local bus power connected through the carrier extenders. There are two 12 V DC output connections powered by either supply. For redundant power, ensure that the power demand is within the output range of one system power supply.



Two-Wide Power Carrier for power injection.

With the introduction of the PK controller, a 4 wide I/O carrier is available for use with M-series I/O cards when a smaller footprint for the hardware is required. The 4-wide carrier allows for individual field power per card slot and is ideal if separate field power is required for redundant I/O cards.



4-wide I/O card carrier with individual field power connections.

Hardware Specifications

Specifications for the I/O Subsystem Horizontal Carriers		
2-Wide Power/Controller Carrier		
Capacity	One system power supply and one controller or two system power supplies	
Dimensions	**Centimeters**	**Inches**
Height	16.5	6.5
Width	8.4	3.3
Depth	3.1	1.2
Connector to connector width	9.1	3.6
8-Wide I/O Carrier with field power per two I/O cards Specifications		
Capacity	Eight I/O cards and eight terminal blocks	
Dimensions	**Centimeters**	**Inches**
Height	16.5	6.5
Width	33.6	13.2
Depth	3.1	1.2
Current Ratings		
Backplane	8 A max (supplied to I/O cards)	
Bussed field power bus	6.5 A max (supplied to field terminals) per two I/O cards	
8-Wide I/O Carrier with separate field power for each I/O cards Specifications		
Capacity	Eight I/O cards and eight terminal blocks	
Dimensions	**Centimeters**	**Inches**
Height	16.9	6.7
Width	33.6	13.2
Depth	3.1	1.2
Current Ratings		
Backplane	8 A max (supplied to I/O cards)	
Bussed field power bus	3.2 A max (supplied to field terminals) per I/O card	

4-Wide I/O Carrier Specifications		
Capacity	Four I/O cards and four terminal blocks	
Dimensions	**Centimeters**	**Inches**
Height	16.9	6.7
Width	17.0	6.7
Depth	3.1	1.2
Current Ratings		
Backplane	8 A max (supplied to I/O cards)	
Bussed field power bus	3.2 A max (supplied to field terminals) per I/O card	
1-Wide I/O Carrier Extender (Left and Right) Specifications		
Capacity	Single or dual cables with SIS safety bus coax cables	
Dimensions	**Centimeters**	**Inches**
Height	16.5	6.5
Width	4.2	1.7
Depth	3.1	1.2
Current Ratings		
Backplane	8 A max (supplied to I/O cards)	
Injected Power connector (Left extender only)	8 A max (supplied to I/O cards)	

Environmental specifications (All Carrier components)	
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
Airborne contaminants	ISA-S71.04-1985 Airborne Contaminants Class G3 Conformal coating
Shock (normal operating conditions)	10 g ½-sine wave for 11 ms
Vibration (operative limit)	1 mm peak-to-peak from 5 Hz to 16 Hz, 0.5 g from 16 Hz to 150 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.*

Certifications

The following certifications are available on the M-series Horizontal Carriers.

- **CE:**

  EMC: EN 61326-1

- **FM:**

  FM 3600

  FM 3611

- **CSA:**

  CSA C22.2 No. 213

  CSA C22.2 No. 61010-1

- **ATEX:**

  EN 60079-0

  EN 60079-7

  EN 60079-15

- **Marine Certifications: IACS E10**

  ABS Certificate of Design Assessment

  DNV Type Approval Certificate

Hazardous Area/Location

The M-series Horizontal Carriers can be installed and used based on the following Standards: (see actual certificates for exact product markings for each product)

- **FM (USA):**

  Installation:

  Class I, Division 2, Groups A, B, C, D, T4

- **cFM (Canada):**

  Installation:

  Class I, Division 2, Groups A, B, C, D, T4

- **ATEX:**

  II 3G Ex nA IIC T4 Gc

  II 3G Ex ec IIC T4 Gc

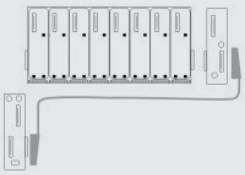
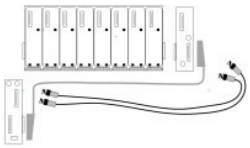
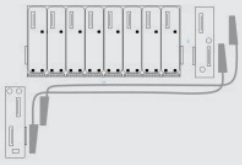
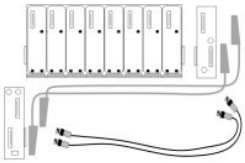
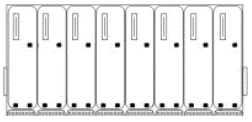
Regarding the Installation instructions please refer to the following Documents: Class 1 Division 2 Installation Instructions DeltaV M-series (12P1293) Zone 2 Installation Instructions DeltaV M-series (12P2046)

System Compatibility

M-series I/O carriers are not physically compatible with S-series controller carriers, except when used with the DeltaV SIS Adapter.

The M-series controllers cannot detect the difference between an 8-wide and a 4-wide carrier. If a 4-wide carrier is used, the four I/O slots after the slots on the carrier will be lost to an M-series controller. If either a 4-wide or 8 wide carrier is connected after a 4-wide carrier, the first slot number will be 5 numbers higher than the last slot on the 4-wide carrier. For example, if a controller has a 4-wide carrier followed by an 8-wide carrier, the slots on the 4-wide carrier will be 1, 2, 3, and 4, and the slots on the 8-wide carrier will be slots 9, 10, 11, 12, 13, 14, 15, 16. The PK Controller does not have this behavior because it can distinguish between a 4-wide and an 8-wide carrier. However, there is still a limit of 8 total carriers (4-wides and/or 8-wides) on any controller.

Ordering Information

Description	View	Model Number
8-Wide I/O Interface Carrier with Carrier Shield Bar		VE4050S2K1C0
8-Wide I/O Interface Carrier with Carrier Shield Bar and Single Enhanced Carrier Extender Cable. Cable is 1.2m		VE4050E1C0
8-Wide I/O Interface Carrier with Carrier Shield Bar, Single Enhanced Carrier Extender Cable, and Redundant SISNet Coax Cables. Cables are 1.2m.		VE4050E1C2
8-Wide I/O Interface Carrier with Dual Carrier Extension Cable and Carrier Shield Bar. Cables are 1.2m.		VE4050E2C0
8-Wide I/O Interface Carrier with Carrier Shield Bar, Dual Enhanced Carrier Extender Cables, and Redundant SISNet Coax Cables. Cables are 1.2m.		VE4050E2C2
4-Wide I/O Interface Carrier with Carrier Shield Bar and individual field power per card		VE4040E0C0
8-Wide I/O Interface Carrier with Carrier Shield Bar and individual field power per card		VE4050S2K1C2