DeltaV™ M-series Zone 2 Remote I/O

DeltaV™ M-series Zone 2 Remote I/O shares I/O with any DeltaV controller for maximum installation flexibility.

- Shared remote I/O
- Easy plug-and-play installation
- Easy to use

Introduction

The DeltaV™ M-series Zone 2 Remote I/O architecture allows I/O cards to be installed remotely from the controller and provides communication and control between the field devices connected to the Remote I/O subsystem and the other nodes on the control network. Control strategies and system configurations reside in the DeltaV system's powerful controllers.

Benefits

Shared remote I/O. DeltaV M-series Zone 2 Remote I/O can be shared amongst several DeltaV controllers for a greater range of applications and installation flexibility.

Easy plug-and-play installation. DeltaV M-series Zone 2 Remote I/O automatically identifies itself to the control network, saving the usual no-value engineering work that other automation systems require. Additionally, I/O cards are recognized as they are inserted into the Remote I/O subsystem.

Easy to use. Like the traditional I/O in your DeltaV system, the DeltaV controller manages all activities for your Zone 2 Remote I/O. The I/O cards supported by the Remote I/O subsystem are the same as those used on M-series controllers – saving you spares.

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Product Description

The DeltaV M-series Zone 2 Remote I/O delivers big savings in the installation process. The compact, modular design allows you to cost-effectively meet your process needs.

The Remote I/O subsystem consists of a System Power Supply and a Remote I/O Unit connected to an 8-wide I/O carrier with up to 8 simplex I/O cards.

There are two versions of the Remote I/O Unit; the original Remote I/O Unit (RIU), and the Next Generation Remote I/O Unit 2 (RIU2). The RIU2 is a drop-in replacement for the original RIU back to DeltaV v13.3.1 and has the same functionality as the original RIU.

Shared remote I/O for maximum flexibility

I/O Targeting. The M-series Zone 2 Remote I/O Units supports targeting of Classic I/O to controllers on a per card basis. For example, a card can be owned by a controller, with different I/O cards owned by a different controller, with the limit that a Remote I/O Unit can support 4 controllers maximum.

Each DeltaV controller can have up to 16 Remote I/O Units associated with it.

The DeltaV system supports up to 300 remote I/O Units[1] and they communicate on the same Ethernet network as the controllers and workstations.

The RIU2 supports 10/100MB communication on both primary and secondary ports.
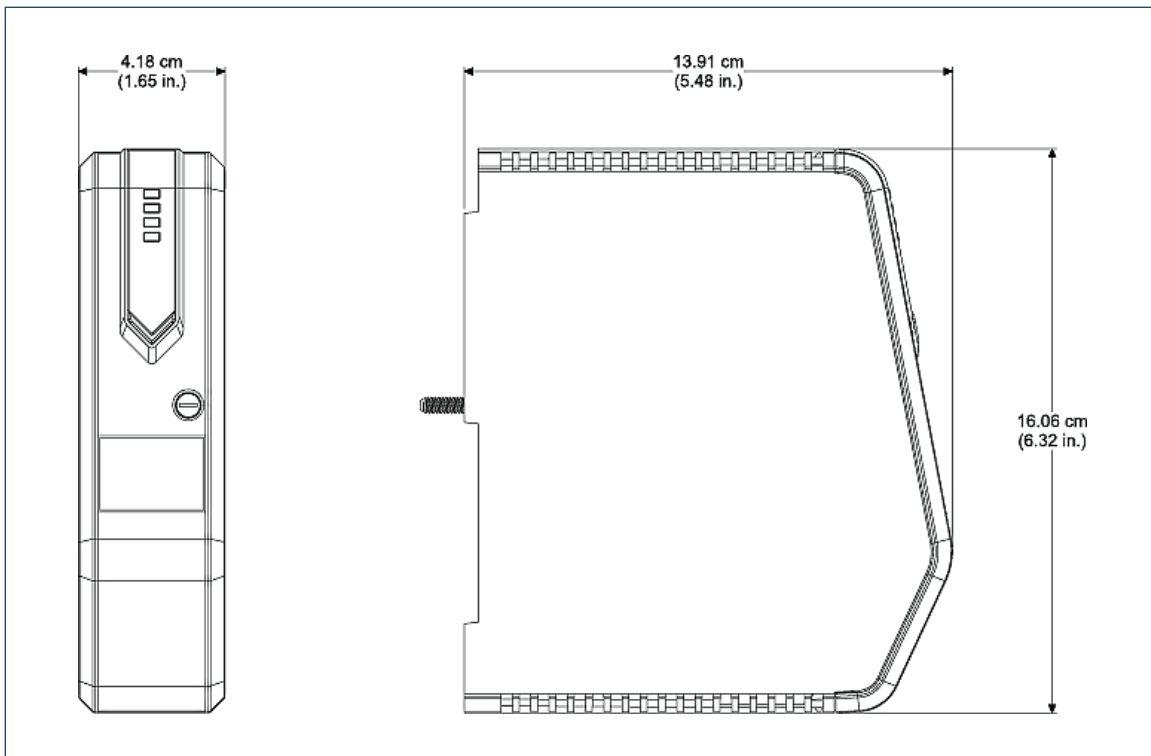
Remote Interface Unit 2 (RIU2) hardware dimensions.

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[1]DeltaV supports a combined 300 Remote I/O nodes, CHARM I/O cards (CIOCs), Wireless I/O cards (WIOCs), and Ethernet I/O Cards (EIOCs) in a single system.

Data Passthrough. The controller is equipped with the ability to pass smart HART® information from field devices connected to a Remote I/O Unit to any workstation node in the control network.

This means you can take advantage of applications, such as AMS Device Manager that enable you to remotely manage the HART information contained in your HART equipped devices.

Mounting. This plug-and-play system structure provides modular system growth with a single controller and is approved for remote mounting in a Class 1, Div 2 or ATEX Zone 2 environment. Refer to the System Power Supplies and I/O Subsystem Carriers product data sheets for additional information.

I/O Types and Capacity. The RIU2 support one I/O carrier of either Classic I/O or HART I/O. The Remote I/O Unit and I/O cards can be installed on either horizontal or VerticalPlus carriers. Any of the Classic or HART I/O cards may be utilized. The HART data from the I/O channels can be used in a control strategy, providing the user with the same experience using remote I/O as when using local I/O.

Pulse Count Input card, Sequence of Events card, FOUNDATION Fieldbus cards, Profibus DP card, DeviceNet card, AS-i card, and Serial cards are not supported on the RIU2. I/O card redundancy is also not supported.

Starting with the DeltaV v14.FP3 release, the RIU2 supports the Series 2 Plus High-Density cards in simplex configuration.

Easy plug-and-play installation

Self-Addressing. The M-series Zone 2 Remote I/O Unit is unique in its ability to automatically identify itself to the DeltaV control network. When the Zone 2 Remote I/O Unit is powered up, it is automatically assigned a unique address— no dip switches, no configuring—just ***plug and play!***

Self-Locating. An M-series Zone 2 Remote I/O Unit's physical location is easy to find. LEDs on the face of the Remote I/O Unit can be made to flash, providing a strong visual cue.

Automatic I/O Detection. The M-series Zone 2 Remote I/O Unit can identify all I/O interface channels located on the subsystem. As soon as an I/O interface is plugged in, the Remote I/O Unit knows the general characteristics of the field devices managed by that I/O interface. This reduces the "no-value engineering" associated with configuration—***easy!***

Easy to use

Total Control. The controller(s) manages all control activities for the I/O interface channels. It also manages all communication functions for the communications network.

Time stamping, alarming, and trend objects are also managed within the controller(s). The controller(s) executes your control strategy. Information from an input channel on a Remote I/O Unit is received, control strategy applied, and data is sent to an output channel on Remote I/O Unit within 200 ms on average - assuming a 100 ms scan time for the I/O.

Hardware Specifications

Specifications for the Zone 2 Remote I/O Units	
Power Requirement	Supplied by System Power Supply through Power/ Controller Carrier
Maximum Current	RIU2: 0.5A
Fuse Protection	3.0 A, non-replaceable fuses
Power Dissipation	RIU2: 2.0 W typical, 2.5 W maximum
Mounting	On right slot of power/controller carrier
Environmental Specifications	
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)	RIU2: 1mm Peak-to-Peak from 2 to 13.2 Hz; 0.7g from 13.2 to 150 Hz
LED Indicators	
Green – Power	Indicates DC power is applied
Red – Error	Indicates an error condition
Yellow flashing – Pri. CN	Indicates valid primary control network communication
Yellow, flashing – Sec. CN	Indicates valid secondary control network communication
All except Power Flashing	Visual identification mode (Initiated by user from engineering software tools)
All except Power Flashing, Sequenced	Firmware upgrade in progress
External Connections	
Primary Control Network	8-pin RJ-45 connector
Redundant Control Network	8-pin RJ-45 connector

*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 for M-series Zone 2 Remote I/O (see actual certificates for exact certifications):

- **CE**

    EMC: EN 61326-1

- **FM**

    FM 3600

    FM 3611

- **CSA**

    CSA C22.2 No. 213-M1987

    CSA C22.2 No. 1010-1

- **ATEX**

    EN60079-0

    IEC60079-7

- **IEC-Ex**

    IEC60079-0

    IEC60079-7

- **Marine Certifications:** IACS E10

    ABS Certificate of Design Assessment

    DNV Marine Certificate

Hazardous Area/Location

M-series Zone 2 Remote I/O can be installed and used based on the following Standards (see actual certificates for exact product markings):

- **FM (USA)**

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

- **cFM (Canada)**

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

- **ATEX**

    II 3G Ex ec IIC T4 Gc

- **IEC-Ex**

    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

Ordering Information

Description	Model Number
Remote Interface Unit 2 (RIU2) for Zone 2 Remote I/O	VE4023

Prerequisites

- For each M-series Zone 2 Remote I/O Unit you will need to select the mounting carrier. Please refer to the I/O Subsystem Carrier product data sheets for details.

  Use either the horizontally mounted model VE4050S2K1C0 8-Wide I/O Interface Carrier for the I/O cards, and model VE3051C0 2-Wide Power/Controller Carrier for the Remote I/O Unit and associated power supply or use the vertically mounted model VE4054S1C0 8-Wide VerticalPlus I/O Interface Carrier for the I/O cards, and model VE3056 4-Wide VerticalPlus Power/Controller Carrier for the Remote I/O Unit and associated power supply.

- Each M-series Zone 2 Remote I/O Unit requires a dedicated system power supply. Please refer to the Power Supplies product data sheet for details. Use model VE5009 enhanced DC to DC System power supply.

Compatibility

- The Remote Interface Unit 2 (RIU2) requires DeltaV v13.3.1, v13.3.2, v14.LTS or later versions. A hotfix is required for v13.3.1, v14.LTS, v14.FP1, and v14.FP2. Please request the original RIU (KJ2004X1-BA1) if needed for DeltaV prior to v13.3.1.

- The Remote Interface Unit 2 (RIU2) support for Series 2 Plus High-Density cards requires DeltaV v14.FP3 or later versions.

- The M-series Zone 2 Remote I/O Units can communicate to both M- and S-series Controllers. It can also communicate with the Integrated PK Controller but not in Standalone mode.

- The M-series Zone 2 Remote I/O Units are not supported on the M- and S- series Migration Controllers for PROVOX and is not supported on the M- series Migration Controller for RS3.

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