DeltaV Distributed Control System

Product Data Sheet
March 2026

DeltaV™ M-series Traditional I/O



The DeltaV™ I/O Subsystem is Easy to Install and Maintain.

- Decreases capital equipment costs
- Decreases installation time and expense
- Increases productivity
- Increases process availability

Introduction

Traditional I/O is a modular subsystem that offers flexibility during installation. It's designed to be installed in the field, near your devices. Traditional I/O is equipped with function and field wiring protection keys to ensure that the correct I/O card is always plugged into the corresponding terminal block. Modularity, protection keys, and plug-and-play capabilities make DeltaV™ Traditional I/O a smart choice for your process control system.

Benefits

Decreases Capital Equipment Costs

Full System Modularity: The Traditional I/O subsystem was designed with your investment in mind. All components are fully modular and may be installable under power. You add I/O interface carriers and I/O interfaces in groups of 4, 8, 16, or 32 channels as you need them. The modular design enables you to purchase the exact amount of I/O cards, 8-wide or 4-wide carriers, power/ controllers, and 2-wide carriers you need and add more DeltaV I/O as your system grows.

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Product Description

The Traditional I/O Subsystem Includes:

- I/O interface carrier (a DIN rail surface mounted) on which all I/O related components are installed
- Bulk AC to 24V DC power supply for field devices
- An I/O interface consisting of an I/O card and an I/O terminal block
- A variety of analog and discrete I/O cards enclosed in a common form factor that easily plugs into the I/O interface carrier
- A variety of I/O terminal blocks mounted on the I/O interface carrier that can be pre-wired before I/O card installation

I/O Cards

A variety of analog and discrete I/O cards are available to meet your specific requirements. The following cards support simplex or redundant installation:

- AI 4-20 mA HART 8 channels
- AO-4-20 mA HART 8 channels
- DI, 24V DC Dry Contact, 8 channels
- DO 24V DC High-Side, 8 channels



A Traditional I/O Card Easily Plugs into an I/O Carrier.

- AI (Plus) 4-20 mA HART, 16 channels
- AO (Plus) 4-20 mA HART, 16 channels
- DI (Plus) 24V DC, Dry Contact, 32 channels
- DO (Plus) 24V DC, High-Side, 32 channels

The following I/O cards are supported in simplex format to meet your field wiring needs:

- RTD, 8-channels
- Thermocouple, 8 channels
- Millivolt, 8 channels
- DI, High Density, 32 channels
- DI 24V DC Isolated, 8 channels
- Multi-Function, 4 channels (Isolated DI)
- Sequence of Event, 16 channels (DI 24 V DC)
- DI 120V AC Low Side Detection, 8 channels
- DI 120V AC Isolated, 8 channels
- DO 24V DC Isolated, 8 channels
- DO 120/230V AC High-Side, 8 channels
- DO 120/230 Isolated, 8 channels

All I/O cards are enclosed in a common form factor that plugs into the I/O interface carrier. The housing is clearly labeled with the enclosed I/O card type. All cards have power and internal error indicators. Eight-channel cards have clearly visible channel status LEDs.

All cards meet ISA G3 corrosion specifications by the careful selection of superior electronic components and the use of conformal coating.

Pulse Counters are available on most DI cards. The supported maximum frequency varies from 0.1 Hz on AC signals to 75 or 120 Hz on 24V DC inputs. For higher pulse counts, up to 50 KHz, use the Multi-Function card's high speed pulse input.

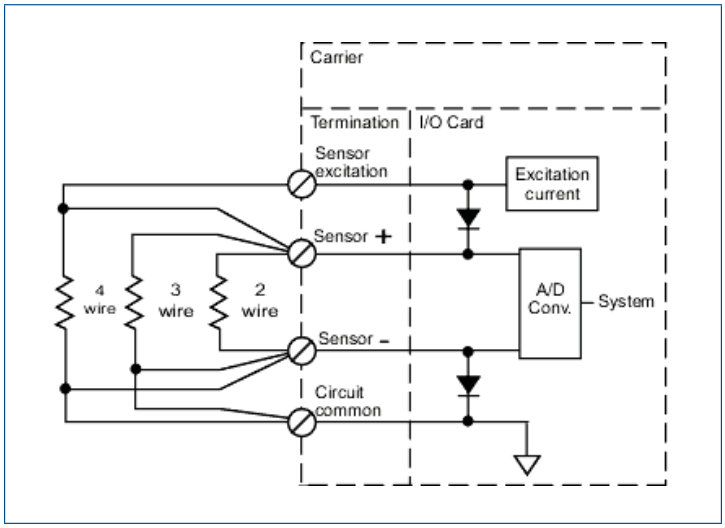
The DeltaV system provides control module level time stamping for log events and alarms. For greater event resolution, the 16-channel Sequence-of-Events DI card can provide signal driven events to a resolution of +/- 0.25 ms per card, or within 1 ms per controller. Please refer to the **Sequence of Events** PDS for more information on Sequence-of-Event data collection and system options for this feature.

Specifications for RTD Input Card, 8-channel	
RTD Channels per Card	Eight
Sensor Types	2 wire, 3 wire, or 4 wire
Sensor Configuration	Resistance, Pt100, Pt200, Pt500, Ni120, Cu10, User Defined
Full Scale Signal Range	See table next page
Accuracy	See table next page
Repeatability	0.05% of span
A/D Resolution	16-bit
Calibration	None required
Units	°C, °F
Sensor Excitation Current	100 µA
Common Mode Rejection	120 dB at 50/60 Hz
Common Mode Impedance	> 10 mega ohms
LocalBus Current (12V DC nominal)	160 mA
Open Sensor Detection Time	1 second
Open mV Lead Detection Time	15 seconds

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RTD, ohms Sensor Type Specifications					
Sensor Type	**Full Scale**	**Operating Range**	**25°C Reference Accuracy**	**Temperature Drift**	**Resolution**
Resistance	0 to 2,000 Ω	0 to 2,000 Ω	± 6.2 Ω	± 0.112 Ω/°C	~0.02 Ω
Pt100	-200 to 850°C	-200 to 850°C	± 0.5°C	± 0.018°C/°C	~0.05°C
Pt200	-200 to 850°C	-200 to 850°C	± 0.5°C	± 0.012°C/°C	~0.05°C
Pt500	-200 to 850°C	-200 to 850°C	± 3.5°C	± 0.063°C/°C	~0.18°C
Ni120	-70 to 300°C	70 to 300°C	± 0.2°C	± 0.006°C/°C	~0.02°C
Cu10	-30 to 140°C	-30 to 140°C	± 2.0°C	± 0.157°C/°C	~0.23°C
User Defined*	0 to 1000 Ω	0 to 1000 Ω	± 0.4 Ω	± 0.009 Ω/°C	~0.05 Ω

*The Callendar-Van Dusen linearization equation can be used with user defined Pt RTDs. Refer to Recommended I/O Practices in DeltaV™ Books online for usage information.



Simplified Circuit Diagram for RTD Input Card, 8 Channels.

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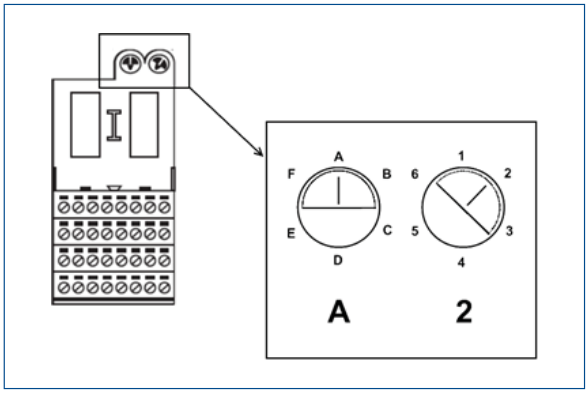
I/O Terminal Blocks

A variety of I/O terminal blocks are available to meet specific functionality and environmental requirements of the installation. The I/O interface is a combination of the I/O card and the I/O terminal block. Each I/O interface is uniquely keyed so that once installed in a carrier slot with a terminal block, that terminal block will only accept a replacement card.



8-channel Standard Terminal Block.

The keying mechanism consists of two keying posts that rotate and lock into the terminal block base. Each post has 6 positions: A-F and 1-6. Each card is assigned a unique key, which is marked on the side of the I/O card:



Terminal Block Keying Example.

The keys prevent installation of an incorrect card, and the graphical information on the card makes it easy to determine if a keyed slot will accept a particular card.

There are different I/O terminal blocks available to meet the wiring needs of field signals:

- 8-Channel terminal block
- Fused 8-Channel terminal block
- AI 8-Channel terminal block
- 2-wire AI Plus 16-Channel terminal block
- 4-wire AI Plus 16-Channel terminal block
- AO Plus 16-Channel terminal block
- DI 32-Channel terminal block
- DI Plus 32-Channel terminal block
- DO Plus 32-Channel terminal block
- RTD/Resistance terminal block
- Thermocouple terminal block

The following redundant I/O terminal blocks are available on some I/O interfaces, allowing a pair of cards to be installed as a redundant pair:

- Redundant AI 8-Channel terminal block
- Redundant AI Plus 16-Channel terminal block
- Redundant AO 8-Channel terminal block
- Redundant AO Plus 16-Channel terminal block
- Redundant Discrete 8-Channel terminal block
- Redundant DI Plus 32-Channel terminal block
- Redundant DO Plus 32-Channel terminal block

The table on the following page lists the compatible terminal blocks for each card, along with the cards unique key positions. The first terminal block listed is the recommended terminal block.

In addition to standard signal wiring, some cards may also be ordered with Mass Terminal blocks that allow these cards to be connected to the M-series Mass Connection Solutions or third party wiring solutions from Phoenix or if IS Barriers are required from Pepperl and Fuchs, mounted in an adjacent cabinet to meet special signal conditioning or for optimizing field wiring solutions. Please refer to the Alliance Program website for details on approved third-party products.

- 10-pin Mass Termination Block (simplex only)
- 16-pin Mass Termination Block (simplex only)
- 24-pin Mass Termination Block (simplex only)
- 40-pin Mass Termination Block (simplex and redundant)
- 48-pin Mass Termination Block (simplex and redundant)

Traditional I/O and Terminal Block Compatibility

I/O Card	I/O Card Keying	Traditional I/O Terminal Blocks	Mass Termination Blocks
AI, 8-Channel, 4–20 mA, HART	A1	I/O terminal block Fused I/O terminal block 4-wire I/O terminal block	16-pin Mass termination block (Supports 2-wire Devices) 24-pin Mass termination block (Supports 4-wire Devices)
AI Plus, 16-Channel, 4-20 mA, HART	A6	16-Channel 2-Wire AI terminal block for Series 2 Plus 16-Channel 4-Wire AI terminal block for Series 2 Plus Redundant 2- & 4-Wire terminal block	48-pin AI Mass termination block for Series 2 Plus Redundant 48-pin AI Mass termination block for Series 2 Plus
AO, 8-Channel, 4–20 mA, HART	A4	I/O terminal block Fused terminal block	16-pin Mass termination block
AO Plus, 16-Channel, 4-20 mA, HART	A5	16-Channel AO terminal block for Series 2 Plus Redundant 16-Channel AO terminal block for Series 2 Plus	48-pin AO Mass termination block for Series 2 Plus Redundant 48-pin AO Mass termination block for Series 2 Plus
Thermocouple, mV	C1	I/O terminal block Cold Junction Compensated (CJC) terminal block	NA
RTD, 8-Channel	C3	Resistant Temperature Device (RTD) terminal block	NA
DI, 8-Channel, 24V DC, Dry Contact	B1	I/O terminal block Fused terminal block	16-pin Mass termination block
DI, 8-Channel, 24V DC, Isolated	B2	I/O terminal block Fused terminal block	16-pin Mass termination block
DI, 32-Channel, 24V DC, Dry Contact	B3	32-Channel terminal block	40-pin Mass termination block
DI Plus, 32-Channel, 24V DC, Dry Contact	E3	32-Channel DI terminal block for Series 2 Plus Redundant 32-Channel DI terminal block for Series 2 Plus	40-pin DI Mass termination block for Series 2 Plus Redundant 40-pin DI Mass termination block for Series 2 Plus

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Ordering Information

Analog Input Cards and Termination Blocks	
Description	**Model Number**
8 Channels 4-20 mA, HART	
Standard I/O Termination Block	VE4003S2B1**
Redundant Standard I/O Termination Block	VE4033S2B1**
Fused I/O Termination Block	VE4003S2B2**
4-wire I/O Termination Block	VE4003S2B3**
16-Pin Mass Termination Block	VE4003S2B4**
24-Pin Mass Termination Block	VE4003S2B5**
16 Channels 4-20 ma, HART, Plus Card	
16-Channel 2-Wire AI Terminal Block for Series 2 Plus	VE4003S2B9
16-Channel 4-Wire AI Terminal Block for Series 2 Plus	VE4003S2B10
Redundant 16-Channel 2- & 4-Wire AI Terminal Block for Series 2 Plus	VE4033S2B10
48-pin AI Mass Termination Block for Series 2 Plus (to be used with DeltaV™ Signal Conditioning Cards for PLC-5 AI, or P+F HiC IS barriers and terminal boards for DeltaV DCS)	VE4003S2B11
48-pin AI Mass Termination Block for Series 2 Plus including 16-channel Analog Mass Connection Boards*	VE4053S2B11
Redundant 48-pin AI Mass Termination Block for Series 2 Plus (to be used with DeltaV Signal Conditioning Cards for PLC-5 AI, or P+F HiC IS barriers and terminal boards for DeltaV DCS)	VE4033S2B11
Redundant 48-pin AI Mass Termination Block for Series 2 Plus including 16-channel Analog Mass Connection Boards*	VE4083S2B11
8 Channels Thermocouple, mV	
Standard I/O Termination Block	VE4003S4B1
Cold Junction Compensated (CJC) Termination Block	VE4003S5B1
Analog Input Card: 8 Channels RTD	
Resistant Temperature Device (RTD) Termination Block	VE4003S6B1

*For more details on the Mass Connection Boards and connection cables, please refer to the **M-series Mass Connection Solutions** PDS.

**Supported on DeltaV v10.3.1 and later. If card will be used on earlier DeltaV versions, please request KJ3222X1-BA2.

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PRODUCT: KJ3002X1-BF1 12P1732X082 VE4003S6B1 / DELTAV M-SERIES 8-CHANNEL RTD INPUT CARD AND RTD TERMINAL BLOCK CONFIGURATION

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