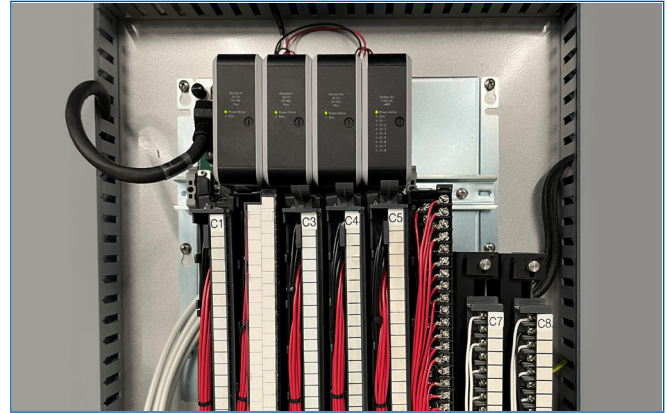


# DeltaV™ Signal Conditioning Cards for Allen Bradley® PLC-5® / 1771 I/O

- No re-wiring of PLC I/O
- Modular design
- Lowers overall termination footprint
- Significant labor and work reduction
- Easier and faster troubleshooting and maintenance
- Significant cost reduction
- Easy AI transmitter upgrades



## Introduction

The DeltaV™ Signal Conditioning Cards for Rockwell Automation, Allen Bradley®, PLC-5® / 1771 I/O Solutions provide a fast, easy and reliable connection from field device 1771 swing-arms to DeltaV M-series simplex and redundant, high-density Series 2 Plus traditional I/O cards.

The modular design of the Signal Conditioning Cards for 1771 I/O further helps to lower the overall termination footprint with flexible mounting capabilities.

Ribbon cable connectors will easily connect the Signal Conditioning Cards for 1771 I/O to high-density M-series Plus traditional I/O cards with mass-connection I/O terminal blocks.

## Benefits

**No re-wiring of the PLC I/O; Fast and easy way to connect.** The DeltaV M-series simplex and redundant high-density traditional I/O cards can be easily connected to the Signal Conditioning Cards for 1771 I/O within seconds.

No tools are necessary to connect the ribbon cables, so you can significantly reduce labor costs by eliminating additional cabinet wiring.

The modular designed Signal Conditioning Cards and mounting panels for 1771 I/O will fit into the same envelope as the OEM 1771 I/O chassis.

**Optimization of space.** The DeltaV Signal Conditioning Cards for 1771 I/O offer significant space advantages by integrating all needed wiring components and signal conditioning circuitry on one assembly.

**Significant labor work reduction.** No need for re-wiring of the 16-Channel 1771 I/O swing-arms to DeltaV I/O terminal blocks. Also, there is no need to add additional signal conditioning for compatibility with the DeltaV DCS.

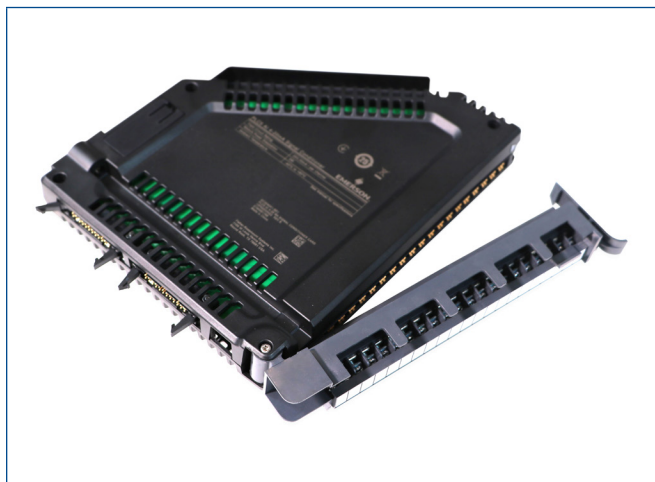
**Easier and faster troubleshooting and maintenance.** System Technicians can access the field wiring on the OEM swing-arms with multi-meters during the troubleshooting process.

**Significant cost reduction.** Since off-the-shelf Round Ribbon cables can be used inside a cabinet with a maximum length of 10.0 m, significant cost reductions can be achieved.

**Easy AI transmitter upgrades.** Take advantage of DCS functionality by updating 4-20mA AI devices to include HART® functionality. This can be done over time with a simple configuration change.

## Product Description

### AI 4-20mA Signal Conditioning Card (S.E.)



**The Analog Input (AI) 4-20mA Single-Ended Signal Conditioning Card for 1771 I/O** connects to the simplex or redundant M-series Plus AI, 16-Channel cards by using the 48-pin Round Ribbon Cable.

The 21-position OEM contact 1771-WG/WH swing-arm is removed from the OEM 16-channel, AI, 4-20mA single-Ended (S.E), 1771-IFE card and placed on the AI 4-20mA Signal Conditioning Card.

The Signal Conditioning Card has three connectors; swing-arm attachment point on the front which provides secure mechanical and electrical connections and two 24-pin (48-pins total) ribbon cable connectors on the bottom, which is used to connect, via ribbon cables, to the 16-channel DeltaV AI card Plus mass-connection terminal block.

Up to 16 Analog, 4-20mA non-HART® based Field devices can be connected to the OEM 16-channel AI swing-arm by screw terminals. The 2- and 4-wire single-ended, field-powered, non-isolated channel-to-channel signals are supported. Field power from the DeltaV AI card is not supported.

Updating transmitters to include HART functionality is very easy with this solution. No DeltaV hardware needs to be changed when the legacy non-HART transmitters are upgraded to HART; just change the channel type from non-HART to HART in the DeltaV Explorer.

Please refer to the **Cross-Reference** List for your application.

### DI 24 VDC Signal Conditioning Card (Non-isolated)



**The Discrete Input (DI) 24 VDC non-isolated Signal Conditioning Card for 1771 I/O** connects to the simplex or redundant M-series Plus DI, 32-Channel, 24 VDC, Dry Contact card by using two of the 20-pin standard Round Ribbon Cables; one for each of the two 16-channel Signal Conditioning Cards for 1771 I/O.

The 21-position OEM contact 1771-WH swing-arm is removed from the OEM 16-channel, DI, 24 VDC, 1771-IBD card and placed on the 16-channel DI 24 VDC, non-isolated, Signal Conditioning Card.

The Signal Conditioning Card has two connectors; swing-arm attachment point on the front which provides secure mechanical and electrical connections and a 20-pin ribbon cable connector on the bottom, which is used to connect, via a ribbon cable, to the DeltaV DI card Plus mass-connection terminal block.

Up to 16 Discrete Input 24 VDC based field devices can be connected to the OEM 16-channel DI swing-arm, by screw terminals. Non-isolated channel-to-channel signals are supported.

Each M-series Plus, DI, 32-Channel, 24 VDC, Dry Contact card supports two 16-Channel swing-arms from the 1771-IBD/IAD DI cards.

The M-series Plus DI, 32-Channel, 24 VDC, Dry Contact card has one parameter in the Explorer view for the cable connection. When this Parameter is turned on, DeltaV Diagnostics will mark the status of affected signals.

Please refer to the **Cross-Reference** List for your application.

### DO 24 VDC Signal Conditioning Card (Non-isolated)



**The Discrete Output (DO) 24 VDC non-isolated Signal Conditioning Card for 1771 I/O** connects to the simplex or redundant M-series Plus DO, 32-Channel, 24 VDC, High-Side card by using two of the 20-pin standard Round Ribbon Cables; one for each of the two 16-channel Signal Conditioning Cards for 1771 I/O. The 21-position OEM contact 1771-WH swing-arm is removed from the OEM 16-channel, DO, 24 VDC, 1771-OBD card and placed on the 16-channel DO 24 VDC, non-isolated, Signal Conditioning Card.

The Signal Conditioning Card has two connectors; swing-arm attachment point on the front which provides secure mechanical and electrical connections and a 20-pin ribbon cable connector on the bottom, which is used to connect, via a ribbon cable, to the DeltaV DO card Plus mass-connection terminal block.

Up to 16 Discrete Output 24 VDC based field devices can be connected to the OEM 16-channel DO swing-arm, by screw terminals. Non-isolated channel-to-channel signals are supported.

Each M-series Plus, DO, 32-Channel, 24 VDC, High-Side card supports two 16-Channel swing-arms from the 1771-OBD/OAD DO cards.

The M-series Plus DO, 32-Channel, 24 VDC, High-Side card has one parameter in the Explorer view for the cable connection. When this Parameter is turned on, DeltaV Diagnostics will mark the status of affected signals.

Please refer to the **Cross-Reference** List for your application.

### DI 120 VAC/VDC Signal Conditioning Card (Non-isolated)



**The Discrete Input (DI) 120 VAC/VDC non-isolated Signal Conditioning Card for 1771 I/O** connects to the simplex or redundant M-series Plus DI, 32-Channel, 24 VDC, Dry Contact card by using two of the 20-pin standard Round Ribbon Cables; one for each of the two 16-channel Signal Conditioning Cards for 1771 I/O. The 21-position OEM contact 1771-WH swing-arm is removed from the OEM 16-channel, DI, 120 VAC/VDC, 1771-IAD card and placed on the 16-channel DI, non-isolated, Signal Conditioning Card.

The Signal Conditioning Card has two connectors; swing-arm attachment point on the front which provides secure mechanical and electrical connections and a 20-pin ribbon cable connector on the bottom, which is used to connect, via a ribbon cable, to the DeltaV DI card Plus mass-connection terminal block.

A filtering jumper is present to select the input delay at 5msec (default) or 20msec.

Up to 16 Discrete Input 120 VAC/VDC based field devices can be connected to the OEM 16-channel DI swing-arm, by screw terminals. Non-isolated channel-to-channel signals are supported.

Each M-series Plus, DI, 32-Channel, 24 VDC, Dry Contact card supports two 16-Channel swing-arms from the 1771-IAD/IBD DI cards.

The M-series Plus DI, 32-Channel, 24 VDC, Dry Contact card has one parameter in the Explorer view for the cable connection. When this Parameter is turned on, DeltaV Diagnostics will mark the status of affected signals.

Please refer to the **Cross-Reference** List for your application.

### DO 120 VAC Signal Conditioning Card (Non-isolated)



**The Discrete Output (DO) 120 VAC non-isolated Signal Conditioning Card for 1771 I/O** connects to the simplex or redundant M-series Plus DO, 32-Channel, 24 VDC, High-Side card by using two of the 20-pin standard Round Ribbon Cables; one for each of the two 16-channel Signal Conditioning Cards for 1771 I/O.

The 21-position OEM contact 1771-WH swing-arm is removed from the OEM 16-channel, DO, 120 VAC, 1771-OAD card and placed on the 16-channel DO, non-isolated, Signal Conditioning Card.

The Signal Conditioning Card has two connectors; swing-arm attachment point on the front which provides secure mechanical and electrical connections and a 20-pin ribbon cable connector on the bottom, which is used to connect, via a ribbon cable, to the DeltaV DO card Plus mass-connection terminal block.

Up to 16 Discrete Output 120 VAC based field devices can be connected to the OEM 16-channel DO swing-arm, by screw terminals. Non-isolated channel-to-channel signals are supported.

Each M-series Plus, DO, 32-Channel, 24 VDC, High-Side card supports two 16-Channel swing-arms from the 1771-OAD/OBD DO cards.

The M-series Plus DO, 32-Channel, 24 VDC, High-Side card has one parameter in the Explorer view for the cable connection. When this Parameter is turned on, DeltaV Diagnostics will mark the status of affected signal.

Please refer to the **Cross-Reference** List for your application.

### DO-Relay 250 VAC/150 VDC Signal Conditioning Card (Isolated)



**The Discrete Output - Relay (DO-R) 24-250 VAC/24-150 VDC isolated Signal Conditioning Card for 1771 I/O** connects to the simplex or redundant M-series Plus DO, 32-Channel, 24 VDC, High-Side card by using two of the 20-pin standard Round Ribbon Cables; one for each of the two 16-channel Signal Conditioning Cards for 1771 I/O.

The 40-position OEM contact 1771-WN swing-arm is removed from the OEM 16-channel, DO, 250 VAC/150 VDC, 1771-OW16 card and placed on the 16-channel DO-R, isolated, Signal Conditioning Card.

The Signal Conditioning Card has two connectors; swing-arm attachment point on the front which provides secure mechanical and electrical connections and a 20-pin ribbon cable connector on the bottom, which is used to connect, via a ribbon cable, to the DeltaV DO Plus card mass-connection terminal block.

Up to 16 Discrete Output 250 VAC/150 VDC based field devices can be connected to the OEM 16-channel DO-R swing-arm, by screw terminals. Channels #1-8 are Normally-Open (NO) and Channels #9-16 are selectable (NO/NC). Isolated channel-to-channel signals are supported.

Each M-series Plus, DO, 32-Channel, 24 VDC, High-Side card supports two 16-Channel swing-arms from the 1771-OW16 DO-relay cards.

The M-series Plus DO, 32-Channel, 24 VDC, High-Side card has one parameter in the Explorer view for the cable connection. When this Parameter is turned on, DeltaV Diagnostics will mark the status of affected signal.

Please refer to the **Cross-Reference** List for your application.

**DI 120 VAC/VDC Signal Conditioning Card (Isolated)**

**The Discrete Input (DI) 120 VAC/VDC isolated Signal Conditioning Card for 1771 I/O** connects to the simplex or redundant M-series Plus DI, 32-Channel, 24 VDC, Dry Contact card by using two of the 20-pin standard Round Ribbon Cables; one for each of the two 16-channel Signal Conditioning Cards for 1771 I/O.

The 40-position OEM contact 1771-WN swing-arm is removed from the OEM 16-channel, DI, 120 VAC/VDC, 1771-ID16 card and placed on the 16-channel DI, isolated, Signal Conditioning Card.

The Signal Conditioning Card has two connectors; swing-arm attachment point on the front which provides secure mechanical and electrical connections and a 20-pin ribbon cable connector on the bottom, which is used to connect, via a ribbon cable, to the DeltaV DI card Plus mass-connection terminal block.

Two filtering jumpers are present to select the input delay at 5msec or 20msec (default).

Up to 16 Discrete Input 120 VAC/VDC based field devices can be connected to the OEM 16-channel DI swing-arm, by screw terminals. Isolated channel-to-channel signals are supported.

Each M-series Plus, DI, 32-Channel, 24 VDC, Dry Contact card supports two 16-Channel swing-arms from the 1771-ID16 DI cards.

The M-series Plus DI, 32-Channel, 24 VDC, Dry Contact card has one parameter in the Explorer view for the cable connection. When this Parameter is turned on, DeltaV Diagnostics will mark the status of affected signals.

Please refer to the **Cross-Reference** List for your application.

**DO 120 VAC Signal Conditioning Card (Isolated)**

**The Discrete Output (DO) 120 VAC isolated Signal Conditioning Card for 1771 I/O** connects to the simplex or redundant M-series Plus DO, 32-Channel, 24 VDC, High-Side card by using two of the 20-pin standard Round Ribbon Cables; one for each of the two 16-channel Signal Conditioning Cards for 1771 I/O.

The 40-position OEM contact 1771-WN swing-arm is removed from the OEM 16-channel, DO, 120 VAC, 1771-OD16 & -ODD cards and placed on the 16-channel DO, isolated, Signal Conditioning Card.

The Signal Conditioning Card has two connectors; swing-arm attachment point on the front which provides secure mechanical and electrical connections and a 20-pin ribbon cable connector on the bottom, which is used to connect, via a ribbon cable, to the DeltaV DO card Plus mass-connection terminal block.

Up to 16 Discrete Output 120 VAC based field devices can be connected to the OEM 16-channel DO swing-arm, by screw terminals. Isolated channel-to-channel signals are supported.

Each M-series Plus, DO, 32-Channel, 24 VDC, High-Side card supports two 16-Channel swing-arms from the 1771-ODD & -OD16 DO cards.

The M-series Plus DO, 32-Channel, 24 VDC, High-Side card has one parameter in the Explorer view for the cable connection. When this Parameter is turned on, DeltaV Diagnostics will mark the status of affected signal.

Please refer to the **Cross-Reference** List for your application.

Support of Additional 1770 I/O Cards

What to do if the 9 DeltaV Signal Conditioning card types do not cover all the 1771 cards in your PLC application. A couple of popular examples are: 4-channel AO (OFE) and the 8-channel AI isolated (IFE) cards. For these, and many other 1771 I/O, cards a custom DeltaV mounting kit to DIN-rail adapter along with a passive DIN-rail mounted swing-arm interface adapter card with attached flying-lead/open-end cables (available in 1, 3, 5, 10, 15, or 30-meter lengths) have been developed and are available from Weidmuller for the following 1771 swing-arm types: WA, WB, WC, WD, WF, WG, WH, and WN.

Please refer to the **Passive Interface Adapter Cards** section at the end of this document for your application.

For the 5, 10, 15, and 30-meter cables, an RSV plug & socket connector will be present at the 1-meter location past the interface adapter cards to facilitate running the longer cables in the cabinets.

These passive swing-arm interface adapter cards also have matching contact material that matches the OEM swing-arm Example: Gold contacts on both the 21-position 1771-WG swing-arm and on the adapter card contact connectors.

These passive swing-arm interface adapter cards fit on to the same DeltaV mounting kit as the DeltaV Signal Conditioning cards.

In most cases the raw field signal can just be “re-routed” with these passive swing-arm interface adapter cards. However, there are cases where external signal conditioning will need to be installed to make the field signals compatible with the DeltaV I/O solution. Examples are: 48, 60, 120, and 220 VDC input signals and some higher current DO applications.

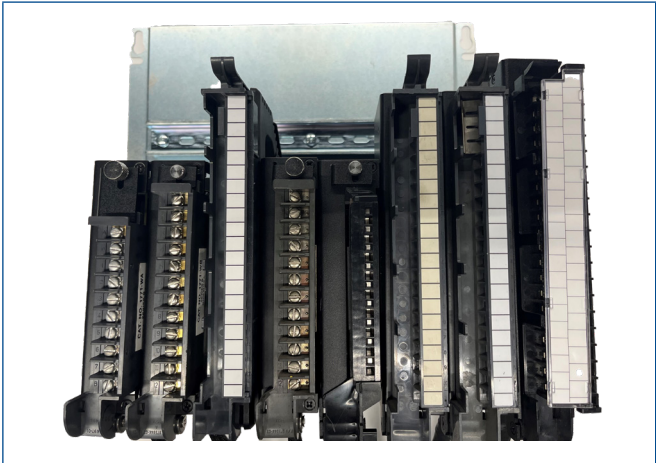
The flying-lead/open-end loomed cables, which have ferruled and numbered individual conductors, can be pre-terminated, ahead of the migration, to DeltaV M-series traditional I/O card screw type I/O terminal blocks.

Specifications

| Description                                | Details                      |
|--------------------------------------------|------------------------------|
| Approvals                                  | cURus                        |
| Wire Gauge                                 | 18 AWG                       |
| Operating Temperature                      | -4 to +120°F<br>-20 to +50°C |
| Maximum Current per Channel                | 2A                           |
| Total Operating Current per Interface Card | 8A                           |
| Clamping Technology                        | Tension                      |



Example of the 1771-WF swing-arm interface adapter card with a 1-m flying lead cable.



Examples of all 8 1771 swing-arm interface adapter cards mounted on to an 8-wide DeltaV mounting kit.

Mounting Options

Six (6) mounting kits (4, 8, 12{3} and 16-wide) are available that replace the OEM 4, 8, 12 and 16-wide I/O chassis. The mounting plate contained in the replacement I/O chassis mounting kit fits into the same space and uses the same mounting bolts as the OEM I/O chassis. There is a DIN-rail installed on the mounting plate that is used for the DeltaV I/O carrier, carrier extenders, and possibly a DeltaV controller. There is a round plastic spacer washer included in the mounting kits for installations where the DIN-rail can be extended to accommodate more DeltaV hardware. This spacer is to be used between the longer DIN-rail and the cabinet mounting sub panel. There are 4-wide Signal Conditioning Card mounting hangers pre-installed on the mounting plates.

The ground stud location on the OEM I/O chassis and DeltaV mounting plate are the same location so the grounding mechanisms can be re-used.

The depth of the solution from the front of the 1771 swing-arms to the back of the mounting kit is 8,7 inches or 220mm's.

**Note:** *If the field wiring extends past the front of the swing-arm, then the depth of the solution will be larger.*

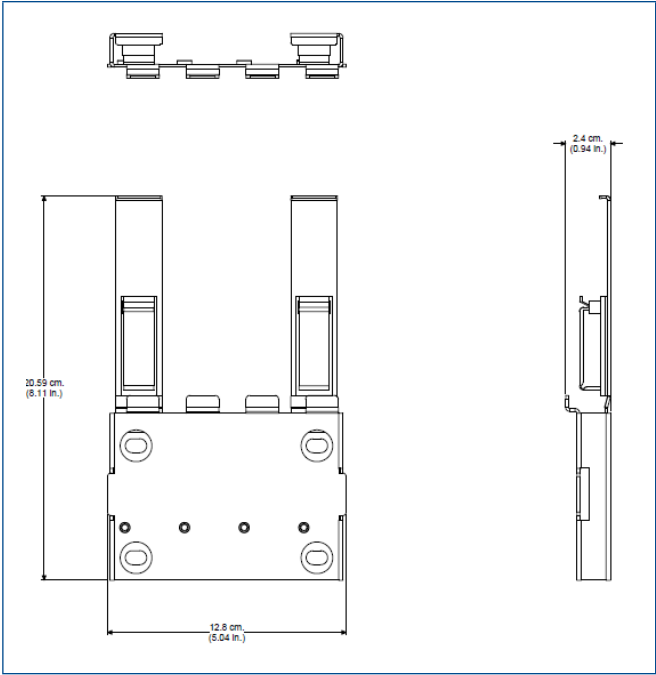
For those installations where the mounting kit isn't required, the 4-card Signal Conditioning Card mounting hanger assembly is available as a spare part. Four screws will be required to mount this assembly to the cabinet mounting sub panel.

Please refer to the Ordering Information and Spare Part Ordering Information for the available mounting options.

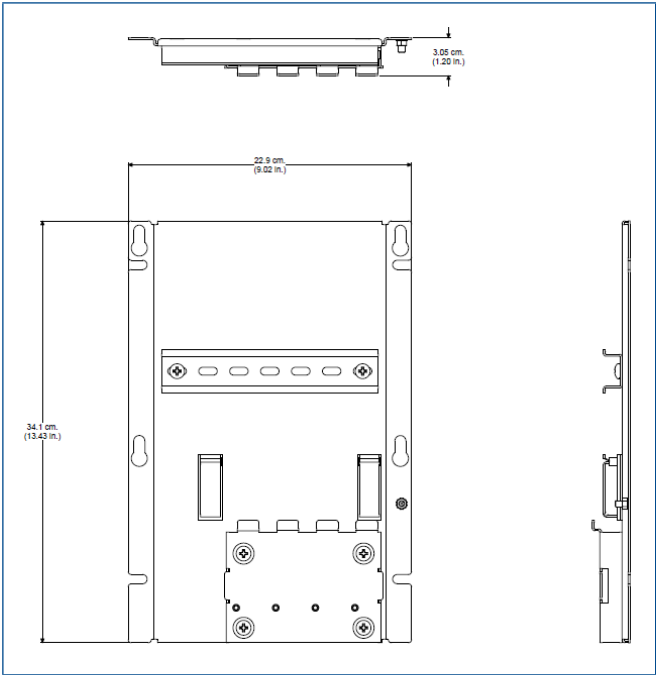
Additional Details

| Type          | OEM         | Dimensions (L x W x H in CM) |
|---------------|-------------|------------------------------|
| 4-wide        | 1771-A1B/B  | 22.9 x 34.1 x 3.05           |
| 8-wide        | 1771-A2B/B  | 35.6 x 34.1 x 3.05           |
| 12-wide, R0*  | 1771-A3B/B  | 48.3 x 34.1 x 3.05           |
| 12-wide, R1   | 1771-A3B1/B | 48.3 x 34.1 x 3.05           |
| 16-wide       | 1771-A4B/B  | 61.0 x 34.1 x 3.05           |
| 4-card hanger | N/A         | 12.8 x 20.59 x 2.4           |

\*Panel-mount solution only.

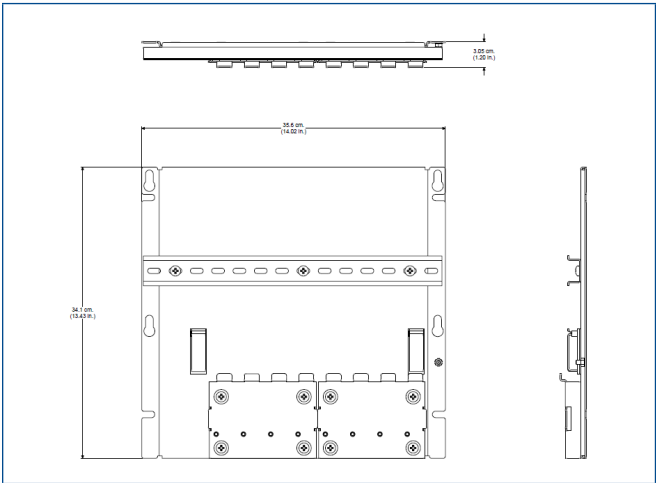


4-card Hanger Assembly.

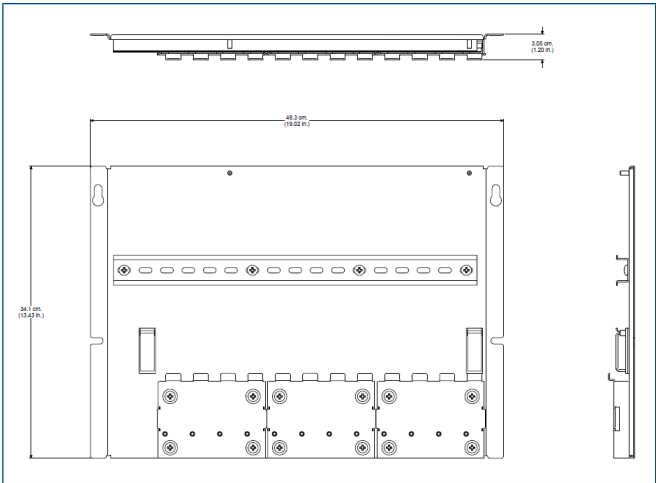


4-wide Mounting Kit.

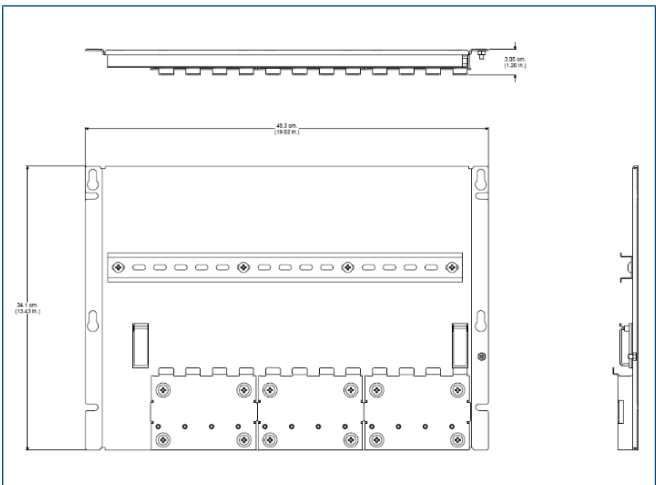
Additional Details (cont'd)



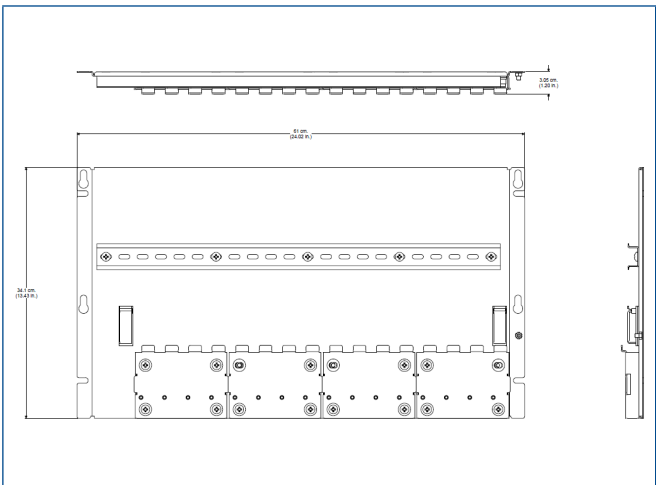
8-wide Mounting Kit.



12-wide (R0) Mounting Kit.

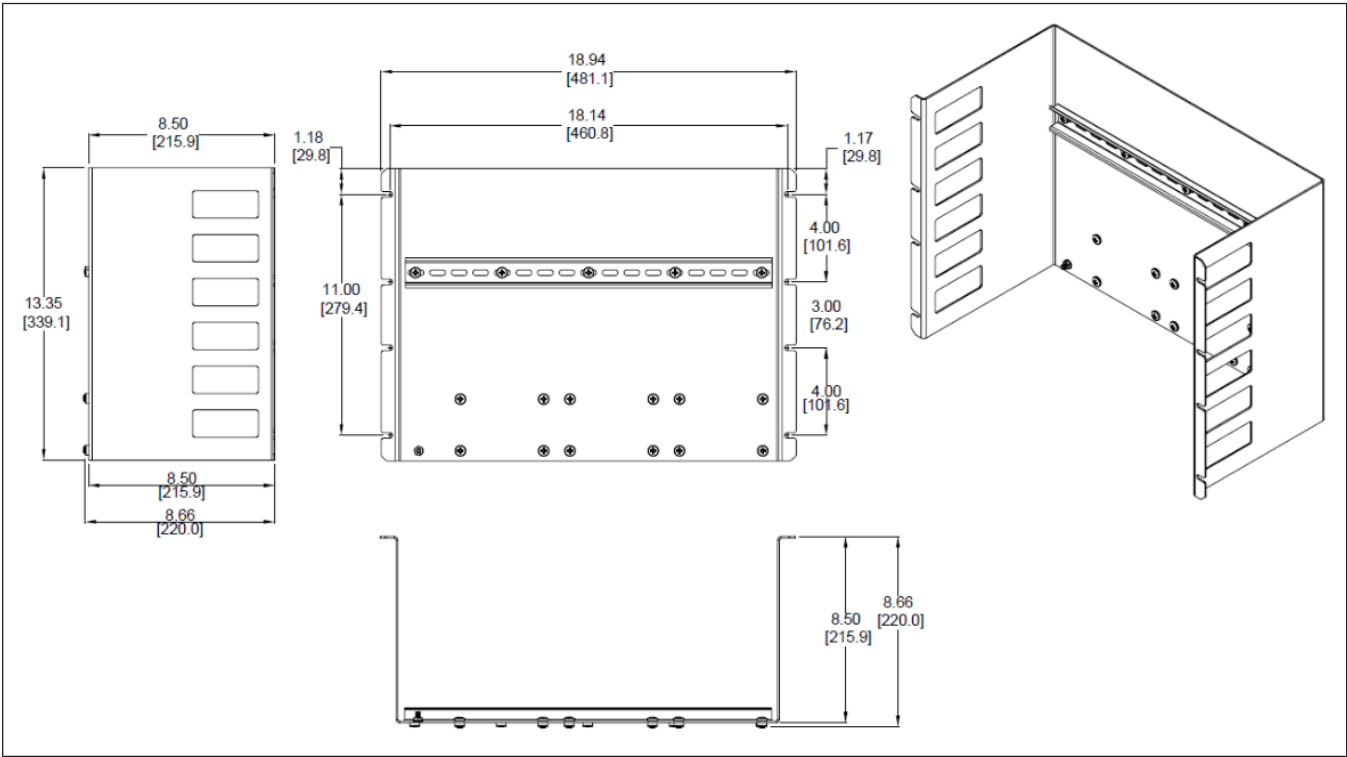


12-wide (R1) Mounting Kit.



16-wide Mounting Kit.

For applications requiring the rackmount, 19-inch recessed 12-slot/wide mounting kit, see the following information:  
(**Note:** Qty 3 DeltaV 4-card hanger assembly, VE4300SOT6, need to be ordered separately.)



*Recessed 19-inch 12-slot/wide Mounting Kit.*

## Cross Reference List

| Signal Conditioning Card Description              | OEM Information I/O Card / Swing-Arm Combination | VE4306S1T1 | VE4301S1T1 | VE4302S1T1 | VE4303S1T1 | VE4304S1T1 | VE4301S2T1 | VE4302S2T1 | VE4302S2T2 | VE4305S2T1 | Compatible DeltaV M-series I/O card and Simplex Mass-Connection I/O Terminal Block <sup>(2)</sup> |
|---------------------------------------------------|--------------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|---------------------------------------------------------------------------------------------------|
| AI, 4-20mA 16-channel single-ended <sup>(1)</sup> | 1771-IFE / 1771-WG/WH                            | ✓          | —          | —          | —          | —          | —          | —          | —          | —          | VE4003S2B11                                                                                       |
| DI, 120 VAC/VDC 16-channel non-isolated           | 1771-IAD / 1771-WH                               | —          | ✓          | —          | —          | —          | —          | —          | —          | —          | VE4001S2T2B7                                                                                      |
| DO, 120 VAC 16-channel non-isolated               | 1771-OAD / 1771-WH                               | —          | —          | ✓          | —          | —          | —          | —          | —          | —          | VE4002S1T2B8                                                                                      |
| DI, 24 VDC 16-channel non-isolated                | 1771-IBD / 1771-WH                               | —          | —          | —          | ✓          | —          | —          | —          | —          | —          | VE4001S2T2B7                                                                                      |
| DO, 24 VDC 16-channel non-isolated                | 1771-OBDD / 1771-WH                              | —          | —          | —          | —          | ✓          | —          | —          | —          | —          | VE4002S1T2B8                                                                                      |
| DI, 120 VAC/VDC 16-channel isolated               | 1771-ID16 / 1771-WN                              | —          | —          | —          | —          | —          | ✓          | —          | —          | —          | VE4001S2T2B7                                                                                      |
| DO, 120 VAC 16-channel isolated                   | 1771-OD16 / 1771-WN                              | —          | —          | —          | —          | —          | —          | ✓          | —          | —          | VE4002S1T2B8                                                                                      |
| DO, 120 VAC 16-channel isolated                   | 1771-ODD / 1771-WN                               | —          | —          | —          | —          | —          | —          | —          | ✓          | —          | VE4002S1T2B8                                                                                      |
| DO-Relay 250 VAC / 120 VDC 16-channel, isolated   | 1771-OW16 / 1771-WN                              | —          | —          | —          | —          | —          | —          | —          | —          | ✓          | VE4002S1T2B8                                                                                      |

**Notes:**

<sup>(1)</sup>Only Single-ended, field powered, transmitters are supported on this Signal Conditioning Card.

<sup>(2)</sup>Only simplex I/O terminal block shown for clarity. Check M-series Traditional I/O Product Data Sheet for redundant I/O terminal block part numbers.

## Hardware Specifications

| Common Environmental Specifications for all Signal Conditioning Cards |                                                                     |
|-----------------------------------------------------------------------|---------------------------------------------------------------------|
| Category                                                              | Specifications                                                      |
| Operating Temperature                                                 | -40 to +60°C                                                        |
| Storage Temperature                                                   | -40 to +85°C                                                        |
| Relative Humidity                                                     | 5 to 95% Non-Condensing                                             |
| Airborne Contaminates                                                 | ISA-S71.04-1985 Airborne Contaminants Class G3<br>Conformal coating |
| Protection Rating                                                     | IP 20                                                               |
| Shock                                                                 | 10g, 1/2 sine wave for 11 milliseconds                              |
| Vibration                                                             | 1mm Peak-to-Peak from 2 to 13.2Hz, 0.7g from 13.2 to 150Hz          |

| Specifications for Analog Input (AI) 4-20mA Signal Conditioning Card (Single-Ended) |                                                                     |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| Category                                                                            | Specifications                                                      |
| Field Device Type                                                                   | 4-20mA HART                                                         |
| Number of Channels                                                                  | 16                                                                  |
| Field Signals                                                                       | 2 or 4-wire field powered transmitters                              |
| Electrical Connections                                                              | Front; one 1771-WG/WH swing-arm<br>Bottom; two 24-Pin ribbon cables |
| Dimensions                                                                          | Depth: 168mm; Height: 208mm; Width: 32mm                            |

| Specifications for Discrete Input (DI) 24 VDC Signal Conditioning Card (Non-isolated) |                                                                 |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| Category                                                                              | Specifications                                                  |
| Field Device Type                                                                     | 24 VDC Dry Contact                                              |
| Number of Channels                                                                    | 16                                                              |
| Isolation                                                                             | Channels share a common ground return                           |
| Nominal Input Current                                                                 | 4.5mA @ 10 VDC<br>15mA @ 30 VDC                                 |
| Minimum ON-state Voltage                                                              | 10 VDC                                                          |
| Minimum OFF-state Voltage                                                             | 5 VDC                                                           |
| Nominal Input Impedance                                                               | 2.2K $\Omega$ (Max.)                                            |
| Input Voltage Range                                                                   | 10 to 30 VDC                                                    |
| Electrical Connections                                                                | Front; one 1771-WH swing-arm<br>Bottom; one 20-Pin ribbon cable |
| Dimensions                                                                            | Depth: 168mm; Height: 208mm; Width: 32mm                        |

| Specifications for Discrete Output (DO) 24 VDC Signal Conditioning Card (Non-isolated) |                                                                                                         |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Category                                                                               | Specifications                                                                                          |
| Field Device Type                                                                      | 24 VDC High-Side                                                                                        |
| Number of Channels                                                                     | 16                                                                                                      |
| Isolation                                                                              | 1000 VDC channel to system isolation<br>No channel-to-channel isolation                                 |
| User Supply Voltage                                                                    | 10 to 60 VDC                                                                                            |
| Output Current Rating                                                                  | 2A per output. Not to exceed 8A per card                                                                |
| Maximum Surge Current                                                                  | 4A per output for 10ms, repeatable every 2 seconds<br>25A per card for 10ms, repeatable every 2 seconds |
| Maximum ON-state Voltage Drop                                                          | 1.5 VDC at rated current                                                                                |
| Minimum Load Current                                                                   | 2.5mA per output                                                                                        |
| Maximum OFF-state Leakage Current                                                      | 0.5mA per output                                                                                        |
| Electrical Connections                                                                 | Front; one 1771-WH swing-arm<br>Bottom; one 20-Pin ribbon cable                                         |
| Dimensions                                                                             | Depth: 168mm; Height: 208mm; Width: 32mm                                                                |

| Specifications for Discrete Input (DI) 120 VAC / VDC Signal Conditioning Card (Non-isolated) |                                                                        |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Category                                                                                     | Specifications                                                         |
| Field Device Type                                                                            | 120 VAC/VDC Dry Contact                                                |
| Number of Channels                                                                           | 16                                                                     |
| Isolation                                                                                    | 250 VAC channel to system isolation<br>No channel-to-channel isolation |
| Nominal Input Voltage                                                                        | 120 VAC @ 50/60Hz<br>125 VDC                                           |
| Nominal Input Current                                                                        | 9.9mA @ 120 VAC @ 60Hz<br>8.7mA @ 120 VAC @ 50Hz<br>2.56mA @ 125 VDC   |
| ON-state Voltage Range                                                                       | 79 to 138 VAC/VDC                                                      |
| Maximum OFF-state Voltage                                                                    | 43 VAC/VDC                                                             |
| Input Impedance                                                                              | 11.2KΩ @ 60Hz                                                          |
| Input Signal Delay OFF to ON                                                                 | Time delay jumper for 5 and 20 milliseconds;<br>factory set to 5ms.    |
| Electrical Connections                                                                       | Front; one 1771-WH swing-arm<br>Bottom; one 20-Pin ribbon cable        |
| Dimensions                                                                                   | Depth: 168mm; Height: 208mm; Width: 32mm                               |

| Specifications for Discrete Output (DO) 120 VAC Signal Conditioning Card (Non-isolated) |                                                                                                                |
|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Category                                                                                | Specifications                                                                                                 |
| Field Device Type                                                                       | 120 VAC High-Side                                                                                              |
| Number of Channels                                                                      | 16                                                                                                             |
| Isolation                                                                               | 250 VAC Channel to system isolation<br>No channel-to-channel isolation                                         |
| Output Voltage Range                                                                    | 10 to 138 VAC @ 47-63Hz                                                                                        |
| Output Current Rating                                                                   | 2A per channel, not to exceed 8A per card                                                                      |
| Maximum Surge Current                                                                   | 25A per output for 10ms, repeatable every 1 second<br>25A per card for 10ms, repeatable every 1 second         |
| Maximum ON-state Voltage Drop                                                           | 1.5V at load current = 50mA to 2A                                                                              |
| ON-state Load Current                                                                   | 50mA minimum per channel                                                                                       |
| Maximum OFF-state Leakage Current                                                       | 3.0mA at 138 VAC                                                                                               |
| Fusing                                                                                  | One fuse (10A / 250 VAC, Fast Acting, Cartridge, Ceramic, 3AB, 3AG, ¼" x 1-1/4")<br>Littlefuse P/N 0332010.HXP |
| Electrical Connections                                                                  | Front; one 1771-WH swing-arm<br>Bottom; one 20-Pin ribbon cable                                                |
| Dimensions                                                                              | Depth: 168mm; Height: 208mm; Width: 32mm                                                                       |

| Specifications for Discrete Input (DI) 120 VAC / VDC Signal Conditioning Card (Isolated) |                                                                                                                                 |
|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Category                                                                                 | Specifications                                                                                                                  |
| Field Device Type                                                                        | 120 VAC/VDC Dry Contact                                                                                                         |
| Number of Channels                                                                       | 16                                                                                                                              |
| Isolation                                                                                | 250 VAC Channel to system isolation<br>150 VAC Channel-to-channel isolation                                                     |
| Nominal Input Voltage                                                                    | 120 VAC @ 47-63Hz<br>120 VDC                                                                                                    |
| Nominal Input Current                                                                    | 9.9mA @ 120 VAC @ 60Hz<br>8.7mA @ 120 VAC @ 50Hz<br>2.56mA @ 125 VDC                                                            |
| ON-state Voltage Range                                                                   | 79 to 138 VAC/VDC                                                                                                               |
| Maximum OFF-state Voltage                                                                | 43 VAC/VDC                                                                                                                      |
| Input Impedance                                                                          | 11.2K $\Omega$ @ 60Hz                                                                                                           |
| Input Signal Delay OFF to ON                                                             | Two time delay jumpers J1 (Channels 1 through 8) and J4 (Channels 9 through 16) for 5 and 20 milliseconds; factory set to 20 ms |
| Electrical Connections                                                                   | Front; one 1771-WN swing-arm<br>Bottom; one 20-Pin ribbon cable                                                                 |
| Dimensions                                                                               | Depth: 168mm; Height: 208mm; Width: 32mm                                                                                        |

| Specifications for Discrete Output (DO) 120 VAC Signal Conditioning Card (Isolated) |                                                                                                                     |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Category                                                                            | Specifications                                                                                                      |
| Field Device Type                                                                   | 120 VAC High-Side                                                                                                   |
| Number of Channels                                                                  | 16                                                                                                                  |
| Isolation                                                                           | 250 VAC Channel to system isolation<br>150 VAC Channel-to-channel isolation                                         |
| Output Voltage Range                                                                | 74 to 138 VAC @ 47-63Hz                                                                                             |
| Output Current Rating                                                               | 5mA – 2A per channel, not to exceed 8A per card                                                                     |
| Maximum Surge Current                                                               | 20A per output for 100ms, repeatable every 2 seconds                                                                |
| Maximum ON-state Voltage Drop                                                       | 5.8V rms @load current <50mA<br>1.5V rms @load current >50mA                                                        |
| Maximum OFF-state Leakage Current                                                   | 3.0mA at 138 VAC                                                                                                    |
| Fusing                                                                              | Sixteen (16) fuses (3.5A / 250 VAC, 125 VDC, Slo-Blo, Cartridge, 2AG, 0.177" x 0.57")<br>Littlefuse P/N 229 03.5MXP |
| Electrical Connections                                                              | Front; one 1771-WN swing-arm<br>Bottom; one 20-Pin ribbon cable                                                     |
| Dimensions                                                                          | Depth: 168mm; Height: 208mm; Width: 32mm                                                                            |

| Specifications for Discrete Output-Relay (DO-R) 250 VAC / 120 VDC Signal Conditioning Card (Isolated) |                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Category                                                                                              | Specifications                                                                                                                                |
| Field Device Type                                                                                     | 24-250 VAC / 24-150 VDC                                                                                                                       |
| Number of Channels                                                                                    | 16 (Channels 1-8 NO, Channels 9-16 selectable NO/NC)                                                                                          |
| Isolation                                                                                             | 250 VAC Channel to system isolation<br>250 VAC Channel-to-channel isolation                                                                   |
| Output Voltage Range                                                                                  | 24-250 VAC @ 47-63Hz<br>24-150 VDC                                                                                                            |
| Maximum power rating                                                                                  | AC: 500VA per output; 1440VA per card<br>DC: 80W per output; 1280W per card                                                                   |
| Maximum Output Current Rating per Channel                                                             | AC: 2A per output at rated power<br>DC: 2A per output up to 40V, 1A per output up to 50V<br>0.5A per output at 100V, 0.25A per output at 150V |
| Maximum Surge Current                                                                                 | DC: 2A per output at rated power<br>AC: Contact Emerson for details                                                                           |
| Minimum Contact Load                                                                                  | 10mA                                                                                                                                          |
| Operate Time                                                                                          | Maximum 15ms (without bounce)                                                                                                                 |
| Release Time                                                                                          | Maximum 5ms (without bounce, no diode)                                                                                                        |
| Switching Frequency Maximum                                                                           | 1/3Hz @ maximum load                                                                                                                          |
| Expected life of Electrical Contacts                                                                  | 100K operations @25C<br>(1 seconds ON/ 9 seconds OFF, cosΦ=1)                                                                                 |
| Electrical Connections                                                                                | Front; one 1771-WN swing-arm<br>Bottom; one 20-Pin ribbon cable                                                                               |
| Dimensions                                                                                            | Depth: 168mm; Height: 208mm; Width: 32mm                                                                                                      |

| Common Environmental / Specifications for Round Ribbon Cables |                                                                     |
|---------------------------------------------------------------|---------------------------------------------------------------------|
| Category                                                      | Specifications                                                      |
| Operating Temperature*                                        | -20 to +70°C                                                        |
| Storage Temperature                                           | -20 to +70°C                                                        |
| Relative Humidity                                             | 5 to 95% Non-Condensing                                             |
| Airborne Contaminates                                         | ISA-S71.04-1985 Airborne Contaminants Class G3<br>Conformal coating |
| Protection Rating                                             | IP 20                                                               |
| Allowed Cable Lengths                                         | 0.5 to 10 meters                                                    |
| Wires/Pairs per Cable                                         | 50/25 or 20/10                                                      |
| Wire Gauge                                                    | 0.14mm <sup>2</sup> / 26AWG                                         |

\*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 Signal Conditioning Cards for 1771 I/O Solutions:

- European EMC Compliance (CE MARK)
- IEC61010-1 personal safety and Low Voltage Directive approval
- CAN/CSA C22.2 No.61010-1-12

## Hazardous Area/Location

Signal Conditioning Cards for 1771 I/O can be installed and used based on the following Standards:

- FM 3611-Class 1 Division 2
- ATEX Zone 2: EN 60079-0, EN 60079-7
- IECEx Zone 2: IEC 60079-0, IEC 60079-7

## Ordering Information

| Description                                                                                                                                      | Model Number |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Analog Input Signal Conditioning Card for 1771-IFE; 16-Channel, 4-20mA, field powered, non-isolated, single-ended, 21-position WG/WH swing-arms* | VE4306S1T1   |
| Discrete Input Signal Conditioning Card for 1771-IAD; 16-Channel, 120 VAC/VDC, non-isolated, 21-position WH swing-arm*                           | VE4301S1T1   |
| Discrete Output Signal Conditioning Card for 1771-OAD; 16-Channel, 120 VAC, non-isolated, 21-position WH swing-arm*                              | VE4302S1T1   |
| Discrete Input Sinking Signal Conditioning Card for 1771-IBD; 16-Channel, 24 VDC, non-isolated, 21-position WH swing-arm*                        | VE4303S1T1   |
| Discrete Output Sourcing Signal Conditioning Card for 1771-OBd; 16-Channel, 24 VDC, non-isolated, 21-position WH swing-arm*                      | VE4304S1T1   |
| Discrete Input Signal Conditioning Card for 1771-ID16; 16-channel, 120 VAC/VDC, isolated, 40-position WN swing-arm*                              | VE4301S2T1   |
| Discrete Output Signal Conditioning Card for 1771-OD16; 16-channel, 120 VAC, isolated, 40-position WN swing-arm*                                 | VE4302S2T1   |
| Discrete Output Signal Conditioning Card for 1771-ODD; 16-channel, 120 VAC, isolated, 40-position WN swing-arm*                                  | VE4302S2T2   |
| Discrete Output Relay Contact Signal Conditioning Card for 1771-OW16; 16-channel, 24 to 250 VAC/ 24-120 VDC, isolated, 40-position WN swing-arm* | VE4305S2T1   |
| 4-wide replacement I/O chassis (1771-A1B/B) mounting panel for Signal Conditioning cards for 1771 I/O                                            | VE4300S0T1   |
| 8-wide replacement I/O chassis (1771-A2B/B) mounting panel for Signal Conditioning cards for 1771 I/O                                            | VE4300S0T2   |
| 12-wide replacement I/O chassis (1771-A3B/B) mounting panel for Signal Conditioning cards for 1771 I/O                                           | VE4300S0T3   |
| 12-wide replacement I/O chassis (1771-A3B1/B) mounting panel for Signal Conditioning cards for 1771 I/O                                          | VE4300S0T4   |
| 16-wide replacement I/O chassis (1771-A4B/B) mounting panel for Signal Conditioning cards for 1771 I/O                                           | VE4300S0T5   |

\*Ribbon cables, replacement I/O chassis mounting panel and DeltaV traditional I/O cards / mass-connection terminal blocks are sold separately.

## Spare Part Ordering Information

| Description                                                                     | Model Number |
|---------------------------------------------------------------------------------|--------------|
| 4-card hanger assembly for mounting on locally supplied cabinet mounting panels | VE4300S0T6   |

## Related 3rd Party Products

Ribbon cables are required between the Signal Conditioning Cards for 1771 I/O and the DeltaV Mass-Termination I/O terminal blocks. These ribbon cables are orderable directly from Phoenix Contact.

**Passive Interface Adapter Cards** may be required for 1771 I/O cards that are not supported by the DeltaV Signal Conditioning Cards. These adapters are orderable directly from Weidmuller.

### Ribbon Cables for Discrete Input / Discrete Output (DI/DO) Signal Conditioning Cards

| Description                     | Phoenix Contact Information |                         |
|---------------------------------|-----------------------------|-------------------------|
|                                 | Part Number                 | Part Type               |
| 20-pin Round Ribbon Cable 0.5m  | 2296391                     | FLK 20/EZ-DR/ 50KONFEK  |
| 20-pin Round Ribbon Cable 1.0m  | 2296401                     | FLK 20/EZ-DR/ 100KONFEK |
| 20-pin Round Ribbon Cable 1.5m  | 2296472                     | FLK 20/EZ-DR/ 150KONFEK |
| 20-pin Round Ribbon Cable 2.0m  | 2296485                     | FLK 20/EZ-DR/ 200KONFEK |
| 20-pin Round Ribbon Cable 3.0m  | 2296498                     | FLK 20/EZ-DR/ 300KONFEK |
| 20-pin Round Ribbon Cable 4.0m  | 2296508                     | FLK 20/EZ-DR/ 400KONFEK |
| 20-pin Round Ribbon Cable 8.0m  | 2296524                     | FLK 20/EZ-DR/ 800KONFEK |
| 20-pin Round Ribbon Cable 10.0m | 2296537                     | FLK 20/EZ-DR/1000KONFEK |

### Ribbon Cables for Analog Input (AI) Signal Conditioning Cards

| Description                       | Phoenix Contact Information |                                 |
|-----------------------------------|-----------------------------|---------------------------------|
|                                   | Part Number                 | Part Type                       |
| 2x24-pin Round Ribbon Cable 0.5m  | 2906950                     | CABLE-2FLK24/2FLK24/DV/ 0,5M/S  |
| 2x24-pin Round Ribbon Cable 1.0m  | 2906951                     | CABLE-2FLK24/2FLK24/DV/ 1,0M/S  |
| 2x24-pin Round Ribbon Cable 1.5m  | 2906952                     | CABLE-2FLK24/2FLK24/DV/ 1,5M/S  |
| 2x24-pin Round Ribbon Cable 2.0m  | 2906954                     | CABLE-2FLK24/2FLK24/DV/ 2,0M/S  |
| 2x24-pin Round Ribbon Cable 3.0m  | 2906955                     | CABLE-2FLK24/2FLK24/DV/ 3,0M/S  |
| 2x24-pin Round Ribbon Cable 4.0m  | 2906956                     | CABLE-2FLK24/2FLK24/DV/ 4,0M/S  |
| 2x24-pin Round Ribbon Cable 8.0m  | 2906958                     | CABLE-2FLK24/2FLK24/DV/ 8,0M/S  |
| 2x24-pin Round Ribbon Cable 10.0m | 2906959                     | CABLE-2FLK24/2FLK24/DV/ 10,0M/S |

**Mounting Kit: Recessed I/O chassis, Rackmount, 12-slot/wide, and 19-inches**

| Description                                         | Weidmuller Information |                                          |
|-----------------------------------------------------|------------------------|------------------------------------------|
|                                                     | Part Number            | Part Type                                |
| Recessed I/O chassis: Rackmount, 12-slot, 19-inches | 8000181397             | MBGE CHASSIS PLC5 12 SLOT, 19RM, EMERSON |

**Passive Interface Adapter Cards**

|                |                           | Weidmuller Ordering Information |            |            |            |            |            |
|----------------|---------------------------|---------------------------------|------------|------------|------------|------------|------------|
| Swing-Arm Type | Description               | 1-meter                         | 3-meter    | 5-meter    | 10-meter   | 15-meter   | 30-meter   |
| 1771-WA        | 10-position, 1 Gold/9 Tin | 8000118200                      | 8000118201 | 8000118357 | 8000118358 | 8000118359 | 8000118360 |
| 1771-WB        | 12-position, Gold         | 8000118333                      | 8000118334 | 8000118365 | 8000118366 | 8000118367 | 8000118368 |
| 1771-WC        | 10-position, Gold         | 8000118198                      | 8000118199 | 8000118353 | 8000118354 | 8000118355 | 8000118356 |
| 1771-WD        | 12-position, Tin          | 8000118202                      | 8000118330 | 8000118361 | 8000118362 | 8000118363 | 8000118364 |
| 1771-WF        | 18-position, Gold         | 8000118336                      | 8000118339 | 8000118369 | 8000118370 | 8000118372 | 8000118373 |
| 1771-WG        | 21-position, Gold         | 8000118340                      | 8000118341 | 8000118374 | 8000118375 | 8000118376 | 8000118377 |
| 1771-WH        | 21-position, Tin          | 8000118342                      | 8000118344 | 8000118378 | 8000118379 | 8000118380 | 8000118381 |
| 1771-WN        | 40-position, Tin          | 8000118196                      | 8000118197 | 8000118349 | 8000118350 | 8000118351 | 8000118352 |

**Spare Part Ordering Information**

| Description                                                 | Part Number |
|-------------------------------------------------------------|-------------|
| Replacement hanger assemblies are available from Weidmuller | 8000125424  |

©2026, Emerson. All rights reserved.

The Emerson logo is a trademark and service mark of Emerson Electric Co. The DeltaV logo is a mark of one of the Emerson family of companies. All other marks are the property of their respective owners.

The contents of this publication are presented for informational purposes only, and while diligent efforts were made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available on request. We reserve the right to modify or improve the designs or specifications of our products at any time without notice.

**Contact Us**

🌐 [www.emerson.com/contactus](http://www.emerson.com/contactus)