Installation Instructions

POINT I/O 24V dc Expansion Power Supply

Catalog Number 1734-EP24DC, Series B

Inside . . .

Publication 1734-IN058B-EN-P - June 2005

Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. *Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls* (Publication SGI-1.1 available from your local Rockwell Automation sales office or online at http://www.literature.rockwellautomation.com) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

WARNING 	Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.
ATTENTION 	Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard and recognize the consequences.
SHOCK HAZARD 	Labels may be located on or inside the equipment (e.g., drive or motor) to alert people that dangerous voltage may be present.
BURN HAZARD 	Labels may be located on or inside the equipment (e.g., drive or motor) to alert people that surfaces may be dangerous temperatures.

Preventing Electrostatic Discharge

ATTENTION

This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:

- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- If available, use a static-safe workstation.
- When not in use, store the equipment in appropriate static-safe packaging.

Environment and Enclosure

ATTENTION

This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC publication 60664-1), at altitudes up to 2000 meters without derating.

This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR Publication 11. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

This equipment is supplied as “open type” equipment. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to prevent personal injury resulting from accessibility to live parts. The interior of the enclosure must be accessible only by the use of a tool. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

See NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure. Also, see the appropriate sections in this publication, as well as the Allen-Bradley publication 1770-4.1 (“Industrial Automation Wiring and Grounding Guidelines”), for additional installation requirements pertaining to this equipment.

North American Hazardous Location Approval

The following information applies when operating this equipment in hazardous locations:	**Informations sur l'utilisation de cet équipement en environnements dangereux:**
Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, D, Hazardous Locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest "T" number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local Authority Having Jurisdiction at the time of installation.	Les produits marqués "CL I, DIV 2, GP A, B, C, D" ne conviennent qu'à une utilisation en environnements de Classe I Division 2 Groupes A, B, C, D dangereux et non dangereux. Chaque produit est livré avec des marquages sur sa plaque d'identification qui indiquent le code de température pour les environnements dangereux. Lorsque plusieurs produits sont combinés dans un système, le code de température le plus défavorable (code de température le plus faible) peut être utilisé pour déterminer le code de température global du système. Les combinaisons d'équipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.

WARNING

EXPLOSION HAZARD -

- Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous.
- Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product.
- Substitution of components may impair suitability for Class I, Division 2.
- If this product contains batteries, they must only be changed in an area known to be nonhazardous.

AVERTISSEMENT

RISQUE D'EXPLOSION –

- Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement.
- Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher les connecteurs. Fixer tous les connecteurs externes reliés à cet équipement à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens fournis avec ce produit.
- La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe 1, Division 2.
- S'assurer que l'environnement est classé non dangereux avant de changer les piles.

European Hazardous Location Approval

European Zone 2 Certification (The following applies when the product bears the EEx marking.)

This equipment is intended for use in potentially explosive atmospheres as defined by European Union Directive 94/9/EC.

DEMKO certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of Category 3 equipment intended for use in potentially explosive atmospheres, given in Annex II to this Directive. The examination and test results are recorded in confidential report No 03NK30347. Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 50021.

IMPORTANT

Observe the following additional Zone 2 certification requirements.

- This equipment is not resistant to sunlight or other sources of UV radiation.
- The secondary of a current transformer shall not be open-circuited when applied in Class I, Zone 2 environments.
- Equipment of lesser Enclosure Type Rating must be installed in an enclosure providing at least IP54 protection when applied in Class I, Zone 2 environments.
- This equipment shall be used within its specified ratings defined by Allen-Bradley.
- Provision shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 40% when applied in Class I, Zone 2 environments.

ATTENTION

Do not connect 120/240V ac to the 1734-EP24DC terminals. Damage to the supply will result.

ATTENTION

Use the 1734-EP24DC expansion power supply only with 1734 POINT I/O adapters, such as the 1734-ADN DeviceNet adapter.

ATTENTION

POINT I/O is grounded through the DIN rail to chassis ground. Use zinc plated yellow-chromate steel DIN rail to assure proper grounding. The use of other DIN rail material (e.g., aluminum, plastic, etc.) that can corrode, oxidize, or are poor conductors, can result in improper or intermittent grounding.

Secure DIN rail to mounting surface approximately every 200 mm (7.8 inches).

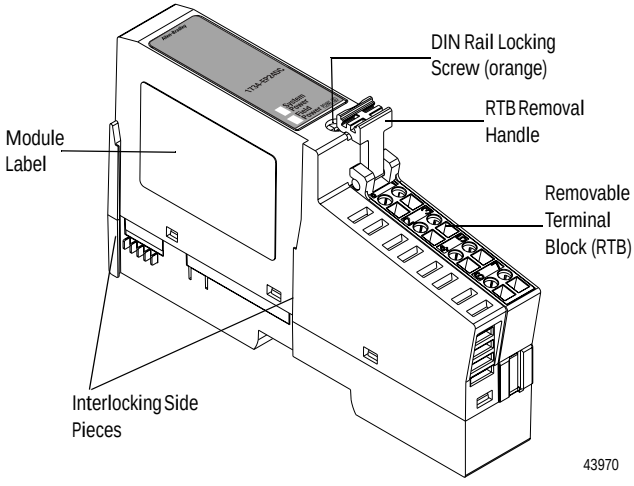
About the Power Supply

The expansion power supply passes 24V dc field power to the I/O modules to the right of it. The expansion power supply extends the backplane bus power for up to 17 I/O modules to the right of the supply and creates a new field voltage partition segment for driving field devices. The expansion power supply separates field power from I/O modules to the left of the unit, effectively providing functional and logical partitioning for the following.

- Separate field power between input and output modules.
- Separate field power to the analog and digital modules.
- Group modules to perform a specific task or function.

The dark-gray color of the expansion power supply allows for easy visual inspection and identification. Refer to the figure to identify external power supply components.

Use multiple expansion power supplies with POINT I/O adapters to assemble a full system. With any POINT I/O adapter, use an expansion power supply to add additional modules in 4-17 module increments, for a total of 63 I/O modules.



Install the Power Supply

To install the expansion power supply on the DIN rail, proceed as follows.

WARNING

When you insert or remove the module while backplane power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations.
Be sure that power is removed or the area is nonhazardous before proceeding. Repeated electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance that can affect module operation.

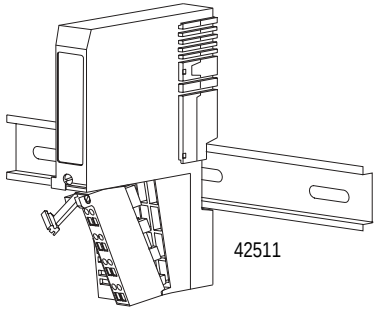
1. Position the power supply vertically above the DIN rail.
2. Engage the interlocking side pieces with the unit on the left.
3. Press down firmly to install the power supply on the DIN rail.

   The locking mechanism locks the module to the DIN rail.

Remove the Power Supply

To remove an expansion power supply, proceed as follows.

1. Pull up on the RTB removal handle to remove the terminal block.



2. Remove the module to the right of the 1734-EP24DC module from its base unit.

3. Use a small-bladed screwdriver to rotate the DIN rail locking screw to a vertical position.

   This releases the locking mechanism.

4. Lift straight up to remove.

Replace the Power Supply

To install a replacement expansion power supply, proceed as follows.

WARNING

When you connect or disconnect the removable terminal block (RTB) with field-side power applied, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

1. Remove the module to the right of the power supply from its base unit.

2. Position the power supply vertically above the DIN rail.

3. Slide the power supply down allowing the interlocking side pieces to engage the adjacent modules (both left and right sides).

4. Press firmly to seat the power supply on the DIN rail.

   The power supply locking mechanism snaps into place.

5. Reinsert the module into the base next to the expansion power supply.

Wire the Power Supply

WARNING

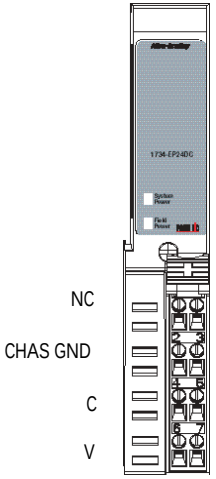
If you connect or disconnect wiring while the field-side power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

ATTENTION

Use the 1734-EP24DC expansion power supply only with adapter class products.

ATTENTION

Use the 1734-EP24DC expansion power supply only with 1734 POINT I/O adapters, such as the 1734-ADN DeviceNet adapter.



NC = No Connection
CHAS GND = Chassis Ground
C = Common
V = Supply

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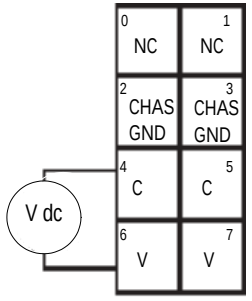
12/24Vdc Wiring



12/24V dc

Do not connect 120/240V ac power to this supply.

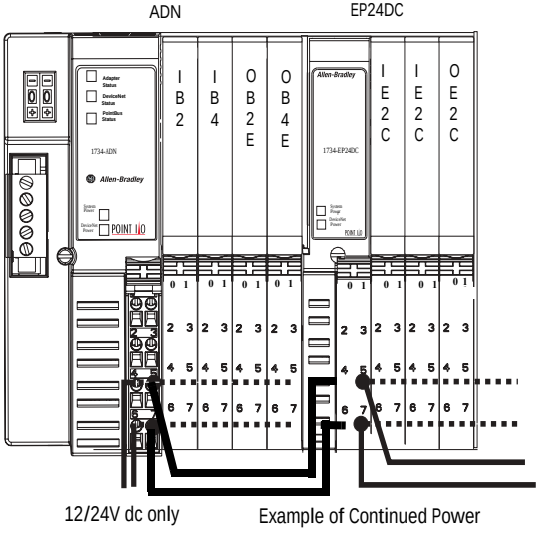
This supply will be connected to the internal field power bus.

EP24

V = 12/24V dc C = Common
CHAS GND = Chassis Ground

Connect	Terminal	Terminals (for continuing power)
+V dc	6	7
-V dc	4	5
Chas Gnd	2	3
12/24V dc becomes the internal field power bus for modules to the right.		

Example of Continuing Power



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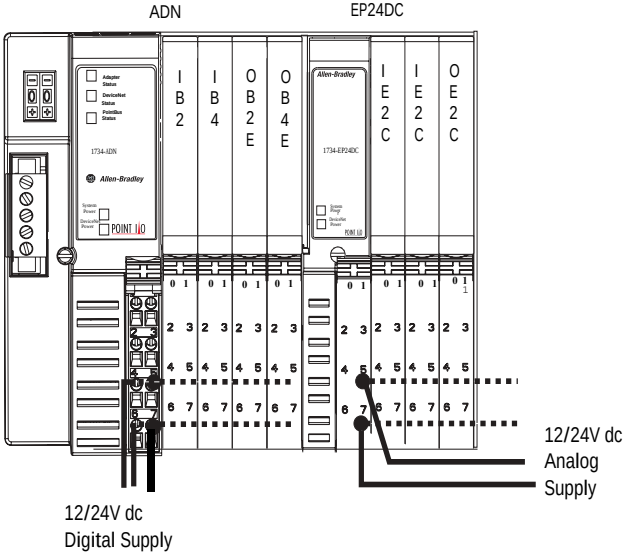
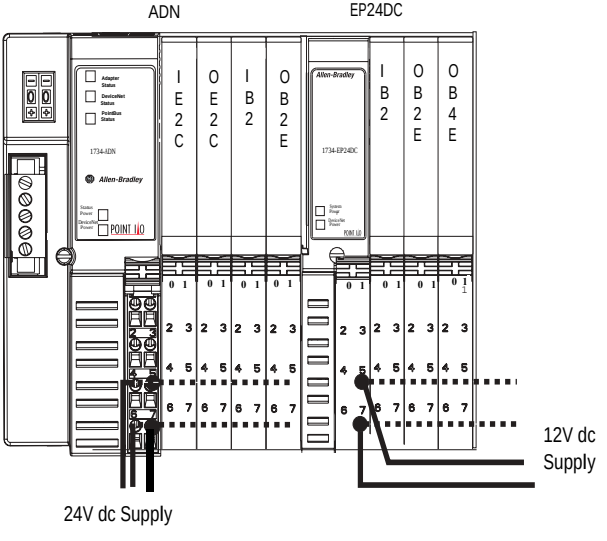
Example of Functional Partitioning



Example of Logical Partitioning



Specifications

1734-EP24DC POINT I/O 24V dc Expansion Power Supply

Specification	Value
I/O Module Capacity	4-17 modules, depending on current rating of each module
Input Voltage Rating	24V dc nominal 10…28.8V dc range
Field Side Power Requirements	24V dc (+20% = 28.8V dc maximum) @ 400 mA maximum
Inrush Current	6 A maximum for 10 ms
Indicators	1 Green Field Power Status Indicator 1 Green 5V System Power Indicator
POINTBus Output Current	Horizontal mounting - 1 A at 10…19.2V input; 1.3 A at 19.2…28.8V input Vertical mounting - 1 A at 10…28.8V input
Input Overvoltage Protection	Reverse polarity protected
Interruption	Output voltage will stay within specifications when input drops out for 10ms at 10V with maximum load.
Module Location	Between I/O modules in 1734 system Breaks field power bus
Limitations	Use with POINT I/O Adapters only
Dimensions millimeters inches	76.2H x 25.4W x 133.4L mm (3.00H x 1.00W x 5.25L in)
Weight	0.12 kg (0.27 lb)
Terminal Base Screw Torque	0.6 Nm (7 lb-in)

General Specifications

Specification	Value
Power Consumption	9.8 W maximum @ 28.8V dc
Power Dissipation	3.0 W maximum @ 28.8V dc
Thermal Dissipation	10.0 BTU/hr maximum @ 28.8V dc
Isolation Voltage (continuous-voltage withstand rating)	50V continuous Tested to withstand 2600V dc for 60 s
Field Power Bus Supply Voltage Voltage Range Supply Current	 24V dc nominal 10…28.8V dc range 10 A maximum

Environmental Specifications

Specification	Value
Operational Temperature	IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock) -20...55 °C (-4...131 °F)
Storage Temperature	IEC60068-2-1 (Test Ab, Unpackaged Non-operating Cold) IEC60068-2-2 (Test Bb, Unpackaged Non-operating Dry Heat) IEC60068-2-14 (Test Na, Unpackaged Non-operating Thermal Shock) -40...85 °C (-40...185 °F)
Relative Humidity	IEC60068-2-30 (Test Db, Unpackaged Non-operating Damp Heat) 5...95% non-condensing
Shock Operating	IEC60068-2-27 (Test Ea, Unpackaged Shock) 30 g
Shock Non-operating	IEC60068-2-27 (Test Ea, Unpackaged Shock) 50 g
Vibration	IEC 60068-2-6 (Test Fc, Operating) 5 g @ 10-500 Hz

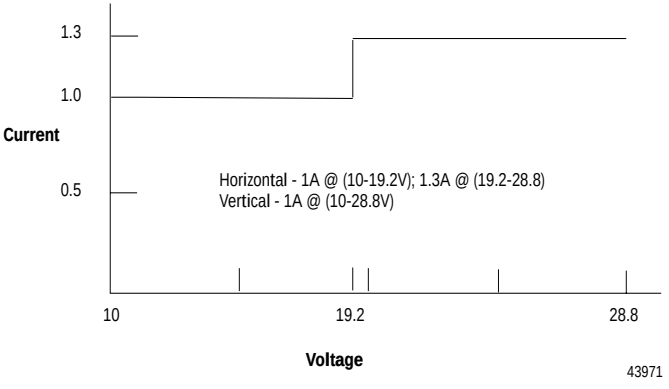
Environmental Specifications

Emissions	CISPR 11: Group 1, Class A
ESD Immunity	IEC6100-4-2 6 kV contact discharges 8 kV air discharges
Radiated RF Immunity	IEC 61000-4-3 10V/m with 1 KHz sine-wave 80% AM from 30 MHz to 2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz
EFT/B Immunity	IEC 61000-4-4 ±4 kV at 2.5 kHz on power ports
Surge Transient Immunity	IEC 61000-4-5 ±1 kV line-line (DM) and ± 2kV line-earth (CM) on power ports
Conducted RF Immunity	IEC61000-4-6 10Vrms with 1 kHz sine-wave 80% AM from 150 kHz to 80 MHz
Enclosure Type Rating	None (open-style)
Conductor Size	#22…#14 AWG (0.324…2.08 sq. mm) solid or stranded copper wire rated @ 75 °C or greater 3/64 inch (1.2 mm) insulation maximum
Conductor Category[1]	1 - on power ports

1 Use this Conductor Category information for planning conductor routing. Refer to publication 1770-4.1, Industrial Automation Wiring and Grounding Guidelines.

Environmental Specifications

Current Derating for Mounting



Certifications

Certifications[1]	c-UL-us	UL Listed Industrial Control Equipment, certified for U.S. and Canada
(when product is marked)	c-UL-us	UL Listed for Class I, Division 2, Group A,B,C,D Hazardous Locations, certified for U.S. and Canada
	CE	European Union 89/336/EEC EMC Directive, compliant with: EN 50082-2; Industrial Immunity EN 61326; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions
	C-Tick	Australian Radiocommunications Act, compliant with: AS/NZS CISPR11; Industrial Emissions
	EEx	European Union 94/9/EC ATEX Directive, compliant with: EN 50021; Potentially Explosive Atmospheres, Protection “n” (Zone 2)

1 See the Product Certification link at www.ab.com for Declarations of Conformity, Certificates, and other certification details.

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