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Allen-Bradley

PLC-2 Family Programmable Controllers

Quick Start for Experienced Users



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Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of this control equipment must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards.

The illustrations, charts, sample programs and layout examples shown in this guide are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Allen-Bradley does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation, and Maintenance of Solid-State Control* (available from your local Allen-Bradley office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

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Throughout this manual we use notes to make you aware of safety considerations:



ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage or economic loss.

Attention statements help you to:

- identify a hazard
- avoid the hazard
- recognize the consequences

Important: Identifies information that is critical for successful application and understanding of the product.

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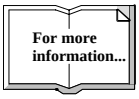
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Preface

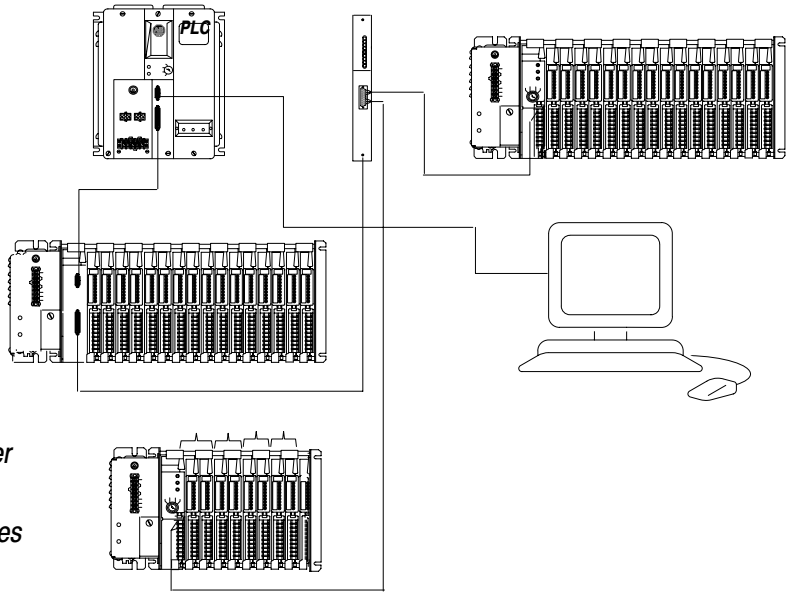
Using this Quick Start

This quick start is designed to help you quickly install and connect a basic PLC-2 family programmable controller system. Use this guide if you are knowledgeable about PLC-2 family products but may not have used one or more of the products for a period of time. The information we provide is geared to "jog your memory."

What You Need to Do



For more information, see the PLC-2 Programmable Controllers Assembly and Installation Manual, publication 1772-6.6.2.



step 1 *Install I/O chassis*

- a *Configure I/O chassis (page 1-1)*
- b *Ground I/O chassis (page 1-2)*

step 2 *Install memory module (page 2-1)*

step 3 *Install I/O*

- a *Install and connect I/O adapter (page 3-1)*
- b *Install and connect I/O modules (page 3-2)*

step 4 *Install power supply (page 4-1)*

step 5 *Install and connect remote I/O scanner and adapter (page 5-1)*

step 6 *Configure and connect a Programming Terminal (page 6-1)*

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System Components used in this Quick Start

Product name:	Catalog number:
I/O chassis	1771-A1B, -A2B, -A3B, -A4B
power supply	1772-P1 series C, 120/220V AC 1772-P4, 24V DC
processor chassis	1772-LA
processor interface module	1772-LH
processor	1772-LP2 (PLC-2/20) 1772-LP3 (PLC-2/30)
memory module	1772-ME8 (PLC-2/20) 1772-ME8, -ME16 (PLC-2/30)
processor control module	1772-LI (PLC-2/20) 1772-LG (PLC-2/30)
remote I/O scanner/distribution panel	1772-SD2
remote I/O adapter module	1771-ASB
I/O local adapter module	1771-AL
programming terminal	1770-T3, 1784-T45, -T50, IBM PC-compatible computer using 6200 or AI series PLC-2 programming software

Installing in Class 1, Division 2 Locations



If your PLC-2 programmable controller is approved for use in Class 1, Division 2 hazardous locations and you plan to install it in such a location, you must refer to publication AG 4.1 for further installation details and warnings. If you do not have a copy of this publication, call 1-800-9NEWLIT to order one, or contact your Allen-Bradley service representative.

If You Need Help ...



If you need additional assistance in installing or connecting your PLC-2 family programmable controller system, call 1-800-9 NEWLIT to order one of the publications suggested below or contact your Allen-Bradley service representative.

Publication title:	Publication number:
PLC-2 Programmable Controllers Assembly and Installation Manual	1772-6.6.2
PLC-2/20 Programmable Controller Programming and Operations Manual	1772-6.8.1
PLC-2/30 Programmable Controller Programming and Operations Manual	1772-6.8.3
Local I/O Adapter Module Product Data	1772-2.95
Remote I/O Adapter Module Assembly Product Data	1772-2.48
Remote I/O Scanner/Distributor Panel Product Data	1772-2.18
Series B and C Power Supplies	1771-2.4
Power Supply Modules Product Data	1771-2.111
AC (120/220) 16A Power Supply Module	1771-2.93
24V DC Input Power Supply	1772-2.12

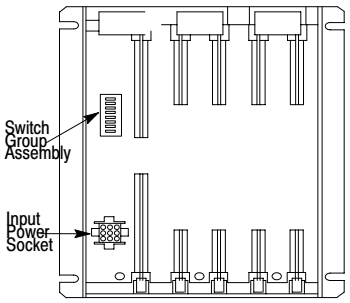
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Configure and Ground I/O Chassis

Configure I/O Chassis

a *Set the backplane switches.*

Local I/O

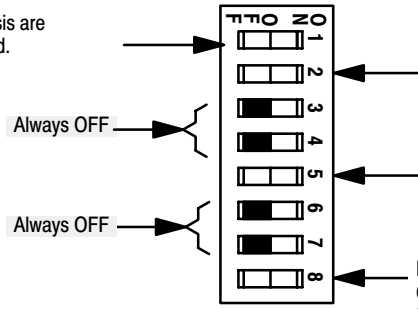


10183-I

Rack:	Switch:		
	1	2	3
1	on	on	on
2	on	on	off
3	on	off	on
4	on	off	off
5	off	on	on
6	off	on	off
7	off	off	on

Remote I/O

Last State Switch -
When ON, outputs of this chassis remain in last state when a fault is detected.
When OFF, outputs of this I/O chassis are deenergized when a fault is detected.



Processor Restart Lockout – 2
When ON, processor can restart I/O chassis
When OFF, I/O chassis must be restarted at the chassis.

Addressing Switch -– 5
ON - 1-slot addressing selected
OFF - 2-slot addressing selected

Last Chassis Switch -– 8
ON - Chassis does not contain the highest numbered I/O group for the associated rack number
OFF - Chassis does contain the highest numbered I/O group for the associated rack number

- If you have only a primary chassis, set this switch to OFF.
- If you have both primary and complementary chassis, set the primary chassis to ON and the complementary chassis to OFF.

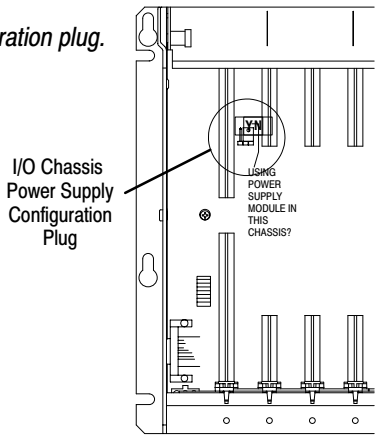
ATTENTION: Set switch 1 to the OFF position to deenergize outputs wired to this chassis when a fault is detected. If switch 1 is set to the ON position, outputs connected to this chassis remain in their last state when a fault occurs and machine motion may continue after fault detection.

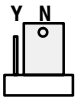
10802-I

b *If you are using a power supply outside of the rack, plug the 9-pin connector of the power cable into the 9-pin socket on the I/O chassis backplane and leave the other end of the power cable loose. (Later, you will connect this end of the cable to the power supply.)*

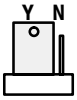
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c *Set the power supply configuration plug.*



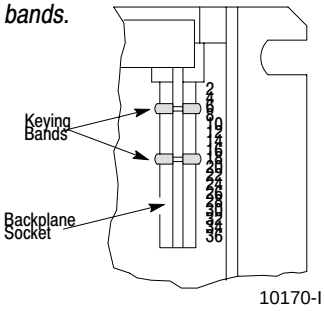


Set this plug to the left (Y) position if you use a slot power supply module.



Set this plug to the right (N) position if you use an external supply.

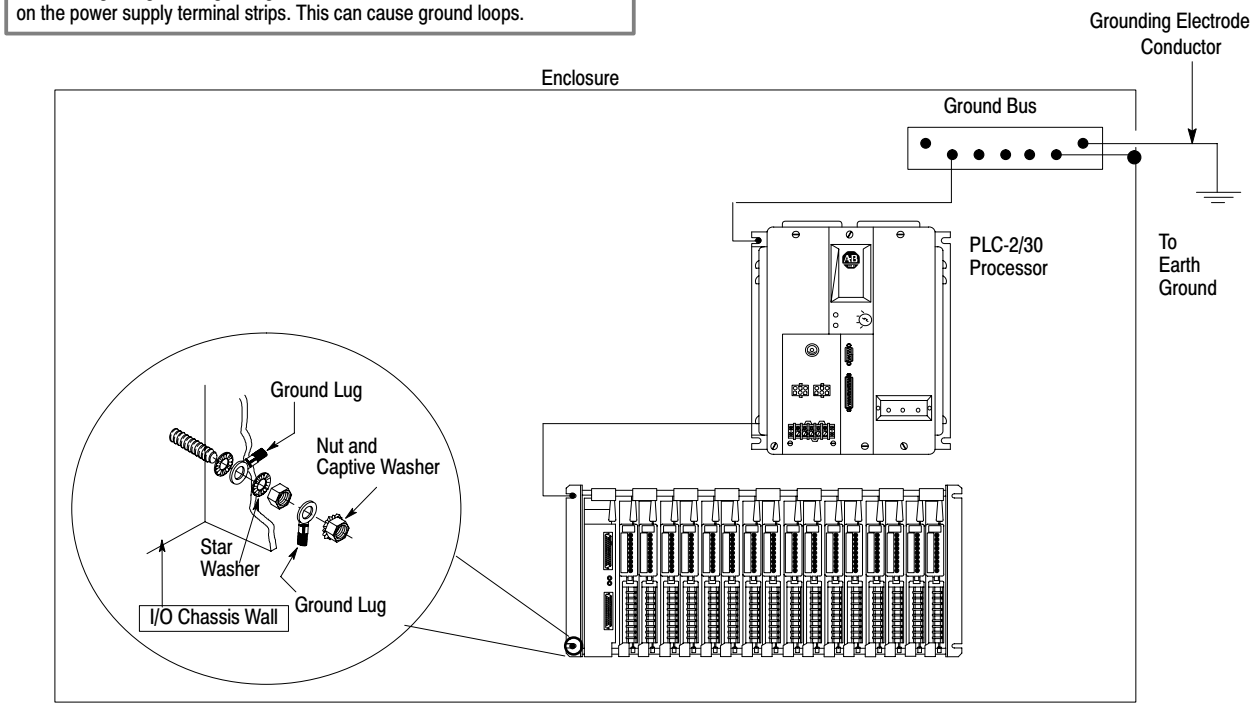
d *Install keying bands.*



See the appropriate product data for the module you are installing to determine the proper keying positions for each module.

Ground I/O Chassis

When using this grounding configuration, make no connections to EQUIP GND on the power supply terminal strips. This can cause ground loops.

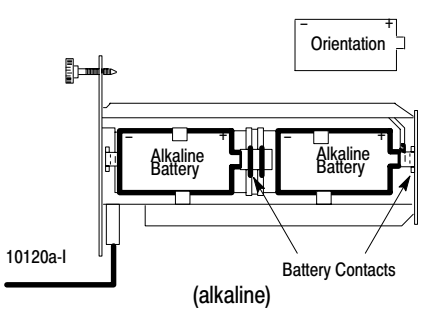


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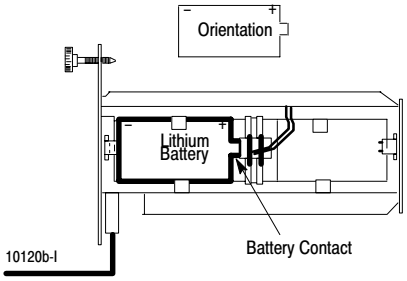
Install Memory Module

Install Memory Module

a *Install backup batteries.*



(alkaline)



(lithium)

b *Install the memory module in the rightmost plastic slot of the processor chassis.*

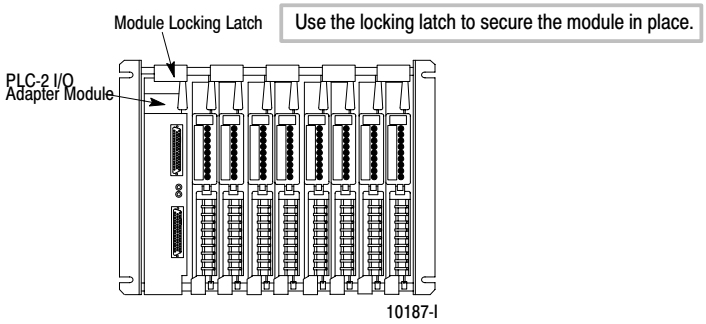
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Install and Connect I/O Adapter Module and I/O Modules

Install and Connect I/O Adapter Module

a *Install the I/O adapter module in the left-most slot of the I/O chassis.*



b *Connect the communication cable from the top socket of the I/O adapter to the I/O rack socket of the processor interface module.*

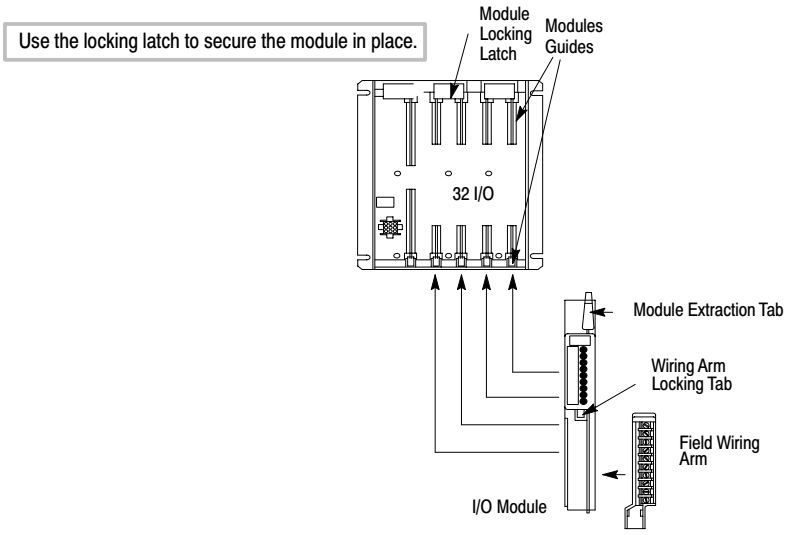
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Install I/O Modules

For more information...

Specific wiring information for each type of I/O module is contained in the product data publication for that specific module. Therefore, refer to the appropriate product data publication when you follow these steps.

a *Install each I/O module.*



b *Snap the field wiring arms for each I/O module onto the horizontal bar of the I/O chassis and connect it to the module.*

c *Remove the terminal cover from each wiring arm and connect the wires between the I/O devices and the wiring arm terminals.*

d *Connect the power and ground wires.*

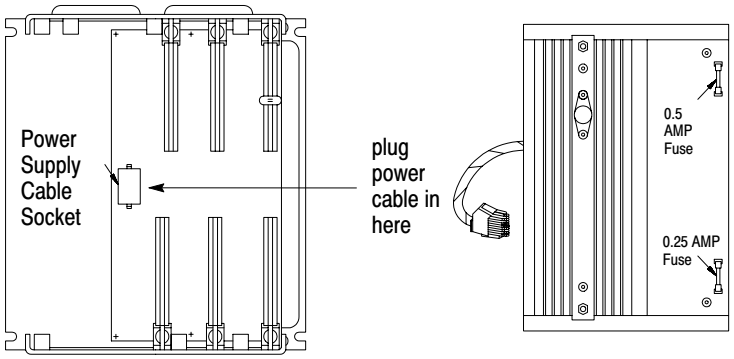
e *Use tie wraps to gather the wires at each wiring arm, then bundle the wires so the arms can pivot freely.*

f *Replace the terminal covers and label the terminal status indicators appropriately.*

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Install and Connect Power Supply

a *Plug the power supply cable that extends from the rear of the power supply module into the socket on the processor chassis backplane.*

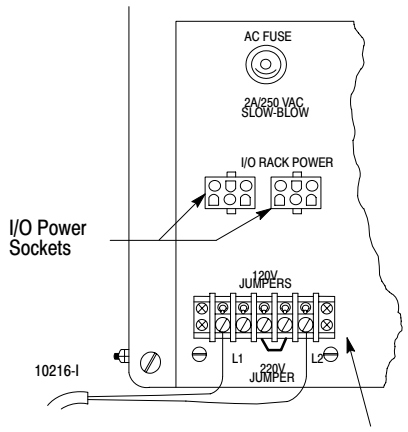


b *Install the power supply module in the left-most slot of the processor chassis.*

c *Plug the other end of the I/O power cable that you used in step 1b on page 1-1 into the power socket on the I/O chassis.*

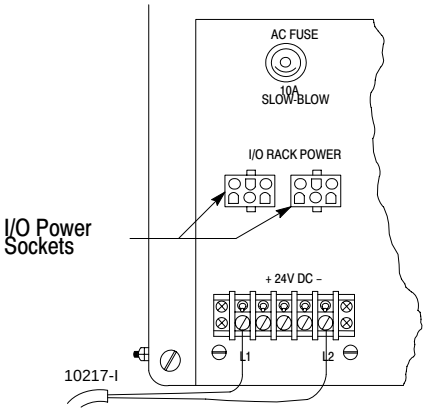
d *Make ac or dc connections to the the power supply terminal strip.*

1772-P1 power supply



If you want to use 220/240V AC, you must reposition these jumpers.

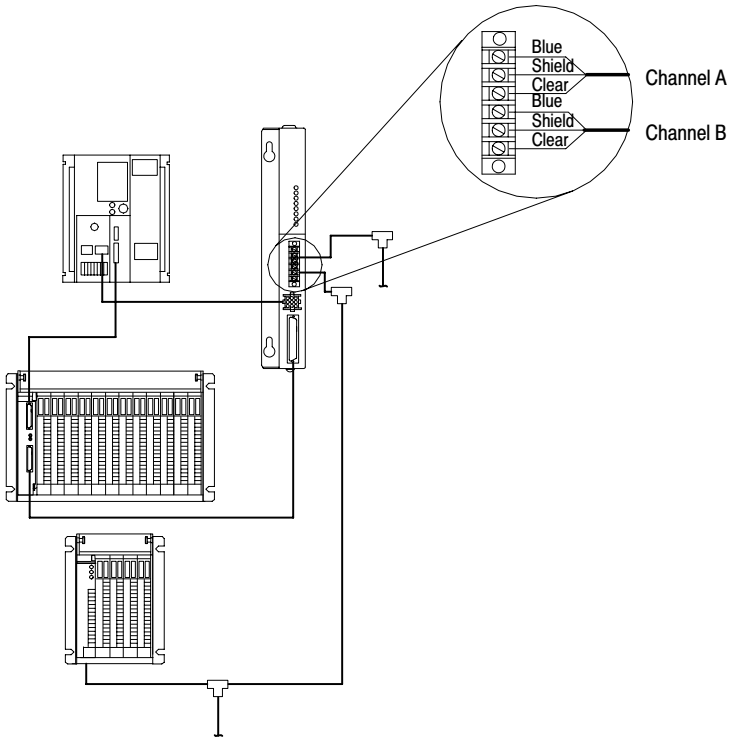
1772-P4 power supply



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Install and Connect Remote I/O Scanner and Adapter

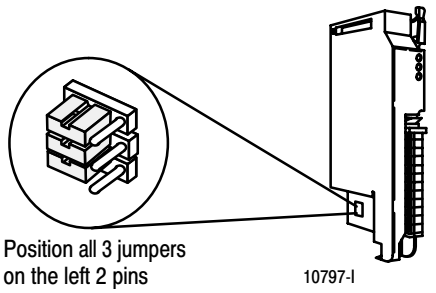
Install and Connect Remote I/O Scanner



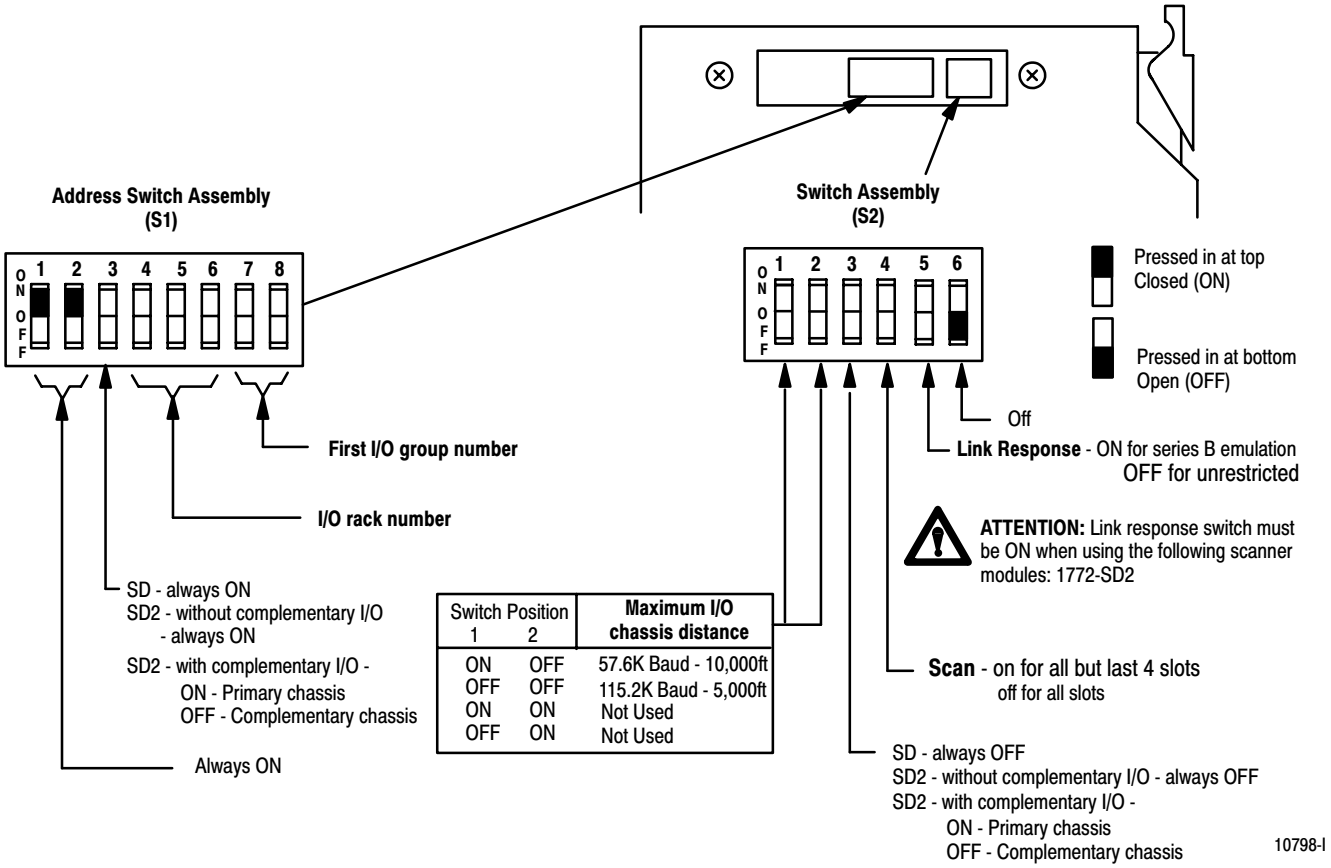
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Install and Connect Remote I/O Adapter

a *Set the module configuration plugs.*



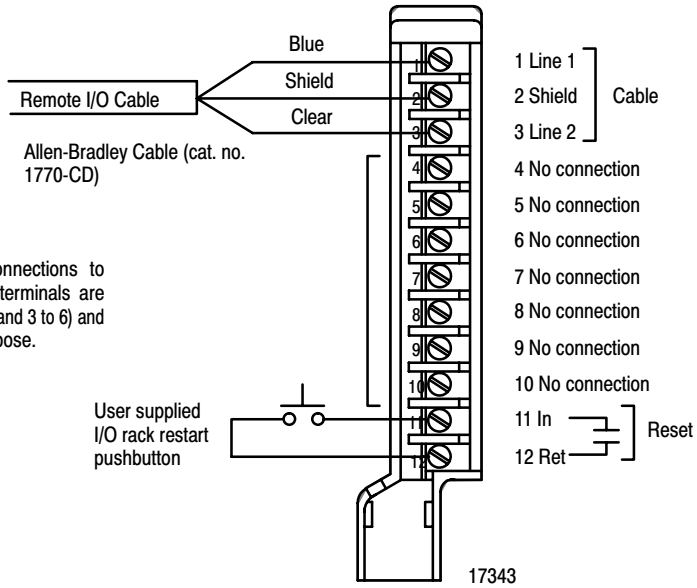
b *Set the module switches.*



Switch Position 1	Switch Position 2	Maximum I/O chassis distance
ON	OFF	57.6K Baud - 10,000ft
OFF	OFF	115.2K Baud - 5,000ft
ON	ON	Not Used
OFF	ON	Not Used

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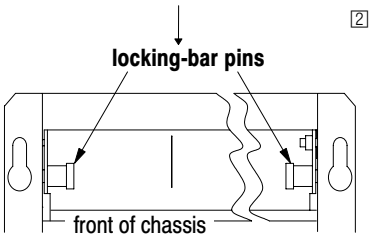
c *Wire the field wiring arm.*



ATTENTION: Do not make connections to terminals 4 through 10. These terminals are connected internally (1 to 4, 2 to 5 and 3 to 6) and cannot be used for any other purpose.

d *Install the module.*

1 1 1 *Remove power from the I/O chassis.*



2 1 1 *Pull these pins to release the locking bar and swing it up.*

3 *Insert the module, then snap the locking bar over the top of the module to secure it.*

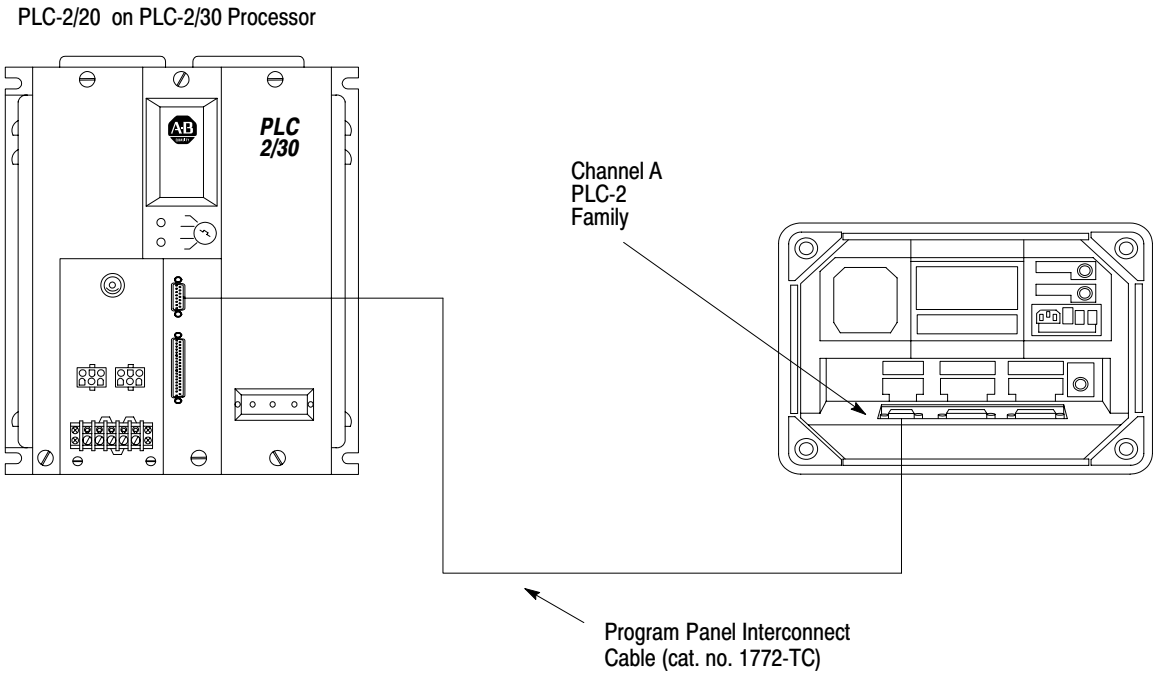
4 *Swing the field wiring arm up into place and press until it latches.*

5 *Restore power to the system.*

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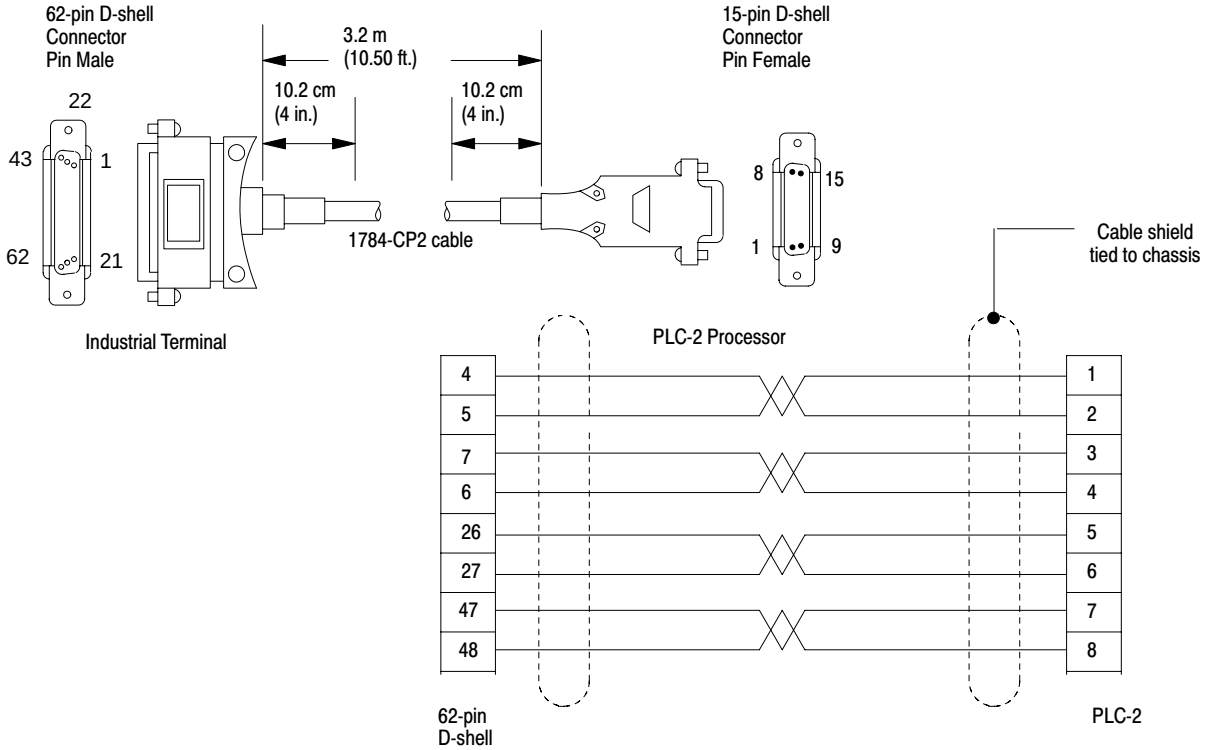
Configure a Personal Computer

Connect Programming Terminal

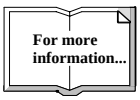


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Connect to a Personal Computer



Using 6200 Programming Software



For specific information about using 6200 programming software, see the PLC-2 Programming Software Configuration Manual, publication 6200-6.4.15.

Any Allen-Bradley or IBM and IBM-compatible machine can be used as a programming device using 6200 or Application Interface (AI) programming software. Before you install the PLC-2 programming software, you need the following:

- 640 KBytes of RAM as base memory (extended or expanded memory not required
- 10 MBytes of disk space for storing files.
- Allen-Bradley DOS version 3.2*x* if you use a 1784-T50 or 1784-T45 programming terminal. If you use a 1784-T47 programming terminal use DOS 4.01. If you use an IBM PC/XT, IBM PC-AT, or IBM-compatible programming terminal, use DOS 3.2, 3.3, 4.*x,* or 5.0.
- monochrome or color graphics monitor
- installed 1785-KL, -KTP, -KT, -KT2, -KTK1 card

If your 1784-T50 has DOS version 2.11 or earlier, you must upgrade to the current version of Allen-Bradley DOS. The current version of Allen-Bradley DOS is version 3.21.

Using AI Programming Software



For specific information about using AI programming software, see the PLC-2 Ladder Logistics Manual, publication 9399-L2man-07.05.89.

Before you install the AI PLC-3 programming software, you need the following:

- IPM PC XT, AT or compatible computer with DOS 2.1 or later
- monitor and graphics board. These display types are supported:
  monochrome display system
  CGA display system
  EGA display system
  VGA display system
- 640K RAM of system memory
- a floppy drive and a hard drive

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Specifications

Specifications

Specifications for PLC-2/20 processors follow.

Nominal Input Voltages to Processor Modules ▪ +5.1V, +12V, -5.1V **Input Power Required for Processor** ▪ (no I/O Racks) ▪ 25 VA **Maximum input Power Required for Loaded Power Supply** ▪ 75VA (nominal) **Scan Time (nominal)** ▪ 5 ms/1K of memory	**Memory Capacity** ▪ 8K words (16 data bits each) **Ambient Temperature Rating** ▪ 0°C to 60°C (operational) ▪ -40°C to +85°C (storage, excluding Battery) **Humidity Rating** ▪ 5 to 95% (without condensation) **Keying** ▪ Processor modules slotted to mate with keyed Chassis sockets

Specifications for PLC-2/30 processors follow.

1772-LP3 Processor **Input Voltage** ▪ 120V AC ▪ 220/240V AC **Input Voltage Range** ▪ 97V to 132V AC ▪ 196 to 250V AC **Input Power** ▪ 75VA **Frequency** ▪ 47 to 63HZ **Memory Capacity** ▪ 16K words (nominal) **1772-LP3D4 Processor** **Input Voltage** ▪ 24V DC (nominal) **Input Voltage Range** ▪ 20.5 – 32.0V DC **Input Power** ▪ 75 VA (nominal) **Memory Capacity** ▪ 8K (nominal)	**Specifications Common to Both Cat. Nos. of the PLC-2/30 Processor** **Battery Back-up** ▪ 2 Alkaline D-size batteries 1.5V ▪ 1 Lithium D-size battery 3.7V **Data Table Size** ▪ Floating, 32 to 8192 words **I/O Scan** ▪ .5ms/128 (typical) **Program Scan** ▪ 5ms (typical)/1 K **I/O Compatability** ▪ Without complementary I/O – 896 ▪ With complementary I/O – 1792 **Mode Selection** ▪ By keyswitch on the processor **Environmental Conditions** ▪ Operating Temperature: 0 to 60°C (32 to 140°F) ▪ Storage Temperature: -40 to 85°C (-40 to 185°F) ▪ Relative Humidity: 5% to 95% (without condensation)

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