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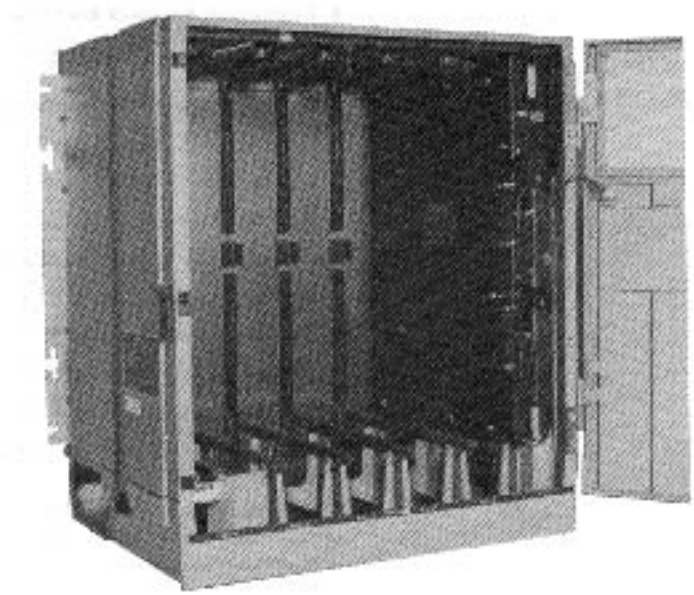
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ALLEN-BRADLEY

Allen-Bradley
PLC-3 Expansion System

Product Data



System Hardware

PLC-3 programmable controllers can be expanded to include as many as four processor chassis. Expansion increases the number of available module slots, allowing a PLC-3 system to be economically configured to meet many application needs, while leaving open the option for future expansion. The PLC-3 expansion system includes the following available hardware:

- PLC-3 Expansion Chassis (cat. no. 1775-A2)
- PLC-3 Expansion Modules (cat. no. 1775-LX): one per processor chassis
- PLC-3 Expansion Terminators (cat. no. 1775-CXT): only required in a three processor chassis system.
- PLC-3 Expansion Distribution panel (cat. no. 1775-CXD): only required in three and four processor chassis systems.

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- PLC-3 Expansion Cable Set (cat. no. 1775-CX): one for a two processor chassis system, three for a three processor chassis system, and four for a four processor chassis system.

System Benefits

Expansion adds many benefits to a PLC-3 system:

- Added module slots
- Economically configurated
- Four chassis expansion at anytime
- Minimal limitations on module placement
- Expansion modules are transparent to the system
- No additional I/O wiring or programming

PLC-3 Expansion Chassis

The PLC-3 expansion chassis consists of the following parts:

- Chassis (cat. no. 1775-AC)
- Expansion Chassis Door (cat. no. 1775-AD2)
- Chassis Power Cable (cat. no. 1775-CAP)

Features of the expansion chassis include:

- Heavy duty aluminum construction
- Six module slots
- Virtually slot independent module placement
- Free flow convection cooling
- Electro-mechanical interlock to guard against removal or insertion of modules while power is applied to the chassis

The expansion chassis is identical to the PLC-3 main chassis, except that the main chassis has a front panel that contains an alphanumeric display and keypad.

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Chassis Identification for Communication

In a multi-chassis PLC-3 programmable controller system, a chassis identification number is necessary for communication. This is accomplished by setting three switches on the backplane of each main and expansion chassis. Table A shows the proper switch settings for each chassis. Chassis are numbered sequentially starting with zero, with higher priority chassis being assigned lower numbers. Therefore, the main processor module (cat. no. 1775-L1, -L2) is always located in chassis 0, the highest priority chassis.

Table A
Backplane Switch Settings

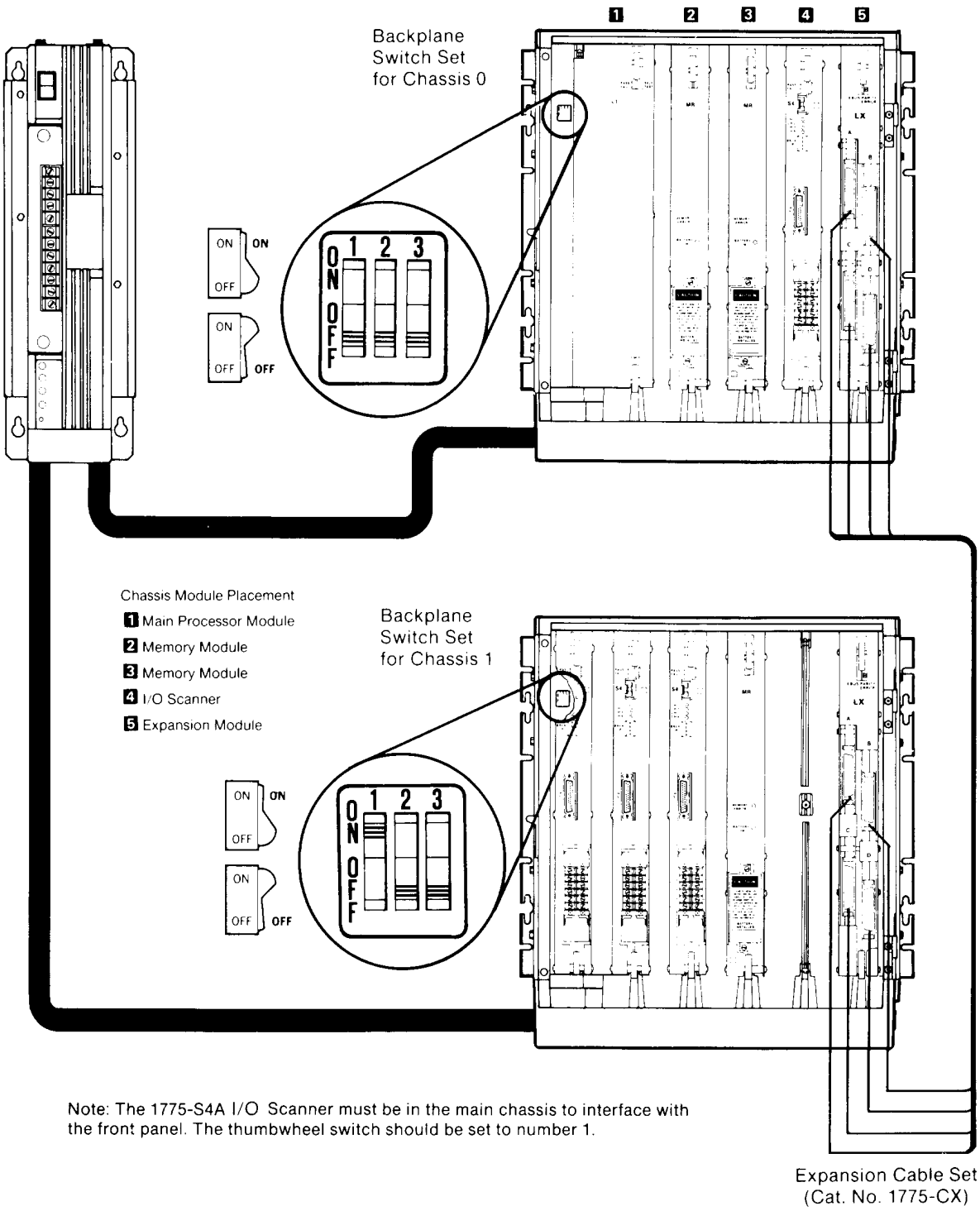
Chassis Number	Comments	Switch Settings		
		1	2	3
0	Highest Priority – Must contain main processor module	OFF	OFF	OFF
1	Second highest priority	ON	OFF	OFF
2	Available with expansion distribution panel only	OFF	ON	OFF
3	Available with expansion distribution panel only	ON	ON	OFF

Multiple Chassis Systems

A two chassis PLC-3 system requires two expansion modules, one installed in each chassis, connected by an expansion cable set. Connectors on the ends of the expansion cable set (labeled A, B, C, and D) attach to connectors on the expansion modules (also labeled A, B, C, and D). Match the letter of the cable to the same letter of the connector. Figure 1 shows a typical two chassis PLC-3 system.

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Figure 1
Two Chassis PLC-3 System



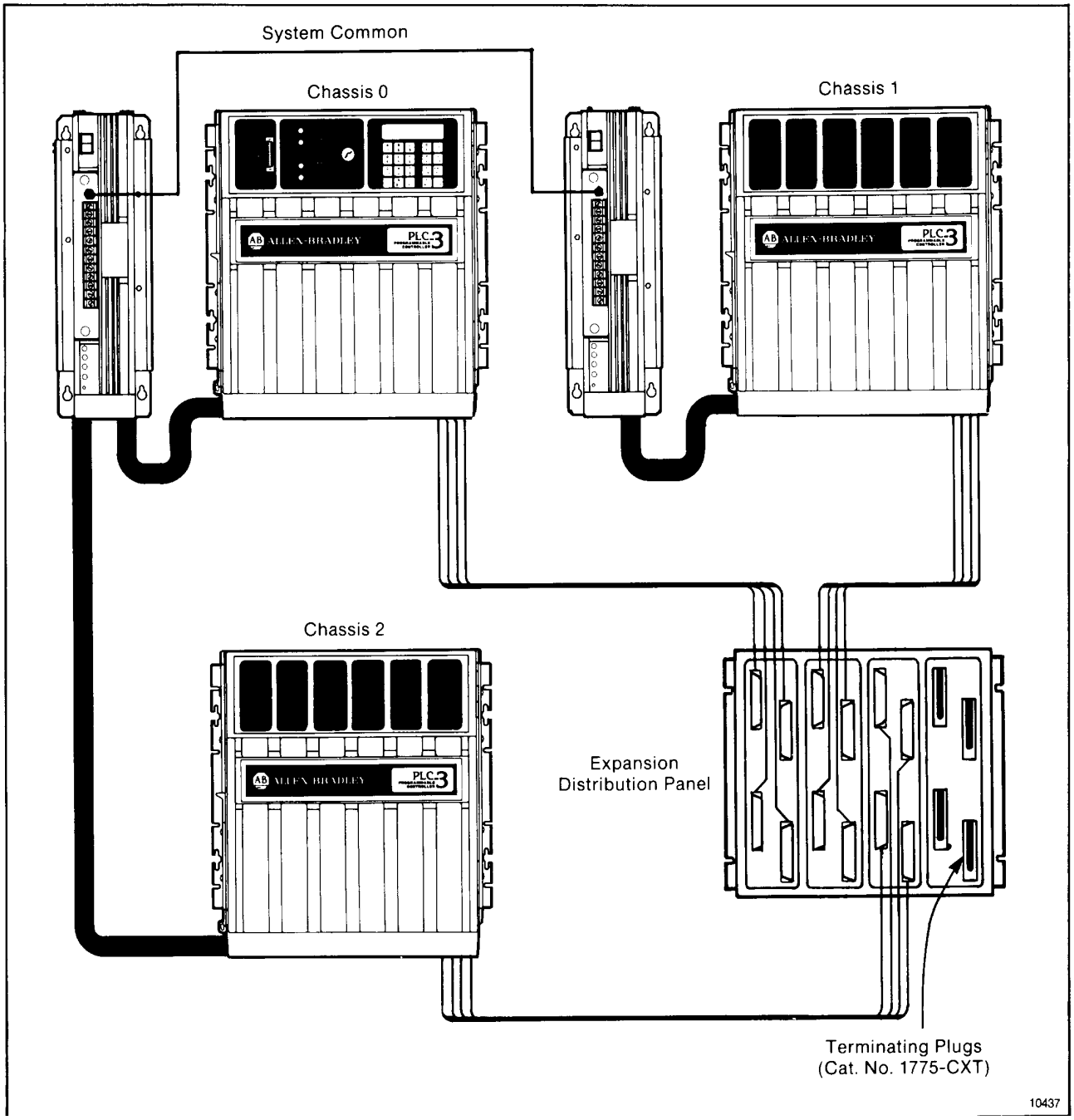
Note: The 1775-S4A I/O Scanner must be in the main chassis to interface with the front panel. The thumbwheel switch should be set to number 1.

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Three and four chassis PLC-3 systems require an expansion module installed in each chassis, an expansion distribution panel, and one expansion cable set per chassis. One end of each expansion cable set is connected to an expansion module in the same manner as in a two chassis system. The other end is connected to the expansion distribution panel. Figure 2 shows a three chassis system, figure 3 shows a four chassis system.

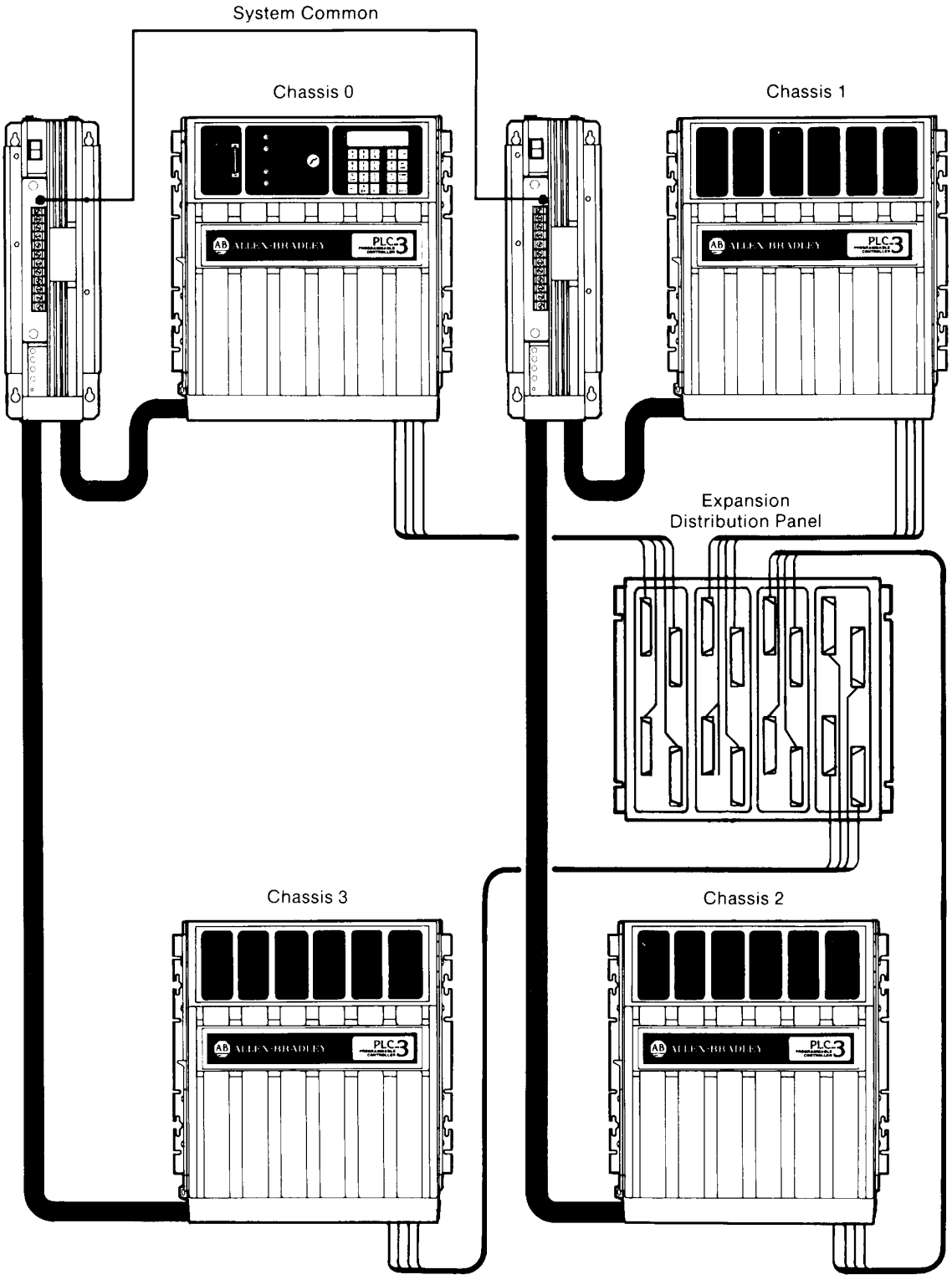
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Figure 2
Three Chassis PLC-3 System



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Figure 3
Four Chassis PLC-3 System



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Since the 1775-P1 power supply can deliver only enough current for two full chassis, three and four chassis systems require two 1775-P1 power supplies. Connect the “system common” studs on the two power supplies together with either 1 inch metal braid wire or 8 AWG wire.

WARNING: In three chassis systems, chassis 0 and chassis 2 must use the same power supply. In four chassis systems, chassis 0 and chassis 3 must use the same power supply. Failure to connect the power supplies in this manner could result in unpredictable operation, causing equipment damage and/or injury to personnel.

Chassis Mounting Kit

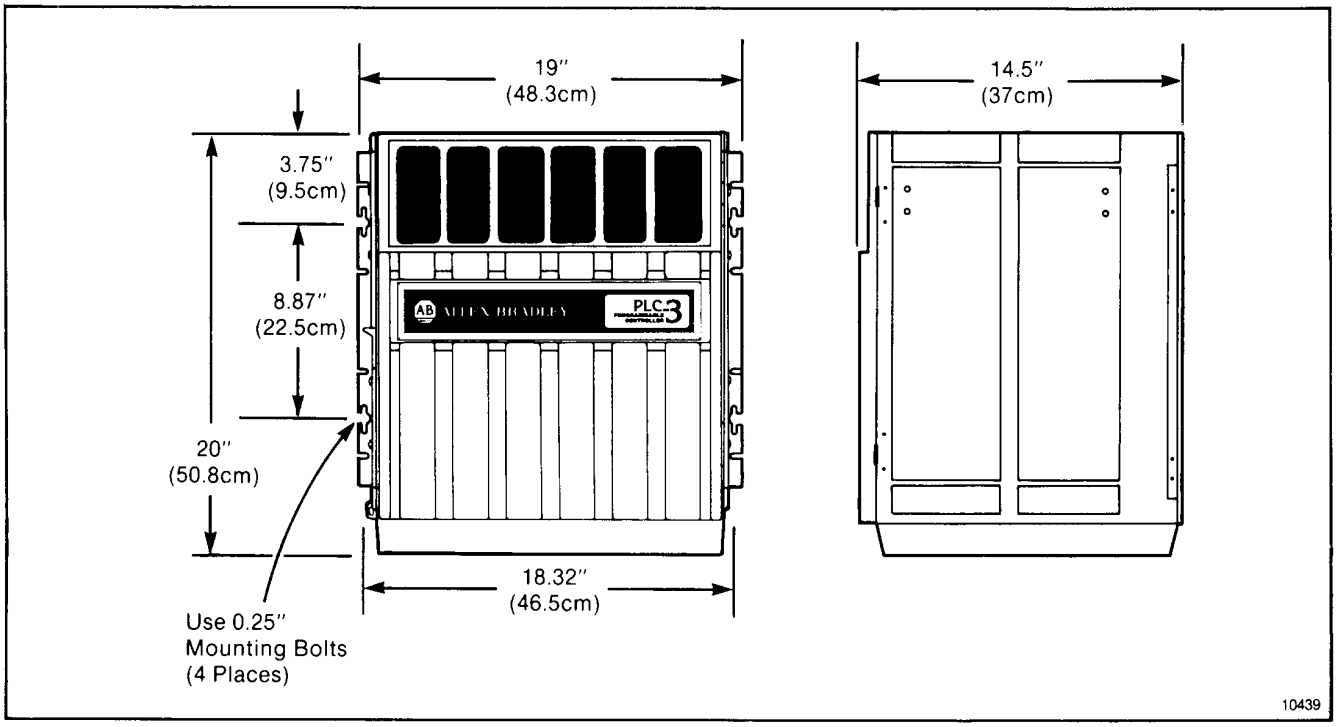
Expansion chassis mounting dimensions are shown in figure 4, and expansion distribution panel mounting dimensions are shown in figure 5. For rack mounting of the chassis, order chassis 19-inch Rack Mounting Kit (cat. no. 1775-XA). The rack mounting kit includes:

- Mounting brackets
- Hardware for mounting the brackets to the chassis
- Hardware for mounting the brackets to the mounting rails

Figure 6 shows the location of the mounting brackets.

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Figure 4
Expansion Chassis Mounting Dimensions



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Figure 5
Expansion Distribution Panel Mounting Dimensions

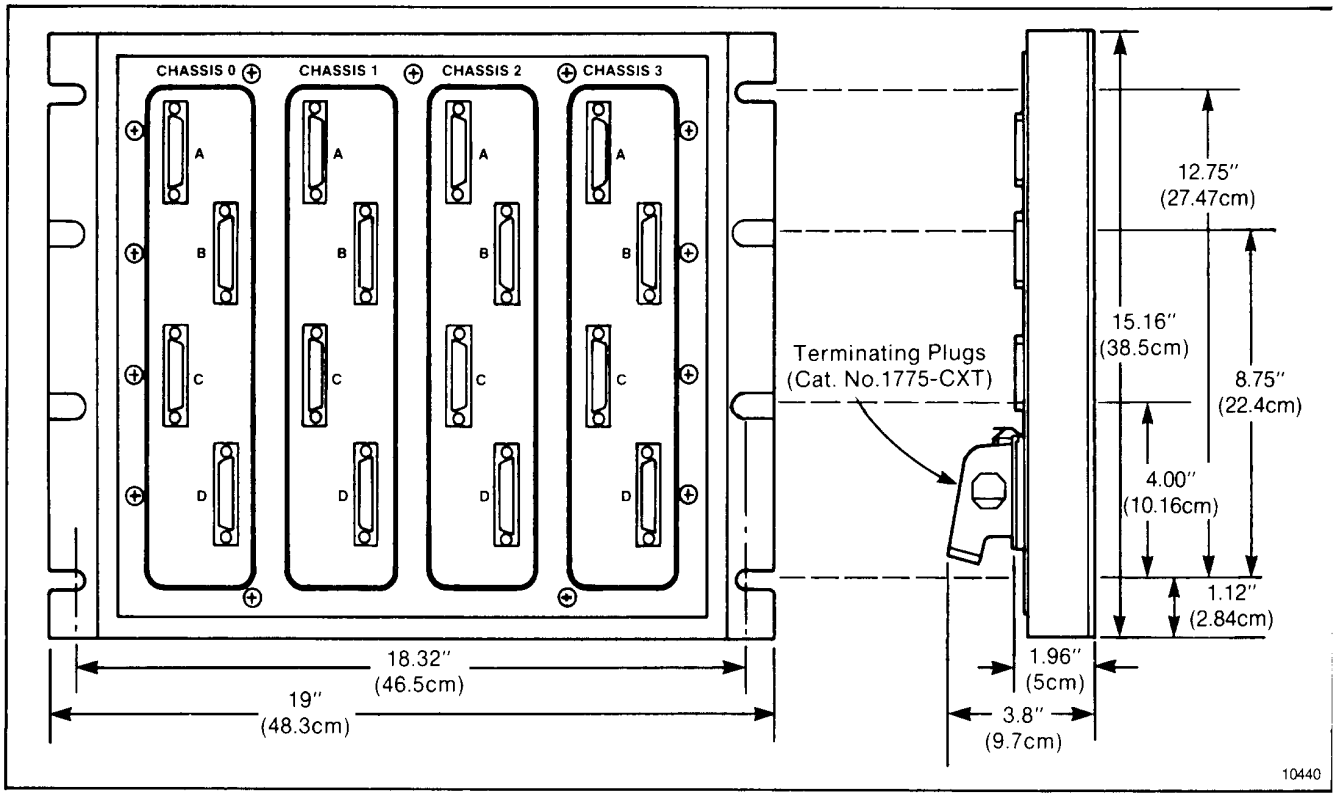
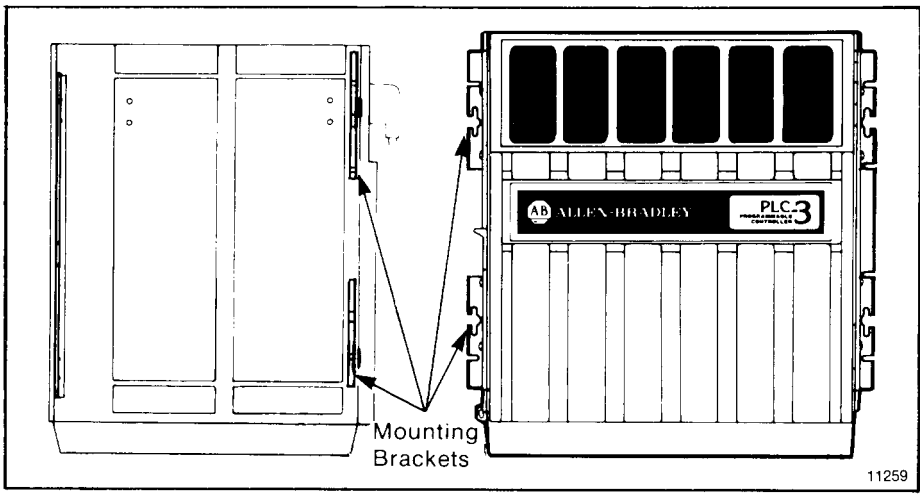


Figure 6
Location of Mounting Brackets



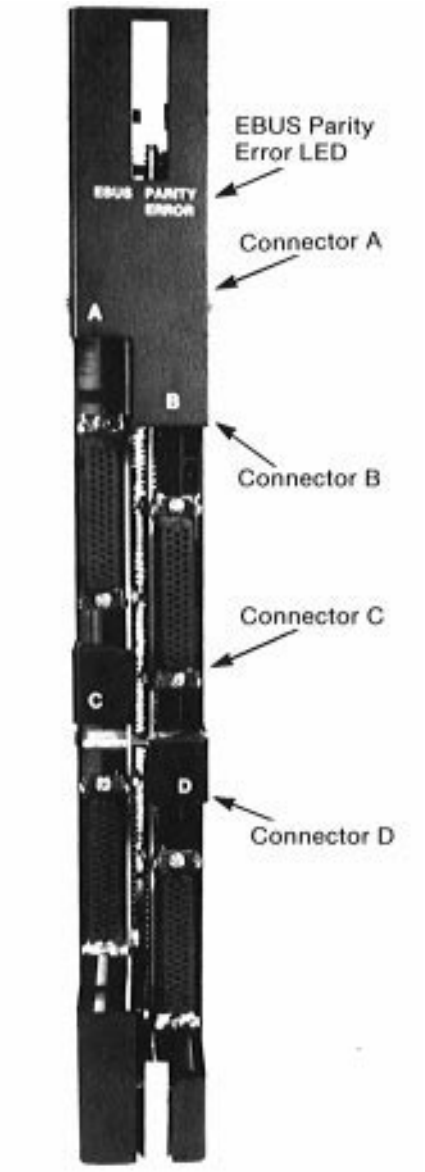
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PLC-3 Expansion Module

Figure 7 shows a front view of this expansion module.

The PLC-3 expansion module occupies one slot in a PLC-3 main chassis or expansion chassis. Four 50-pin connectors, located on the front edge of the expansion module, provide access to the expansion bus (EBUS). The expansion bus is a set of cables which form the communication link between different chassis in a PLC-3 system.

Figure 7
PLC-3 Expansion Module



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On the front of this module there is a red LED indicator labeled EBUS PARITY ERROR. This indicator, when illuminated, tells you that a parity error has occurred during a transmission between any 1775-LX expansion modules. The module will continue to operate when the LED is on. Cycling power to the processor should clear the EBUS PARITY ERROR indicator.

Module Placement

The PLC-3 expansion chassis provides six module slots with free flow convection cooling. Figure 1 illustrates typical module placement for optimum performance in a two chassis system. However, virtually any module will operate in any slot.

PLC-3 Expansion Distribution Panel

The expansion distribution panel is used for three and four chassis PLC-3 systems. It can be mounted in a 19 inch rack. Sixteen 50-pin connectors on the distribution panel connect to the expansion cable set, and in three chassis systems, to the terminators. There are no terminators needed for a two or four chassis system.

PLC-3 Expansion Cable Set

A PLC-3 expansion cable set consists of four 10-foot cables. Each cable has a 50-pin connector on each end which connects to either the expansion module or the expansion distribution panel.

PLC-3 Expansion System Terminators

These terminators are used in three chassis PLC-3 systems and are connected to Channel 3 of the 1775-CXD expansion distribution panel.

Related Publications

For additional information concerning the multi-chassis PLC-3 system, refer to the PLC-3 Programmable Controller Assembly and Installation Manual, publication 1775-800.

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Specifications

Expansion Chassis

Six Module Slots

Power Supply
(from 1775-P1 power supply)

- +5,+15,-15VDC, and control signals

Dimensions (W x H x D)

- 19x 20x14.5 inches (48.3 x 50.8 x 37cm)

Weight (without modules)

- 40 lbs (18kg)

Mounting

- Panel
- Rack

Expansion Module

Single Slot

Power Supply
(from 1775-P1 power supply via chassis backplane)

- +5V and -15V DC

Backplane Current
(includes current to drive the expansion distribution panel)

- 5A from 5V DC circuit
- 80mA from -15V DC circuit

Weight

- 5.5 lbs (2.5 kg)

Expansion Distribution Panel

Dimensions (W x H x D)

- 19x15x1.5 inches (48.3 x 38.1x 3.81 cm)

Weight

- 8.5 lbs (3.8 kg)

System Environmental Conditions

- Operational Temperature:
  32° to 140°F (0° to 60°C)
- Storage Temperature:
  -40° to 185°F (-40° to 85°C)
- Humidity:
  5% to 95% (without condensation)

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Publication 1775-2.10 — December, 1983
Supersedes Publication 1775-917 Dated December, 1983

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