MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

ALLEN-BRADLEY

1746-A4

FOUR SLOT MODULAR CHASSIS

Used with the applicable Allen Bradley SLC 500 configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Official Allen-Bradley document: 1746-A4.pdf

Installation Instructions

SLC 500™ Modular Chassis

(Catalog Numbers 1746-A4, -A7, -A10, and -A13 Series B)

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Publication 1746-IN016C-MU-P - December 2003

Installation Instructions

SLC 500™ Modular Chassis

(Catalog Numbers 1746-A4, -A7, -A10, and -A13 Series B)

English Section

What's in this Publication

Use this publication as a guide when installing an SLC 500 modular chassis.

Installation

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For additional installation information, see the *SLC 500 Modular Style User Manual*, publication 1747-UM011.

Publication 1746-IN016C-MU-P - December 2003

Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of these products 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. In no event will Rockwell Automation be responsible or liable for indirect or consequential damage resulting from the use or application of these products.

Any illustrations, charts, sample programs, and layout examples shown in this publication are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Rockwell Automation 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 Rockwell Automation 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 publication, notes may be used to make you aware of safety considerations. The following annotations and their accompanying statements help you to identify a potential hazard, avoid a potential hazard, and recognize the consequences of a potential hazard:

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.
ATTENTION 	Identifies information about practices or circumstances that can 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.

Prepare for Installation

Make sure you have these items.

M4 or M5 (#10 or #12) Hardware

- phillips screw and star washer (or SEM screw — phillips screw with attached star washer) for chassis mounting tabs

This chassis:	Has:
1746-A4	4 mounting tabs
1746-A7	4 mounting tabs
1746-A10	6 mounting tabs
1746-A13	8 mounting tabs

- phillips screwdriver
- drill

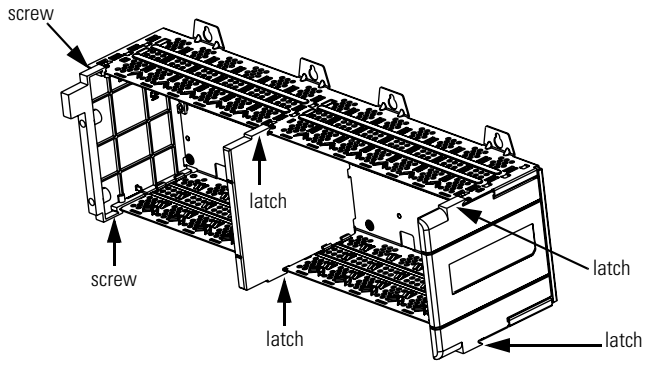
Documentation

For your:

- processor or I/O adapter module
- power supply
- communication modules and/or I/O modules

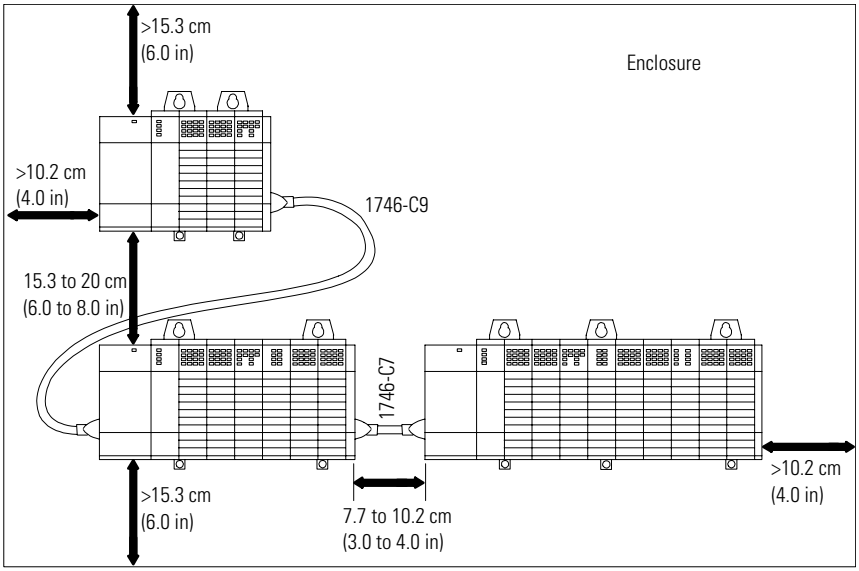
Installation Note

The power supply support panel (left end panel) has screws as indicated in the illustration below. The center and right end panels are held in position by a molded latch and do not require screws.



Allow Sufficient Mounting Space

IMPORTANT Make sure you meet these minimum spacing requirements. Up to three SLC chassis can be connected (for a maximum of 30 I/O slots).



IMPORTANT When vertically connecting two 1746-A13 chassis with a 1746-C9 cable, the space cannot be greater than 15.3 cm (6.0 in) for the cable to reach from chassis to chassis.

For dimensions of:	See page:
left side of all chassis	75
1746-A4, -A7	75
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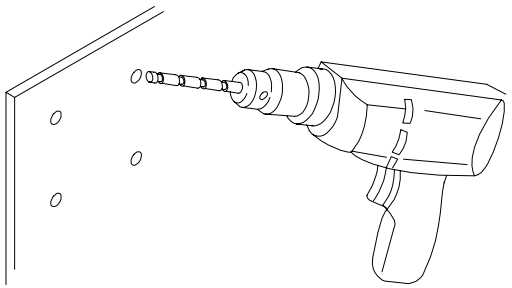
Install Your Chassis

1. Drill holes in the back panel of the enclosure for chassis mounting tabs.

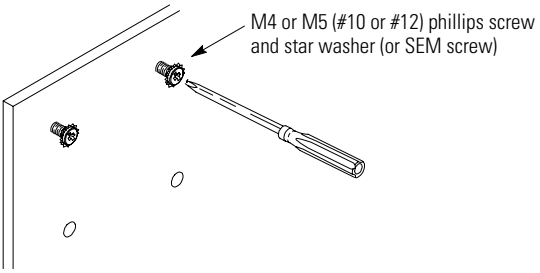
ATTENTION



Be careful of metal chips when drilling mounting holes for the SLC chassis. Do not drill holes above an SLC chassis if a processor and I/O modules are installed.



2. Install the hardware for the top mounting tabs.



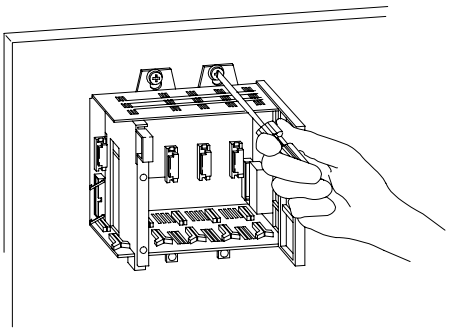
TIP

Scrape paint off the back panel for an electrical connection between the chassis and back panel.

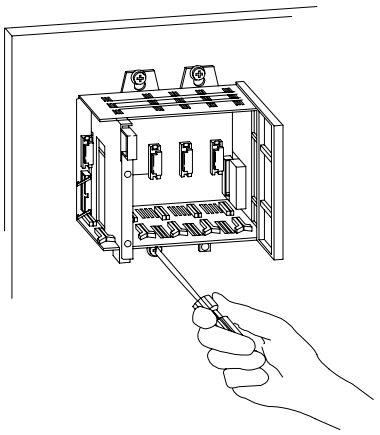
3. Slide the chassis over the installed hardware and tighten the screws.

ATTENTION

If the chassis mounting tabs do not lay flat before the screws are tightened, use additional washers as shims so that the chassis will not be warped by tightening the screws. Warping a chassis could damage the backplane and cause poor connections.



4. Leaving far-left and far-right tabs open for grounding, install the remaining tab hardware (for a four-slot chassis, leave both tabs open).

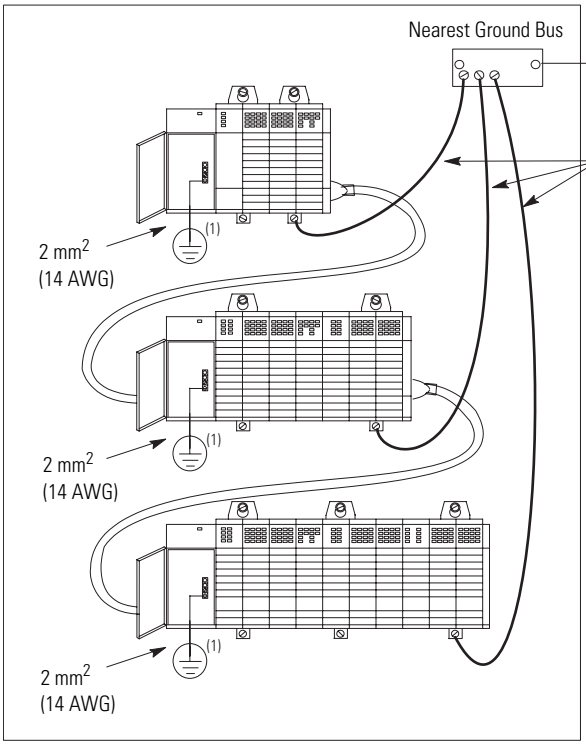


Ground Your Chassis

To properly ground your I/O chassis:	See page:
verify grounding configuration	9
install a central ground bus	10
connect equipment grounding conductor	10
connect equipment grounding conductor to ground bus	11
connect ground bus to grounding-electrode system	11

Verify Grounding Configuration

This figure shows you how to run ground connections from the chassis to the ground bus. Use a ground bus because it reduces the electrical resistance at the connection.



Preferred Grounding Method.

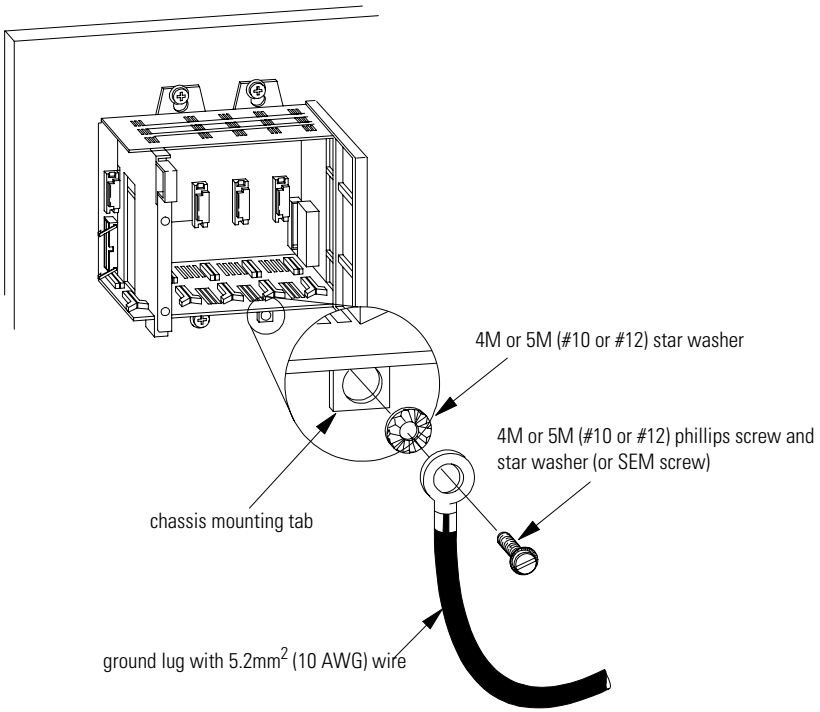
TIP (1) Keep wire length as short as possible.

Install a Central Ground Bus

Each enclosure must contain a central ground bus. The ground bus is the common connection for each chassis within the enclosure and the enclosure itself. If you have not already installed a central ground bus, see the *Industrial Automation Wiring and Grounding Guidelines*, publication 1770-4.1.

Connect Equipment Grounding Conductor

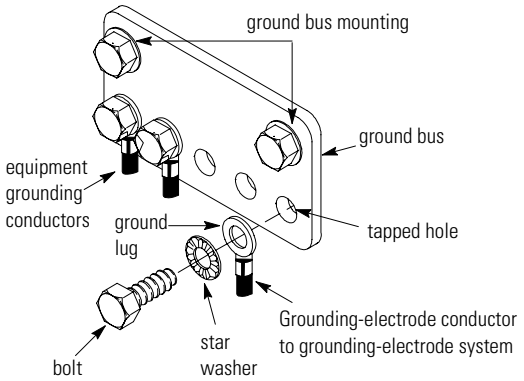
IMPORTANT Use the following information, along with the installation manual for your programmable controller, to functionally ground the chassis.



TIP Keep wire length as short as possible.

Connect Equipment Grounding Conductor to Ground Bus

Connect an equipment grounding conductor directly from each chassis to an individual bolt on the ground bus.



- use 2.54 cm (1in) copper braid or **5.2 mm2 (10 AWG)** copper wire to connect each chassis, the enclosure, and a central ground bus mounted on the back-panel
- use a steel enclosure to guard against electromagnetic interference (EMI)
- make sure the enclosure door viewing window is a laminated screen or a conductive optical substrate (to block EMI)
- install a bonding wire for electrical contact between the door and the enclosure; do not rely on the hinge

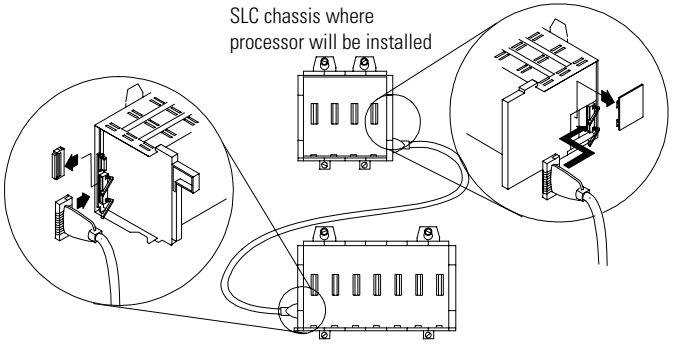
IMPORTANT Do not lay one ground lug directly on top of the other; this type of connection can become loose **due to compression** of the metal lugs. Place the first lug between a star washer and a nut with a captive star washer. After tightening the nut, place the second lug between the first nut and a second nut with a captive star washer.

Connect Ground Bus to Grounding-Electrode System

The grounding-electrode system is at earth-ground potential and is the central ground for all electrical equipment and ac power within any facility. Use a grounding-electrode conductor to connect the ground bus to the grounding-electrode system. Use at **minimum 8.3 mm^2 (8 AWG)** copper wire for the grounding-electrode conductor to guard against EMI. The National Electrical Code specifies safety requirements for the grounding-electrode conductor.

Install the Chassis Interconnect Cable (optional)

To connect up to three chassis together (for a maximum of 30 I/O slots), install the chassis interconnect cable before attaching your power supply.



Install Your I/O Modules and Attach Your Power Supply

Use the installation instructions/user manuals for your modules to install them into the chassis. Use the installation instructions for your power supply to attach it to your chassis.

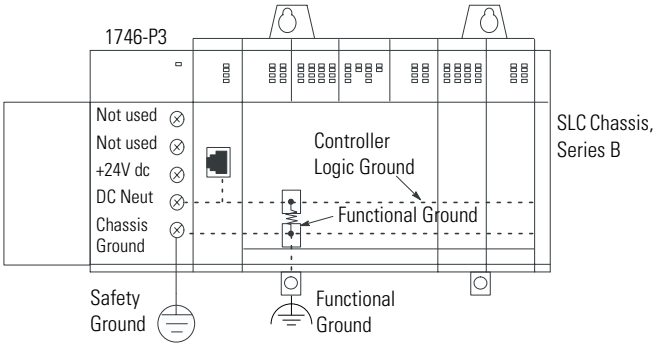
ATTENTION



- Keep the connector plug on the left side-connector of the chassis if you are not connecting chassis together.
- Remove the protective label from the top of the power supply before applying power.

IMPORTANT

Series B chassis have a 1M Ω resistor between logic ground and chassis ground. When using a 1746-P3 power supply, follow the grounding instructions provided with the power supply to avoid unwanted potentials across the logic ground of the SLC processor.



Specifications

SLC Chassis, Series B			
1746-A4	**1746-A7**	**1746-A10**	**1746-A13**
dimensions (with tabs) -W x H x D			
17.7 x 17.1 x 14.5 cm (7.1 x 6.8 x 5.8 in)	28.2 x 17.1 x 14.5 cm (11.3 x 6.8 x 5.8 in)	39.7 x 17.1 x 14.5 cm (15.9 x 6.8 x 5.8 in)	50.2 x 17.1 x 14.5 cm (20.1 x 6.8 x 5.8 in)
approximate weight (without modules)			
0.75 kg (1.7 lbs)	1.1 kg (2.4 lbs)	1.45 kg (3.2 lbs)	1.9 kg (4.2 lbs)
maximum backplane current			
5.1V dc @ 10A; 24V dc @ 2.88A	5.1V dc @ 10A; 24V dc @ 2.88A	5.1V dc @ 10A; 24V dc @ 2.88A	5.1V dc @ 10A; 24V dc @ 2.88A
module slots			
4	7	10	13
type of mount			
panel mount	panel mount	panel mount	panel mount
operating conditions			
operating temperature: 0°C to +60°C (+32°F to +140°F) storage temperature: -40°C to +85°C (-40°F to +185°F) relative humidity: 5 to 95% (without condensation)			

Specifications (continued)

certification

UL Listed Industrial Control Equipment, certified for US and Canada
UL Listed for Class 1 Division 2, Group A, B, C, D Hazardous Locations, certified for US and Canada

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
EN61000-6-4, Industrial Emissions

Australian Radiocommunications Act, compliant with :
AS/NZS 2064, Industrial Emissions
N223

Hazardous Location Considerations

This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D, or non-hazardous locations only. The following WARNING statement applies to use in hazardous locations.

WARNING



EXPLOSION HAZARD

- Substitution of components may impair suitability for Class I, Division 2.
- Do not replace components or disconnect equipment unless power has been switched off or the area is known to be non-hazardous.
- Do not connect or disconnect components unless power has been switched off or the area is known to be non-hazardous.
- All wiring must comply with N.E.C. article 501-4(b).

Notice d'installation

Châssis modulaire SLC 500™

(Références 1746-A4, -A7, -A10 et -A13 série B)

Section française

Contenu de cette publication

Utilisez cette publication comme guide pour l'installation d'un châssis modulaire SLC 500.

Installation

A propos de ..... Voir page

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Installation des modules d'E/S et raccordement de l'alimentation 24

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Dimensions de montage 75

Pour de plus amples informations sur l'installation, consultez la publication 1747-UM011, *SLC 500 Modular Style User Manual*.

Publication 1746-IN016C-MU-P - Décembre 2003

Informations importantes destinées à l'utilisateur

En raison de la diversité des utilisations des produits décrits dans le présent manuel, les personnes qui en sont responsables doivent s'assurer que toutes les mesures ont été prises pour que l'application et l'utilisation des produits soient conformes aux exigences de performance et de sécurité, ainsi qu'aux lois, règlements, codes et normes en vigueur. La société Rockwell Automation ne saurait en aucun cas être tenue pour responsable des dommages indirects ou résultant de l'utilisation ou de l'application de ces produits.

Les illustrations, schémas et exemples de programmes contenus dans cette publication sont présentés à titre indicatif seulement. En raison du nombre important de variables et d'impératifs associés à chaque installation, la société Rockwell Automation ne saurait être tenue pour responsable ni être redevable (y compris en matière de propriété intellectuelle) des suites d'utilisation réelle basée sur les exemples et schémas présentés dans cette publication.

La publication SGI-1.1, *Safety Guidelines for the Application, Installation and Maintenance of Solid-State Control* (disponible auprès de votre agence commerciale Rockwell Automation), décrit certaines différences importantes entre les équipements électroniques et les équipements électromagnétiques, qui devront être prises en compte lors de l'application de ces produits, comme indiqué dans la présente publication.

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AVERTISSEMENT 	Actions ou situations risquant de provoquer une explosion dans un environnement dangereux et d'entraîner des blessures pouvant être mortelles, des dégâts matériels ou des pertes financières.
ATTENTION 	Actions ou situations risquant d'entraîner des blessures pouvant être mortelles, des dégâts matériels ou des pertes financières.
IMPORTANT	Informations particulièrement importantes dans le cadre de l'utilisation du produit.