



ControlLogix Chassis-Series B

Catalog Numbers 1756-A4, -A7, -A10, -A13, -A17

Use this publication as a guide when installing a ControlLogix™ chassis.

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The ControlLogix system is a modular system that requires a 1756 I/O chassis to contain the various modules. Chassis are available with 4, 7, 10, 13, and 17 slots. You can place any module into any slot.

The backplane provides a high-speed communication path between modules. Multiple controller modules on the backplane can pass messages between one another. With multiple communication interface modules on the backplane, a message can be sent from across a link into a port on one module, routed across the backplane and out another module's port, and sent across another link to its ultimate destination.

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.ab.com/manuals/gi>) 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 we use notes to make you aware of safety considerations.

<p>WARNING</p> 	<p>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.</p>
<p>IMPORTANT</p>	<p>Identifies information that is critical for successful application and understanding of the product.</p>
<p>ATTENTION</p> 	<p>Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you:</p> <ul style="list-style-type: none"> • identify a hazard • avoid a hazard • recognize the consequence
<p>SHOCK HAZARD</p> 	<p>Labels may be located on or inside the drive to alert people that dangerous voltage may be present.</p>
<p>BURN HAZARD</p> 	<p>Labels may be located on or inside the drive to alert people that surfaces may be dangerous temperatures.</p>

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.

NOTE: 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.

Prevent 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.
-

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.

The LCIE (Laboratoire Central des Industries Electriques) 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. 28 682 010.

Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 50021.



IMPORTANT

When using this product, also consider the following:

- 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.
-

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 :
<p>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.</p>	<p>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.</p>

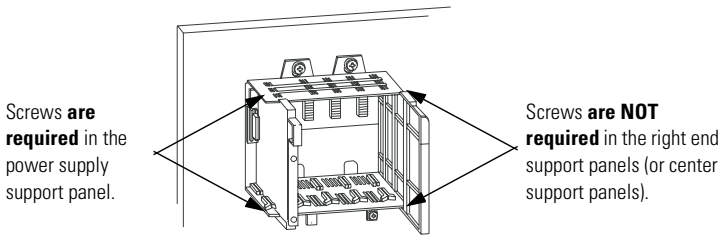
The following information applies when operating this equipment in hazardous locations:		Informations sur l'utilisation de cet équipement en environnements dangereux :	
<p>WARNING</p> 	<p>EXPLOSION HAZARD</p> <ul style="list-style-type: none"> • Do not disconnect equipment unless power has been removed 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. 	<p>AVERTISSEMENT</p> 	<p>RISQUE D'EXPLOSION</p> <ul style="list-style-type: none"> • 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 I, Division 2. • S'assurer que l'environnement est classé non dangereux avant de changer les piles.

Manufacturing Note

Due to a change in Rockwell Automation manufacturing processes only the power supply support panel requires screws in the top and bottom. Molded plastic latches hold center support and right end support panels on ControlLogix chassis.

There are screw holes in the center and right end locations, but screws are **NOT** needed in these locations. For more information, see Figure 1.

Figure 1



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Prepare for Installation

Make sure you have these items.

- M4 or M5 (#10 or #12) mounting tab screws and washers
- drill
- documentation for ControlLogix modules that will be placed in the chassis
- phillips screwdriver

For each:	You need:
top mounting tab	<ul style="list-style-type: none"> • 1 phillips screw • 1 flat washer • 1 split lock-washer
bottom mounting tab	<ul style="list-style-type: none"> • 1 phillips screw • 1 star washer or 1 SEM screw⁽¹⁾

⁽¹⁾ Phillips screw with attached star washer

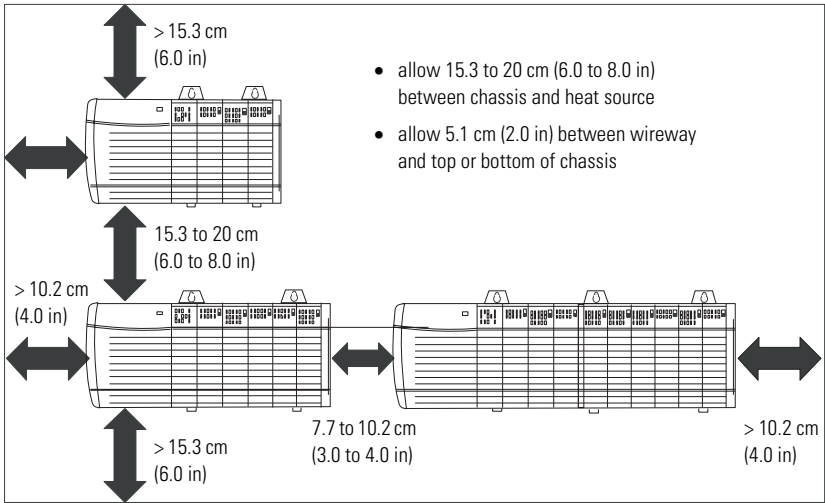
This chassis	Uses this number of mounting tabs	
1756-A4, -A7	2 top	2 bottom
1756-A10	3 top	3 bottom
1756-A13	4 top	4 bottom
1756-A17	5 top	5 bottom

Allow Sufficient Mounting Space

IMPORTANT

Make sure you meet these **minimum** spacing requirements.

Figure 2



20230a-M

Minimum Cabinet Size

IMPORTANT

To meet the UL/CSA standards, the cabinet housing your ControlLogix chassis cannot be smaller than these **minimum** cabinet size requirements.

Chassis	Minimum Cabinet Size (W x H x D)
1756-A4	50.7 x 50.7 x 20.3 cm (20 x 20 x 8 in)
1756-A7	50.7 x 70 x 20.3 cm (20 x 24 x 8 in)
1756-A10	76.2 x 50.7 x 20.3 cm (30 x 20 x 8 in)
1756-A13	76.2 x 70 x 20.3 cm (30 x 24 x 8 in)
1756-A17	82.2 x 76.2 x 20.3 cm (36 x 30 x 8 in)

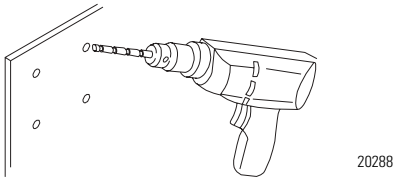
Install Your Chassis

ATTENTION

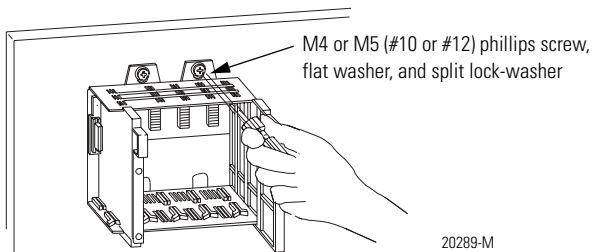
Do not drill holes for a chassis above an installed chassis. Metal chips from drilling can damage the backplane and cause intermittent operation.

1. Drill holes in the back panel of the enclosure for chassis mounting tabs. Refer to Use Mounting Dimensions on page 15, for assistance in hole placement.

Figure 3



2. Scrape paint off the back panel for an electrical connection between the chassis and back panel.
3. Hold the chassis in place against the holes.
4. Install the hardware for the top mounting tabs and tighten.



ATTENTION

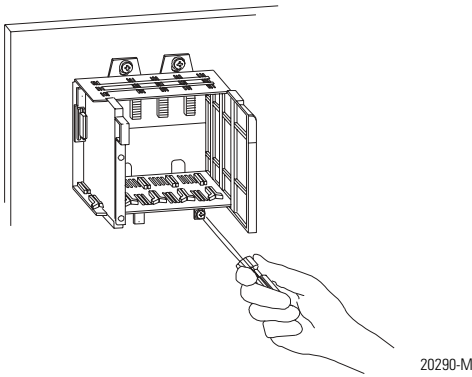


If the chassis mounting tabs do not lay flat before the screws are tightened, use additional washers as shims so the chassis is not warped by tightening the screws.

Warping a chassis could damage the backplane and cause intermittent operation.

5. Leaving the far-left bottom tab open for functional ground, install the remaining tab screw(s).

Figure 4



20290-M

This completes the installation your ControlLogix chassis. The following sections describe how to ground your chassis.

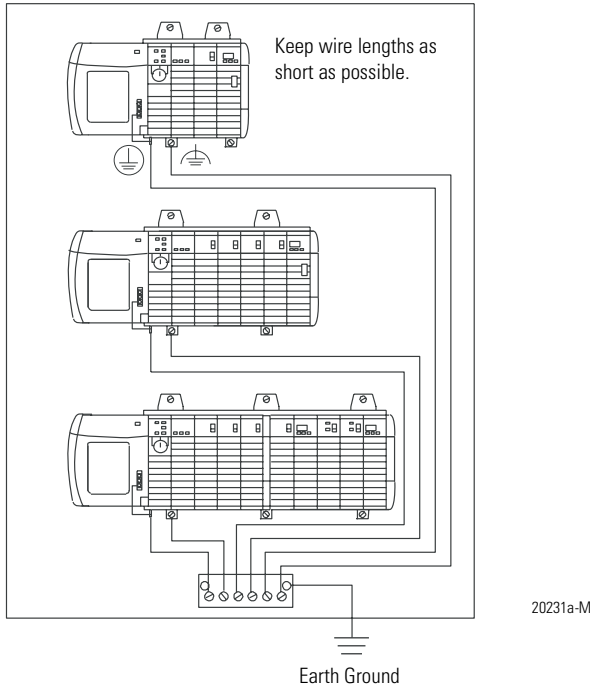
Ground Your Chassis

To properly ground your I/O chassis:	See page:
Verify Grounding Configuration	8
Install a Central Ground Bus	9
Connect Functional Ground	9
Connect Equipment Protective Earth Ground	10
Connect the Equipment Grounding Conductors to the Ground Bus	10
Connect Ground Bus to Grounding-Electrode System	11

Verify Grounding Configuration

This figure shows you how to run functional and equipment protective earth ground connections from the chassis and power supply to the ground bus. Using a ground bus is recommended because it reduces the electrical resistance at the connection.

Figure 5



For more information on installing and connecting protective earth ground to the ControlLogix power supply see each supply's installation instructions. There are multiple ControlLogix power supplies available—the supplies are described in the ControlLogix Selection Guide, publication 1756-SG001.

Install a Central Ground Bus

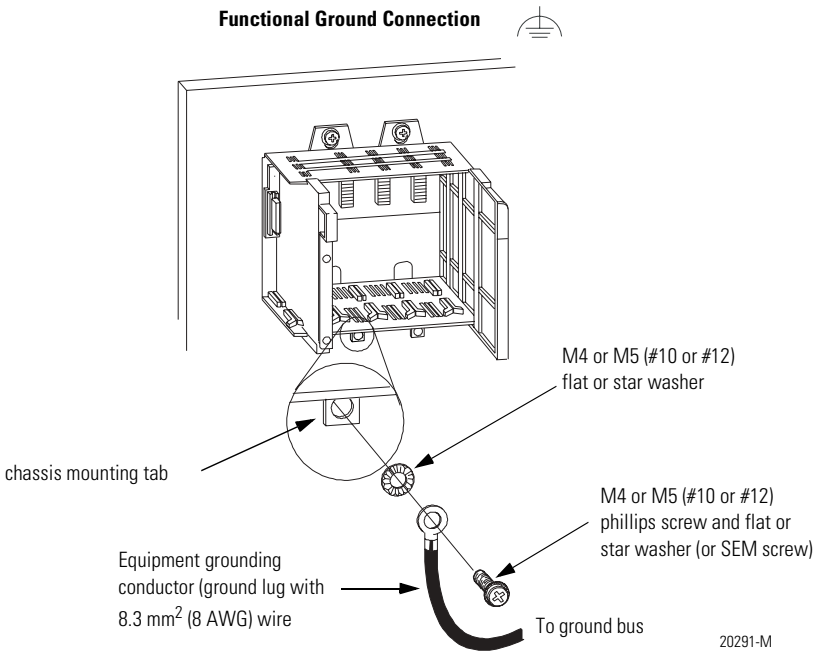
Each enclosure must contain a central ground bus. The ground bus is the common connection for each chassis within the enclosure and the enclosure itself.

For more information on installing a central ground bus, refer to the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1

Connect Functional Ground

Keep wire lengths as short as possible, and use the following figure to connect functional ground to the chassis.

Figure 6



Connect Equipment Protective Earth Ground

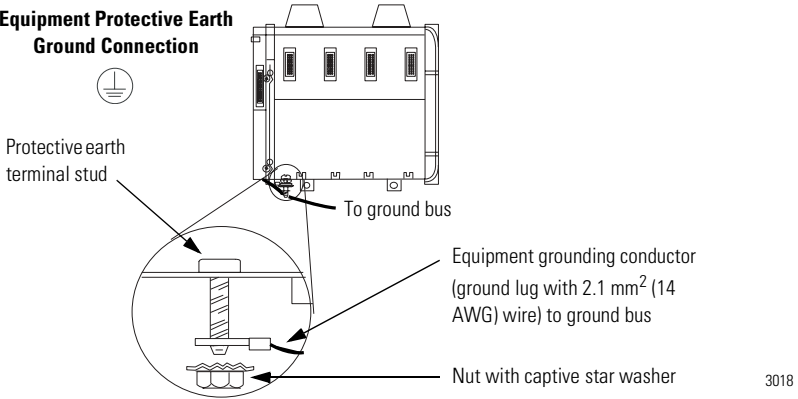
Use Figure 7 to connect equipment protective earth ground to the chassis.

IMPORTANT

Tighten the nut on the equipment protective earth ground terminal stud to a torque of 12 inch-pounds.

Figure 7

Equipment Protective Earth Ground Connection



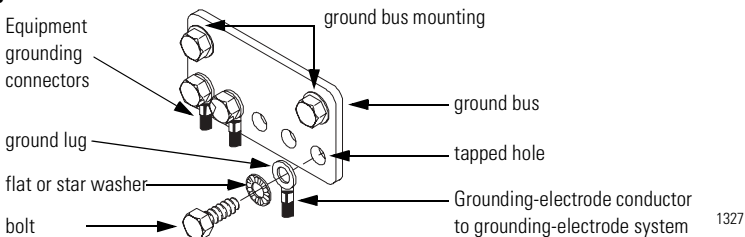
Connect the Equipment Grounding Conductors to the Ground Bus

Connect the equipment grounding conductors (functional and equipment protective earth ground) directly from each chassis to an individual bolt on the ground bus.

IMPORTANT

Do not lay one ground lug directly on top of the other; this 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.

Figure 8



Functional Ground

- use 2.54 cm (1 in) thick copper braid or 8.3 mm² (8 AWG) copper wire to connect equipment grounding conductor for 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)

Equipment Protective Earth Ground

- use a 2.1 mm² (14 AWG) copper wire for the equipment grounding conductors
- install a bonding wire for electrical contact between the door and the enclosure; do not rely on the hinge.

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 mm² (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.

Attach Your Power Supply and Install Your Modules

Use the installation instructions/user manuals for your ControlLogix modules to install them in the chassis.

Use the installation instructions for your ControlLogix power supply to attach it to your chassis. To see the power supplies available for use in a ControlLogix system, see the ControlLogix Selection Guide, publication 1756-SG001.

ControlLogix documentation is available at:

<http://www.ab.com/manuals/cl>

<http://www.theautomationbookstore.com>

Use Mounting Dimensions

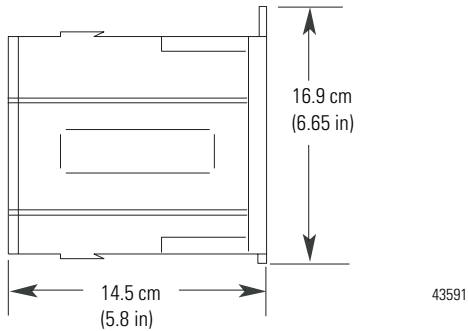
Use the dimension shown below to mount your chassis.

IMPORTANT

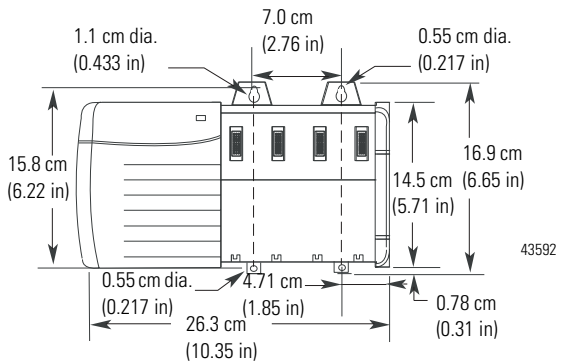
The Series B Chassis is compatible with the 1756-PA72, -PB72, -PA75, -PB75, -PA75R and -PB75R power supplies.

Figure 9

Right-side view of all chassis



1756-A4 with power supply installed



1756-A7 with power supply installed

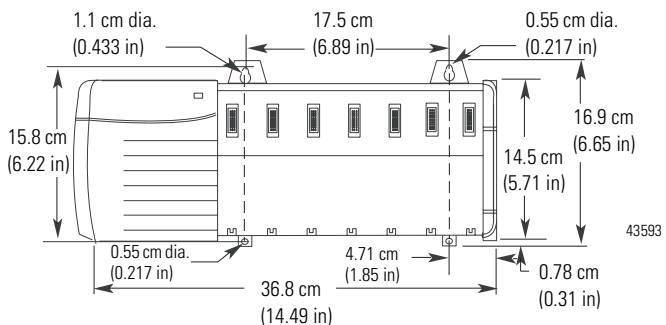
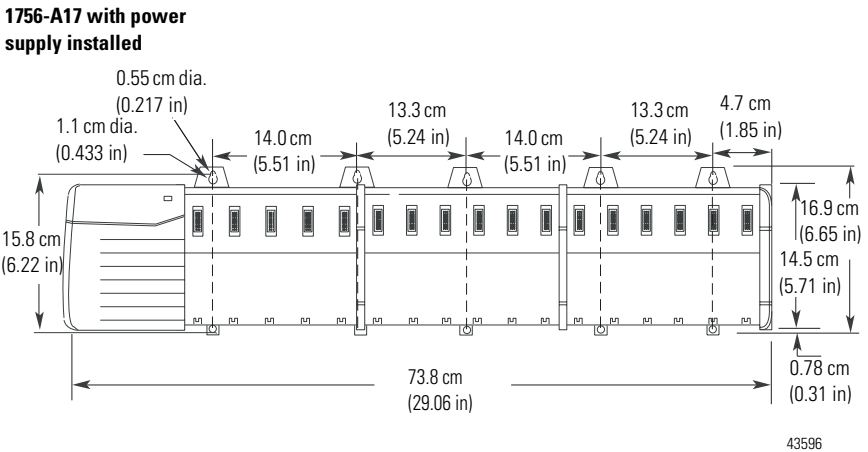
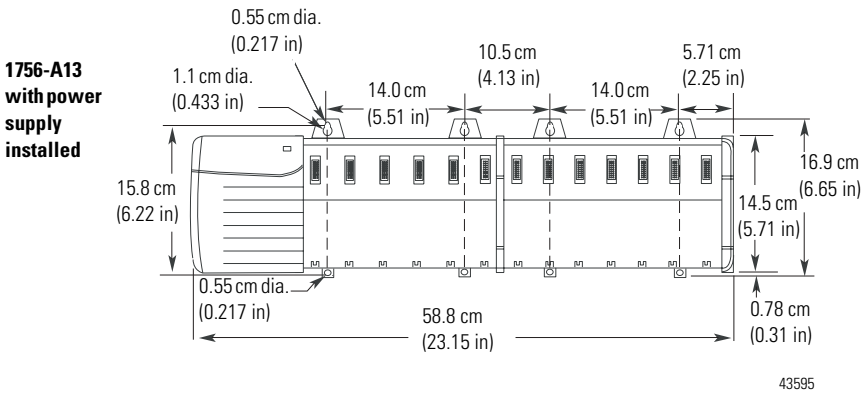
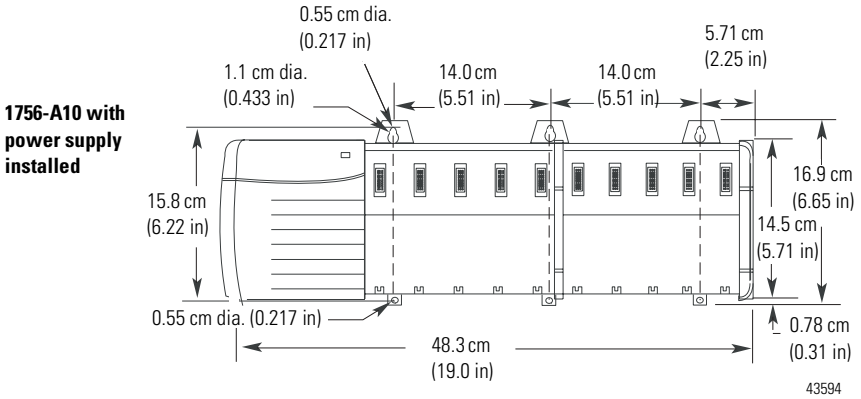


Figure 10



Specifications

	1756-A4	1756-A7	1756-A10
dimensions (with tabs) W x H x D	26.3 x 16.9 x 14.5 cm (10.35 x 6.65 x 5.71 in)	36.8 x 16.9 x 14.5 cm (14.49 x 6.65 x 5.71 in)	48.3 x 16.9 x 14.5 cm (19.0 x 6.65 x 5.71 in)
	1756-A13	1756-A17	
	58.8 x 16.9 x 14.5 cm (23.15 x 6.65 x 5.71 in)	73.8 x 16.9 x 14.5 cm (29.06 x 6.65 x 5.71 in)	
	1756-A4	1756-A7	1756-A10
minimum cabinet size W x H x D	50.7 x 50.7 x 20.3 cm (20 x 20 x 8 in)	50.7 x 70 x 20.3 cm (20 x 24 x 8 in)	76.2 x 50.7 x 20.3 cm (30 x 20 x 8 in)
	1756-A13	1756-A17	
	76.2 x 70 x 20.3 cm (30 x 24 x 8 in)	82.2 x 76.2 x 20.3 cm (36 x 30 x 8 in)	
	1756-A4	1756-A7	1756-A10
approximate weight (without modules)	0.75 kg (1.7 lbs)	1.1 kg (2.4 lbs)	1.45 kg (3.2 lbs)
	1756-A13	1756-A17	
	1.9 kg (4.2 lbs)	2.2 kg (4.8 lbs)	
module slots	1756-A4	1756-A7	1756-A10
	4	7	10
	1756-A13	1756-A17	
	13	17	
maximum backplane current (All chassis)		<u>chassis/slot</u>	
	5.1V dc	15 A/6 A	
	24V dc	2.8 A/2.8 A	
	3.3V dc	4 A/4 A	
type of mount (All chassis)	panel mount		
Environmental Conditions			
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): 0 to 60°C (32 to 140°F)		
Storage Temperature	IEC 60068-2-1 (Test Ab, Un-packaged Non-operating Cold), IEC 60068-2-2 (Test Bb, Un-packaged Non-operating Dry Heat), IEC 60068-2-14 (Test Na, Un-packaged Non-operating Thermal Shock): -40 to 85°C (-40 to 185°F)		

Relative Humidity	IEC 60068-2-30 (Test Db, Un-packaged Non-operating Damp Heat): 5 to 95% non-condensing	
Vibration	IEC 60068-2-6 (Test Fc, Operating): 5g @ 10-500Hz	
Operating Shock	IEC 60068-2-27 (Test Ea, Unpackaged Shock): 30g	
Non-operating Shock	IEC 60068-2-27 (Test Ea, Unpackaged Shock): 50g	
Emissions	CISPR 11: Group 1, Class A	
ESD Immunity	IEC 61000-4-2: 6kV contact discharges 8kV air discharges	
Radiated RF Immunity	IEC 61000-4-3: 10V/m with 1kHz sine-wave 80%AM from 30MHz to 2000MHz 10V/m with 200Hz 50% Pulse 100%AM at 900Mhz 10V/m with 200Hz 50% Pulse 100%AM at 1890Mhz	
EFT/B Immunity	IEC 61000-4-4: ±4kV at 2.5kHz on power ports	
Conducted RF Immunity	IEC 61000-4-6: 10Vrms with 1kHz sine-wave 80%AM from 150kHz to 80MHz	
Enclosure Type Rating	None (open-style)	
Certifications: (when product is marked)	UL	UL Listed Industrial Control Equipment
	CSA	CSA Certified Process Control Equipment
	CSA	CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations
	FM	FM Approved Equipment
	CE ⁽¹⁾	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 ⁽¹⁾	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions
	EEx ⁽¹⁾	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.

Rockwell Automation Support

Rockwell Automation provides technical information on the web to assist you in using our products. At <http://support.rockwellautomation.com>, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration and troubleshooting, we offer TechConnect Support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit <http://support.rockwellautomation.com>.

Installation Assistance

If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running:

United States	1.440.646.3223 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell tests all of our products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned:

United States	Contact your distributor. You must provide a Customer Support case number (see phone number above to obtain one) to your distributor in order to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for return procedure.

www.rockwellautomation.com

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