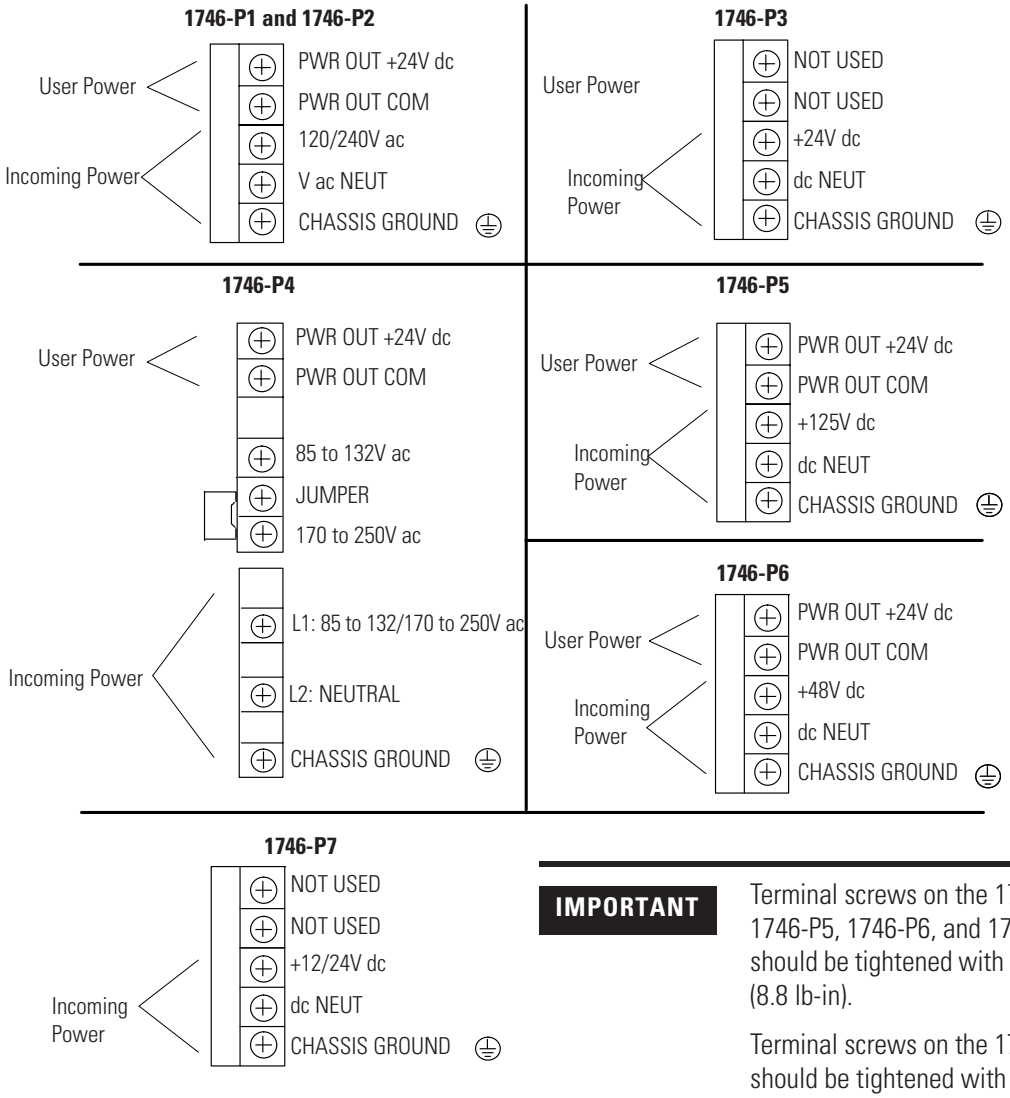
5.	Wire power to the power supply.	Reference
		Chapter 6 (Installing Your Hardware Components)

ATTENTION

Turn off incoming power before connecting wires. Failure to do so could cause injury to personnel and/or equipment.

Connect incoming power.



IMPORTANT

Terminal screws on the 1746-P1, 1746-P2, 1746-P3, 1746-P5, 1746-P6, and 1746-P7 power supplies should be tightened with a maximum torque of 1 Nm (8.8 lb-in).

Terminal screws on the 1746-P4 power supply should be tightened with a max torque of 0.8 Nm (7 lb-in).

Procedure

1. For each slot of the chassis that contains a module, list the slot number, the catalog number of the module, and its 5V and 24V maximum currents. Also include the power consumption of any peripheral devices that may be connected to the processor other than a DTAM or PIC device—the power consumption of these devices is accounted for in the power consumption of the processor.

Chassis Number		***1***	**Maximum Currents**	
Slot Number		**Cat. No.**	**at 5V dc**	**at 24V dc**
Slot	*0*	*1747-L511*	*0.090 A*	*0.000 A*
Slot	*1*	*1746-IV8*	*0.050 A*	*-*
Slot	*2*	*1746-OB8*	*0.135 A*	*-*
Slot	*3*	*1746-OA16*	*0.370 A*	*-*
Slot				
Slot				
Slot				
Slot				
Peripheral Device		*1747-AIC*	*-*	*0.085 A*
Peripheral Device				
2.Add the loading currents of all the system devices at 5 and 24V dc to determine the **Total Current**.			***0.645 A***	***0.085 A***

Chassis Number		**2**	**Maximum Currents**	
Slot Number		**Cat. No.**	**at 5V dc**	**at 24V dc**
Slot	*0*	*1747-L514*	*0.090 A*	*0.000 A*
Slot	*1*	*1746-OW16*	*0.170 A*	*0.180 A*
Slot	*2*	*1746-NO4I*	*0.055 A*	*0.195 A*
Slot	*3*	*1746-NO4I*	*0.055 A*	*0.195 A*
Slot	*4*	*1746-NO4I*	*0.055 A*	*0.195 A*
Slot	*5*	*1746-NO4I*	*0.055 A*	*0.195 A*
Slot	*6*	*1746-IO12*	*0.090 A*	*0.070 A*
Slot				
Peripheral Device		*1747-AIC*	*-*	*0.085 A*
Peripheral Device				
2.Add the loading currents of all the system devices at 5 and 24V dc to determine the **Total Current**.			***0.570 A***	***1.115 A***

3.For 1746-P4 power supplies, calculate the total power consumption of all system devices. If you are not using a 1746-P4 power supply, go to step 4.

Current		**Multiply by**	**= Watts**
Total Current at 5V dc	*0.645 A*	5V	*3.225 W*
Total Current at 24V dc	*0.085 A*	24V	*2.040 W*
User Current at 24V dc	*0.500 A*	24V	*12.00 W*
Add the Watts values to determine Total Power (cannot exceed 70 Watts)			***17.26 W***

Current		**Multiply by**	**= Watts**
Total Current at 5V dc	*0.570 A*	5V	*2.850 W*
Total Current at 24V dc	*1.115 A*	24V	*26.76 W*
User Current at 24V dc	*0.500 A*	24V	*12.00 W*
Add the Watts values to determine Total Power (cannot exceed 70 Watts)			***41.61 W***

4.Choose the power supply from the list of catalog numbers shown below. Compare the Total Current required for the chassis with the Internal Current capacity of the power supplies. Be sure that the Total Current consumption for the chassis is less than the Internal Current Capacity for the power supply, for both 5V and 24V loads.

Cat. No.		**Internal Current Capacity**	
		at 5V dc	**at 24V dc**
1746-P1		2.0 A	0.46 A
1746-P2		5.0 A	0.96 A
1746-P3		3.6 A	0.87 A
1746-P4 (see step 3)		10.0 A	2.88 A
1746-P5		5.0 A	0.96 A
1746-P6		5.0 A	0.96 A
1746-P7[1]	12V dc input	2.0 A	0.46 A
	24V dc input	3.6 A	0.87 A
Required Power Supply		***1746-P1***	

Cat. No.		**Internal Current Capacity**	
		at 5V dc	**at 24V dc**
1746-P1		2.0 A	0.46 A
1746-P2		5.0 A	0.96 A
1746-P3		3.6 A	0.87 A
1746-P4 (see step 3)		10.0 A	2.88 A
1746-P5		5.0 A	0.96 A
1746-P6		5.0 A	0.96 A
1746-P7[1]	12V dc input	2.0 A	0.46 A
	24V dc input	3.6 A	0.87 A
Required Power Supply		***1746-P4***	

(1) See 1746-P7 current capacity graph on page 37.

SLC 500 Operation with 24V dc User Power Overcurrent Condition

Power Supply Cat. No.	SLC Operation	Recovery Procedure
1746-P1 series A (made in Japan)	power supply shutdown, CPU fault	Reload user program
1746-P1 series A (made in Malaysia - current production)	24V dc user shutdown, CPU continues	Correct overcurrent condition
1746-P2 series A and B	power supply shutdown, CPU fault	Reload user program
1746-P2 series C	24V dc user shutdown, CPU continues	Correct overcurrent condition
1746-P4 series A	power supply shutdown, CPU fault	Reload user program
1746-P5 series A	24V dc user shutdown, CPU continues	Correct overcurrent condition
1746-P6 series A	24V dc user shutdown, CPU continues	Correct overcurrent condition

ATTENTION

For 1746-P1 (made in Malaysia), 1746-P2 series C, 1746-P5 series A, and 1746-P6 series A power supply, to avoid unexpected operation due to 24V dc user power shutdown, monitor the 24V dc user output with a 24V dc input channel.

Mounting Your SLC 500 Control System

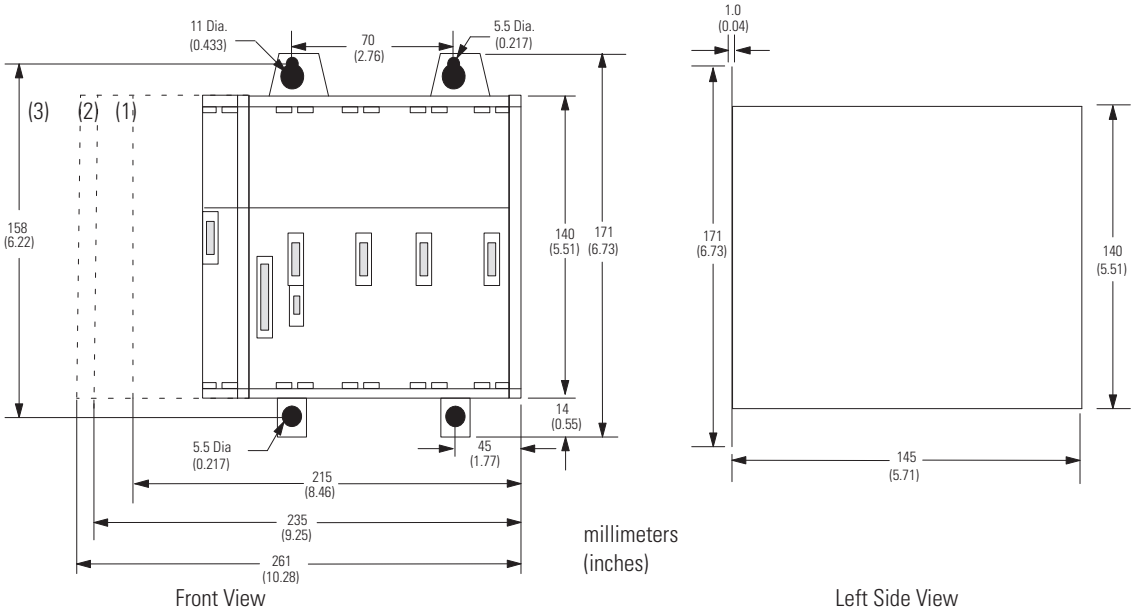
This chapter provides mounting dimensions for:

- 4, 7, 10, and 13-slot chassis.
- link coupler (AIC).
- Data Terminal Access Module (DTAM).
- DTAM Plus Operator Interface.
- DTAM Micro Operator Interface.
- AIC+ Advanced Interface Converter.
- DNI DeviceNet Network Interface.
- ENI EtherNet Network Interface.

Mounting Modular Hardware Style Units

You can mount the modular hardware style units directly to the back panel of your enclosure using the mounting tabs and #10 or #12 screws. The torque requirement is 3.4 Nm (30 lb-in) maximum.

4-slot Modular Chassis

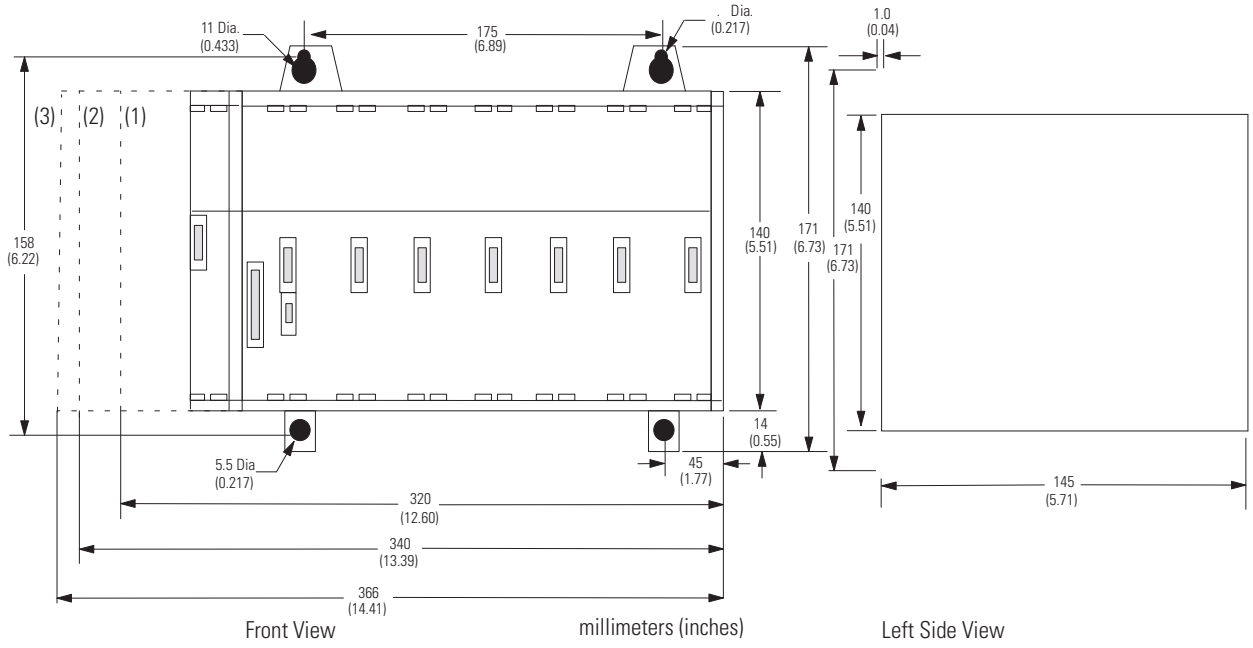


(1) Dimensions for 1746-P1 power supply.

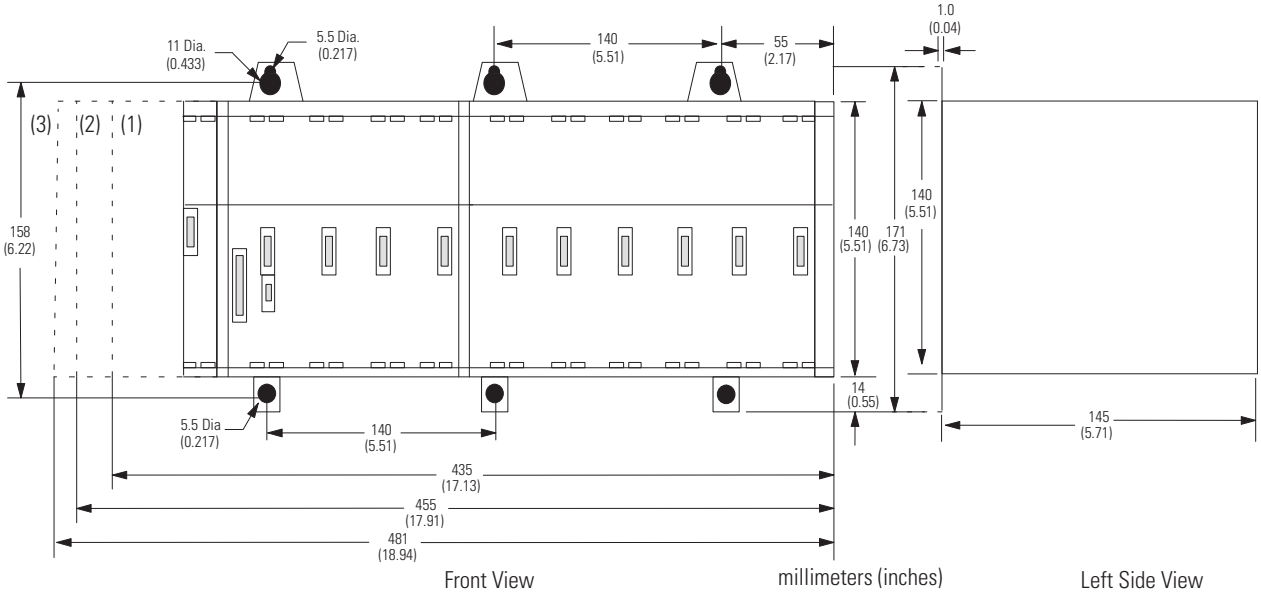
(2) Dimensions for 1746-P2, 1746-P3, 1746-P5, 1746-P6, and 1746-P7 power supplies.

(3) Dimensions for 1746-P4 power supply.

7-slot Modular Chassis



10-slot Modular Chassis

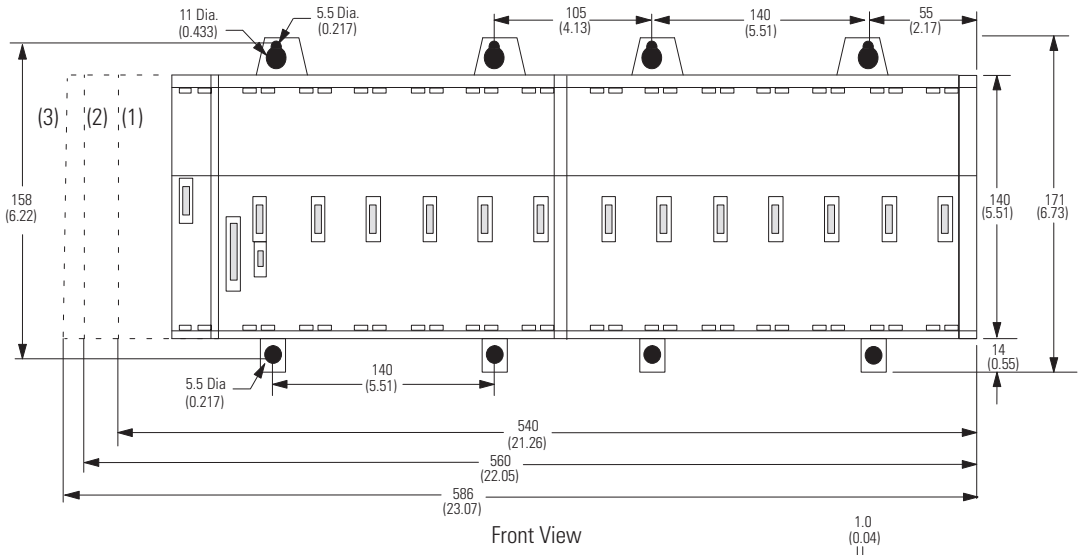


(1) Dimensions for 1746-P1 power supply.

(2) Dimensions for 1746-P2, 1746-P3, 1746-P5, 1746-P6, and 1746-P7 power supplies.

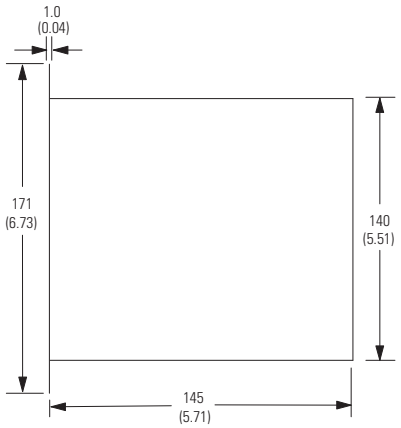
(3) Dimensions for 1746-P4 power supply.

13-slot Modular Chassis



Front View

millimeters
(inches)



Left Side View

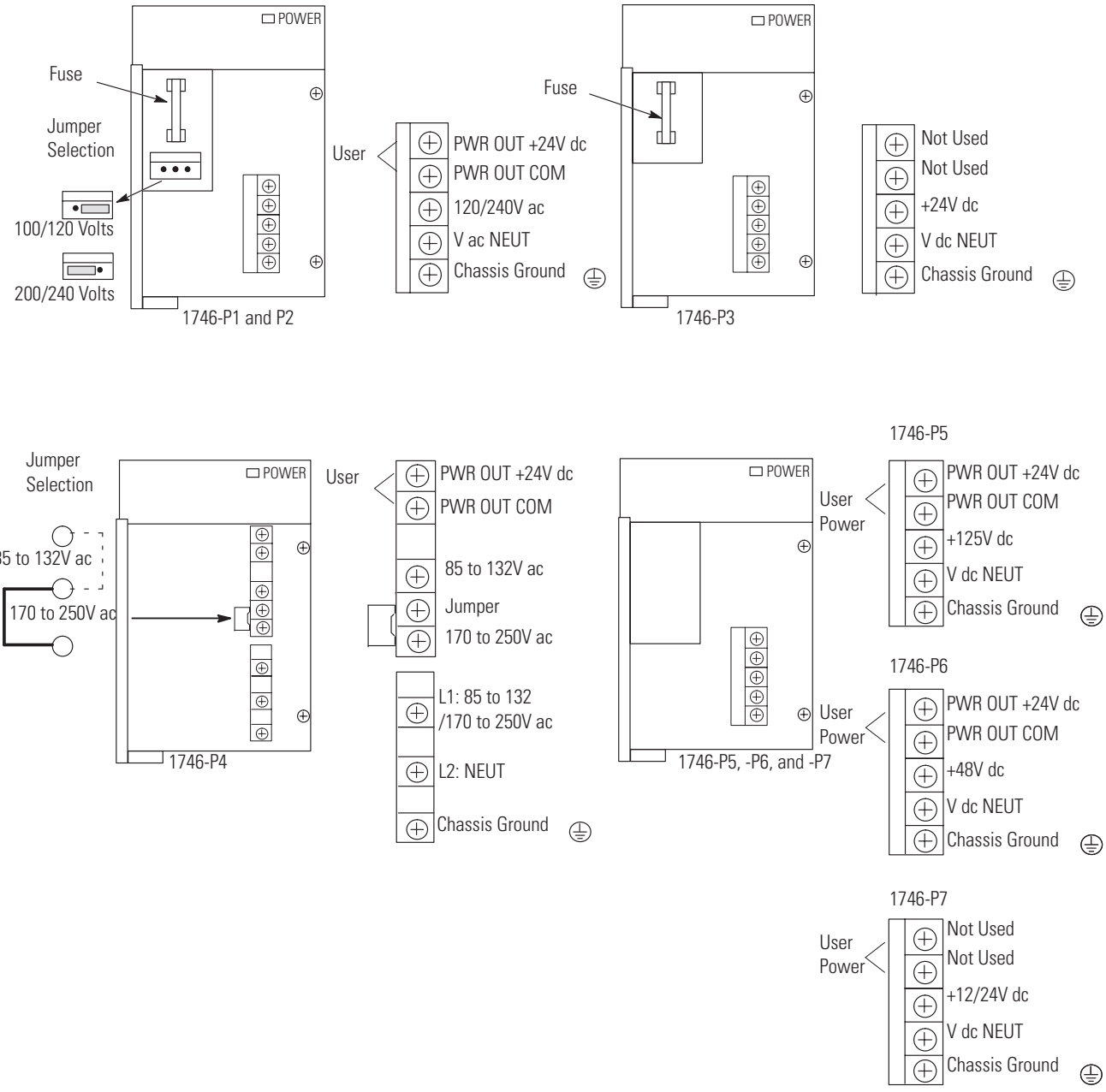
(1) Dimensions for 1746-P1 power supply.

(2) Dimensions for 1746-P2, 1746-P3, 1746-P5, 1746-P6, and 1746-P7 power supplies.

(3) Dimensions for 1746-P4 power supply.

ATTENTION

If you connect or disconnect the wiring to the terminal blocks or if you insert or remove the power supply while the 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. Failure to remove power could cause injury to personnel and/or equipment.

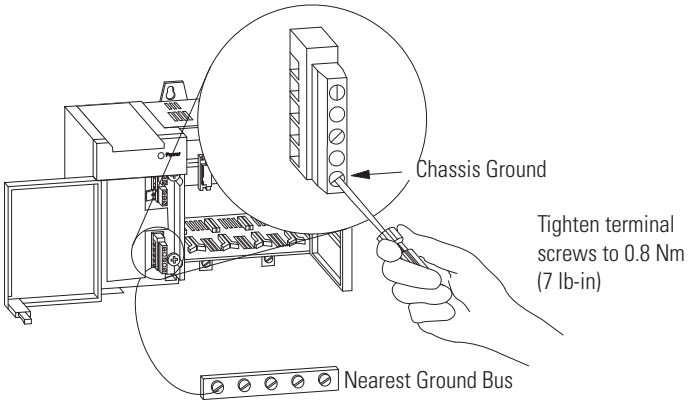


IMPORTANT

Terminal screws on the 1746-P1, 1746-P2, 1746-P3, 1746-P5, 1746-P6, and 1746-P7 power supply should be tightened with a maximum torque of 1 Nm (8.8 lb-in).

Terminal screws on the 1746-P4 power supply should be tightened with a max torque of 0.8 Nm (7 lb-in).

4. Connect the ground screw of the power supply to the nearest ground or ground bus. Use a #14 AWG 75 Deg. Copper wire (Category 1 per Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1) and keep the leads as short as possible. The 1746-P4 is shown below.



5. Remove the warning label from the top of the power supply.
6. Connect line power to the power supply.

ATTENTION

If you have a 1746-P3 power supply, see page 64 for special grounding considerations.

ATTENTION

Your SLC 500 power supply can be damaged by voltage surges when switching inductive loads such as motors, motor starters, solenoids, and relays. To avoid damage to your SLC 500 power supply in these applications, use an isolation transformer to isolate the power supply from harmful voltage surges.

For the 1746-P1, 1746-P2, 1746-P4, 1746-P5, and 1746-P6 power supplies, use PWR OUT +24V dc and PWR OUT COM terminals to

1746-P5, 1746-P6, and 1746-P7 Power Supplies

Attribute	Value			
	1746-P5	1746-P6	1746-P7	
Line voltage	90-146V dc	30-60V dc	10-30V dc[5]	
Typical line power requirement	85VA	100VA	12V dc input: 50VA	24V dc input: 75VA
Inrush current, max	20A		20 A (required for turn-on)	
Internal current capacity	5 A at 5V dc 0.96 A at 24V dc		12V dc input: 2.0 A at 5V dc 0.46 A at 24V dc	24V dc input: 3.6 A at 5V dc 0.87 A at 24V dc
			See P7 current capacity chart	
Fuse protection[1]	Fuse is soldered in place			
24V dc user-power current capacity	200 mA		not applicable	
24V dc user-power voltage range	18-30V dc			
Ambient temperature, operating	0 °C...60 °C (32 °F...140 °F) Current capacity is derated 5% above 55 °C (131°F)			
Isolation[2]	1800V ac RMS for 1 s		600V ac RMS for 1 s	
CPU hold-up time[3]	20 ms (full load) 3000 ms (no load)	5 ms (full load) 1500 ms (no load)	12V dc input: 1.37 ms at 0V dc (full load) 895 ms at 0V dc (no load) 10 ms at 9V dc (full load) continuous at 9V dc (no load)	24V dc input: 40 ms at 0V dc (full load) 1860 ms at 0V dc (no load) 790 ms at 11V dc (full load) continuous at 11V dc (no load)
Certification (when product is marked)	UL Listed Industrial Control Equipment for Class I, Division 2, Groups A, B, C, D Hazardous Locations			
	C-UL Listed Industrial Control Equipment for Class I, Division 2, Groups A, B, C, D Hazardous Locations			
	CE[4] European Union 89/336/EEC EMC Directive, compliant with: EN 50082-2 Industrial Immunity EN 50081-2 Industrial Emissions or EN 61000-6-2 Industrial Immunity EN 61000-6-4 Industrial Emissions European Union 73/23/EEC LVD Directive, compliant with safety related portions of: EN61131-2 Programmable Controllers			
	C-Tick Australian Radio Communications Act, compliant with: AS/NZS 2064 Industrial Emissions			

(1) Power supply fuse is intended to guard against fire hazard due to short-circuit conditions. This fuse may not protect the supply from miswiring or excessive transient in the power line.

(2) Isolation is between input terminals and backplane.

(3) CPU hold-up time is for 0V unless specified. Hold-up time is dependent on power supply loading.

(4) See the Product Certification link at http://ab.com for Declarations of Conformity, Certificates, and other certification details.

(5) See page 70 for information on power supply under voltage operation.

Below are three options for externally powering the 1747-AIC interface.

- If the link coupler is to be installed in an office environment, you can use the 1747-NP1 wall mount power supply or 1747-NP2 global desktop power supply. The link coupler would be powered through either the 1747-C10 cable or by hardwiring from the supply to the screw terminals on the link coupler.
- If you use any of the following chassis power supplies (1746-P1, 1746-P2, 1746-P4, 1746-P5, and 1746-P6), you can use the 24V dc user power supply (200 mA maximum) built into the power supply. The link coupler would be powered through a hard-wired connection from the screw terminals on the power supply to the screw terminals on the bottom of the link coupler.
- You can use an external dc power supply with the following specifications:
  - operating voltage: 24V dc ± 25%
  - output current: 190 mA
  - rated NEC

  The link coupler would be powered through a hard-wired connection from the external supply to the screw terminals on the bottom of the link coupler.

ATTENTION

If you use an external power supply, it must be 24V dc. Permanent damage will result if miswired with wrong power source.

The figure below shows the external wiring connections and specifications of the link coupler.

Blank Worksheet

Procedure

1. For each slot of the chassis that contains a module, list the slot number, the catalog number of the module, and its 5V and 24V maximum currents. Also include the power consumption of any peripheral devices that may be connected to the processor other than a 1747-DTAM or 1747-PIC interface-the power consumption of these devices is accounted for in the power consumption of the processor.

Chassis Number		**Maximum Currents**		**Chassis Number**		**Maximum Currents**	
Slot Number	**Cat. No.**	**at 5V dc**	**at 24V dc**	**Slot Number**	**Cat. No.**	**at 5V dc**	**at 24V dc**
Slot				Slot			
Slot				Slot			
Slot				Slot			
Slot				Slot			
Slot				Slot			
Slot				Slot			
Slot				Slot			
Slot				Slot			
Peripheral Device				Peripheral Device			
Peripheral Device				Peripheral Device			
2.Add the loading currents of all the system devices at 5 and 24V dc to determine the **Total Current**.				2.Add the loading currents of all the system devices at 5 and 24V dc to determine the **Total Current**.			

3.For 1746-P4 power supplies, calculate the total power consumption of all system devices. If you are not using a 1746-P4 power supply, go to step 4.

Current		**Multiply by**	**= Watts**	**Current**		**Multiply by**	**= Watts**
Total Current at 5V dc		5V		Total Current at 5V dc		5V	
Total Current at 24V dc		24V		Total Current at 24V dc		24V	
User Current at 24V dc		24V		User Current at 24V dc		24V	
Add the Watts values to determine Total Power (cannot exceed 70 Watts)				**Add the Watts values to determine Total Power (cannot exceed 70 Watts)**			

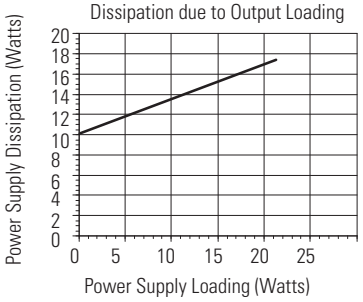
4.Choose the power supply from the list of catalog numbers shown below. Compare the Total Current required for the chassis with the Internal Current capacity of the power supplies. Be sure that the Total Current consumption for the chassis is less than the Internal Current Capacity for the power supply, for both 5V and 24V loads.

Cat. No.		**Internal Current Capacity**		**Cat. No.**		**Internal Current Capacity**	
		at 5V dc	**at 24V dc**			**at 5V dc**	**at 24V dc**
1746-P1		2.0A	0.46A	**1746-P1**		2.0A	0.46A
1746-P2		5.0A	0.96A	**1746-P2**		5.0A	0.96A
1746-P3		3.6A	0.87A	**1746-P3**		3.6A	0.87A
1746-P4 (see step 3)		10.0A	2.88A	**1746-P4 (see step 3)**		10.0A	2.88A
1746-P5		5.0A	0.96A	**1746-P5**		5.0A	0.96A
1746-P6		5.0A	0.96A	**1746-P6**		5.0A	0.96A
1746-P7 (See page 37 for current capacity.)	12V Input	2.0A	0.46A	**1746-P7 (**See page 37 for current capacity.)	12V Input	2.0A	0.46A
	24V Input	3.6A	0.87A		24V Input	3.6A	0.87A
Required Power Supply				**Required Power Supply**			

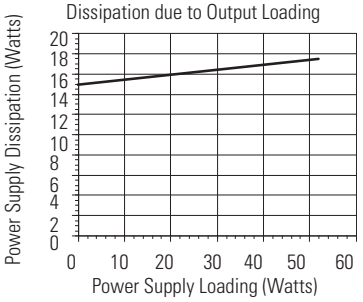
Power Supply Heat Dissipation Graphs

Use the graphs below for determining the power supply dissipation in step 2 of the Example Worksheet for Calculating Heat Dissipation.

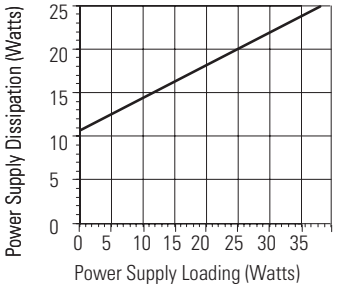
1746-P1 Power Supply Change in Power Dissipation due to Output Loading



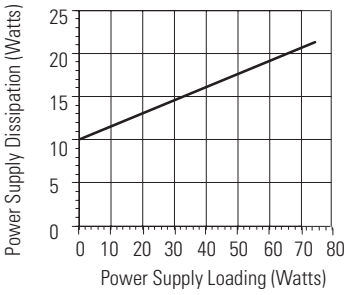
1746-P2 Power Supply Change in Power Dissipation due to Output Loading



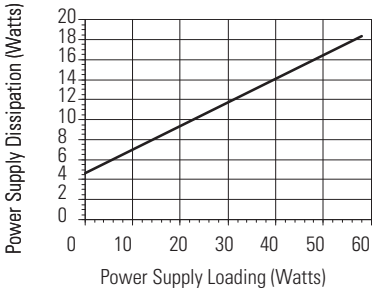
1746-P3 Power Supply Change in Power Dissipation due to Output Loading



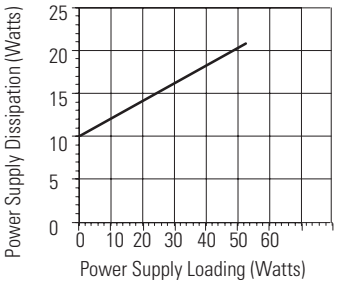
1746-P4 Power Supply Change in Power Dissipation due to Output Loading



1746-P5 Power Supply Change in Power Dissipation due to Output Loading



1746-P6 Power Supply Change in Power Dissipation due to Output Loading



1746-P7 Power Supply Change in Power Dissipation due to Output Loading