Allen-Bradley

Technical Data

SLC 500™ Modular Chassis and Power Supplies

Chassis Catalog Numbers 1746-A4, -A7, -A10 and -A13

Power Supply Catalog Numbers 1746-P1, -P2, -P3, -P4, -P5, -P6 and -P7

SLC 500 modular chassis and power supplies provide flexibility in system configuration. By selecting the appropriate chassis, power supply, processor, and I/O modules you can create a controller system specifically designed for your application.

Four chassis sizes are available to suit your application needs. Choose from 4-slot, 7-slot, 10-slot, and 13-slot chassis based on your modular hardware component requirements.

Seven power supplies are available to meet your system power requirements. There are three different ac power supplies and four dc power supplies.

Power Supply Specifications

Description:	Specification: 1746-							
	P1	P2	P3	P4	P5	P6	P7	
Line Voltage	85-132/170-265V ac 47-63 Hz		19.2-28.8V dc	85-132/ 170-265V ac 47-63 Hz	90-146V dc	30-60V dc	10-30V dc[1]	
Typical Line Power Reqmnt.	135 VA	180 VA	90 VA	240 VA	85VA	100VA	12V dc input: 50 VA	24V dc input: 75 VA
Maximum Inrush Current	20A			45A	20A		20A (required for turn-on)	
Internal Current Capacity	2A at 5V dc 0.46A at 24V dc	5A at 5V dc 0.96A at 24V dc	3.6A at 5V dc 0.87A at 24V dc	10.0A at 5V dc 2.88A at 24V dc[2]	5A at 5V dc 0.96A at 24V dc		12V dc input: 2.0A at 5V dc 0.46A at 24V dc	24V dc input: 3.6A at 5V dc 0.87A at 24V dc
							See 1746-P7 current capacity chart below.	
Fuse Protection[3]	1746-F1 or equivalent[4]	1746-F2 or equivalent[5]	1746-F3 or equivalent[6]	Fuse is soldered in place.				
24V dc User Power Current Capacity	200 mA		Not Applicable	1A[2]	200 mA		Not Applicable	
24V dc User Power Volt. Range	18-30V dc			20.4-27.6V dc	18-30V dc			
Ambient Operating Temperature	0°C to +60°C (+32°F to +140°F) Current capacity is derated 5% above +55°C.			0°C to +60°C (+32°F to +140°F) no derating	0°C to +60°C (+32°F to +140°F) Current capacity is derated 5% above +55°C.			
Isolation[7]	1800V ac RMS for 1 s		None[8]	2600V dc for 1 s	1800V ac RMS for 1 s		600V ac RMS for 1 s	
CPU Hold-up Time[9]	20 ms (full load) 3000 ms (no load)		5 ms (full load) 1000 ms (no load)	20 ms (full load) 3000 ms (no load)	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	UL listed C-UL or CSA certified (as indicated by product or packaging markings) CE compliant for all applicable directives							
Hazardous Envirnmnt. Cert.	Class I Division 2							

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

(2) The combination of all output power (5 volt backplane, 24 volt backplane, and 24 volt user source) cannot exceed 70 watts.

(3) 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.

(5) Equivalent fuse: 250V-3A fuse, SANO SOC SD4, or BUSSMAN AGC 3

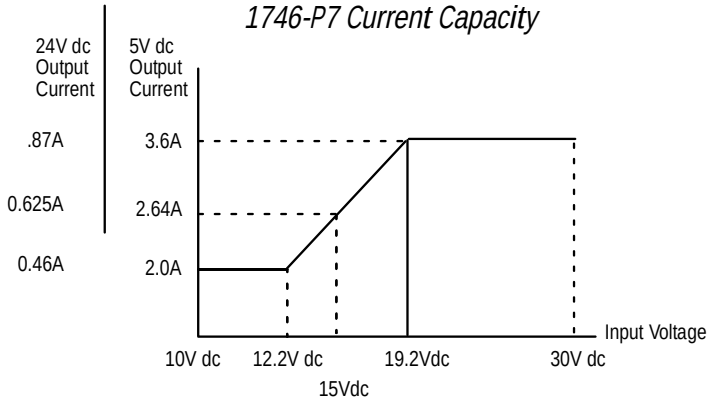
(6) Equivalent fuse: 125V-3A fuse, Nagasawa ULCS-61ML-5, or BUSSMAN AGC 5

(7) Isolation is between input terminals and backplane.

(8) No isolation between input terminals and backplane. However, dielectric withstand between input terminals and chassis ground terminal is 600V ac RMS for 1 s.

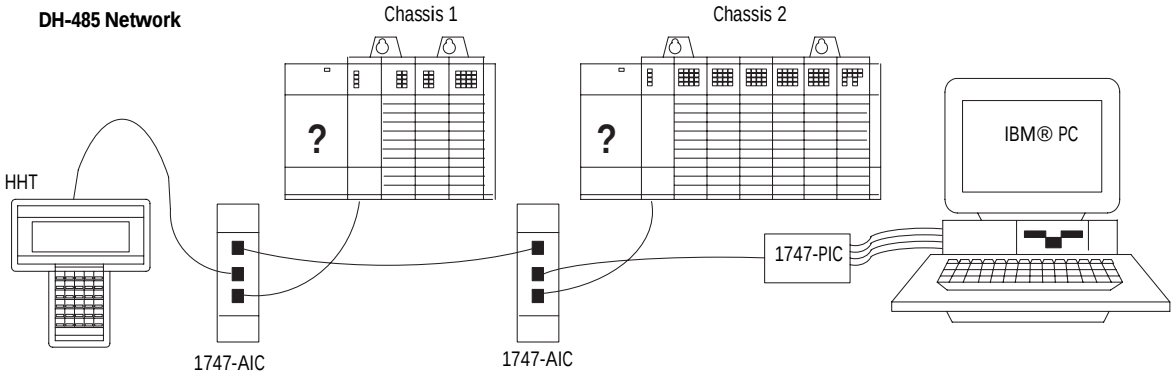
(9) CPU hold-up time is for 0V unless specified. Hold-up time is dependent on power supply loading.

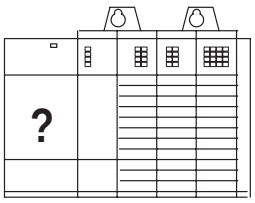
1746-P7 Current Capacity



Power Supply Selection Example

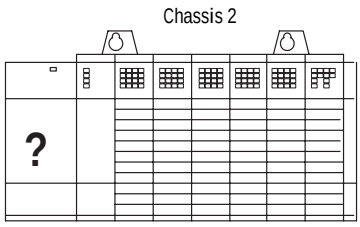
Select a power supply for chassis 1 and chassis 2 in the control system below. (The worksheet for this example is on page 20.)





Slot Numbers	Description	Catalog Number	Power Supply at 5V dc (Amps)	Power Supply at 24V (Amps)
0	Processor Unit	1747-L511	0.35	0.105
1	Input Module	1747-IV8	0.05	NA
2	Transistor Output Module	1746-OB8	0.135	NA
3	Triac Output Module	1746-OA16	0.37	NA
Peripheral Device	Hand-Held Terminal	1747-PT1	NA	NA
Peripheral Device	Isolated Link Coupler	1747-AIC	NA	NA
		Total Current:	0.905	0.190(1)

(1) Power Supply 1746-P1 is sufficient for Chassis #1. The "Internal Current Capacity" for this power supply is 2 Amps at 5V dc; 0.46 Amps at 24V dc.



Slot Numbers	Description	Catalog Number	Power Supply at 5V dc (Amps)	Power Supply at 24V (Amps)
0	Processor Unit	1747-L514	0.35	0.105
1	Output Module	1746-OW16	0.17	0.180
2	Combination Module	1746-IO12	0.09	.07
3,4,5,6	Analog Output Modules	1746-NO4I	0.22 (4 x 0.055)	0.780 (4 x 0.195
Peripheral Device	Isolated Link Coupler	1747-AIC	NA	0.085
Peripheral Device	Interface Converter	1746-PIC	NA	NA
		Total Current:	0.83	1.22(1)

(1) Power Supply 1746-P4 is sufficient for Chassis #2. The "Internal Current Capacity" for this power supply is 10 Amps at 5V dc; not to exceed 70 Watts. (This configuration = 33.43 Watts, i.e., [5V x 0.083] + [24V x 1.22A] = 33.43W)

Example Worksheet for Selecting 1746 Power Supplies for the Example System

If you have a multiple chassis system, make copies of the Worksheet for Selecting a Power Supply found on page 22. For a detailed list of device load currents, see page 14. Remember to consider future system expansion when selecting a power supply.

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, HHT, or PIC—the power consumption of these devices is accounted for in the power consumption of the processor.

Chassis Number		***1***	**Maximum Currents**		**Chassis Number**		**2**	**Maximum Currents**	
Slot Number		**Catalog Number**	**at 5V dc**	**at 24V dc**	**Slot Number**		**Catalog Number**	**at 5V dc**	**at 24V dc**
Slot	*0*	*1747-L511*	*0.350A*	*0.105A*	Slot	*0*	*1747-L514*	*0.350A*	*0.105A*
Slot	*1*	*1746-IV8*	*0.050A*	-	Slot	*1*	*1746-OW16*	*0.170A*	*0.180A*
Slot	*2*	*1746-OB8*	*0.135A*	-	Slot	*2*	*1746-NO4I*	*0.055A*	*0.195A*
Slot	*3*	*1746-OA16*	*0.370A*	-	Slot	*3*	*1746-NO4I*	*0.055A*	*0.195A*
Slot					Slot	*4*	*1746-NO4I*	*0.055A*	*0.195A*
Slot					Slot	*5*	*1746-NO4I*	*0.055A*	*0.195A*
Slot					Slot	*6*	*1746-IO12*	*0.090A*	*0.070A*
Slot					Slot				
Peripheral Device		*A/C*	-	*0.085A*	Peripheral Device		*A/C*	-	*0.085A*
Peripheral Device					Peripheral Device				
2. Add the loading currents of all the system devices at 5 and 24V dc to determine the **Total Current**.			***0.905A***	***0.190A***	2. Add the loading currents of all the system devices at 5 and 24V dc to determine the **Total Current**.			***0.830A***	***1.220A***

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

Current		**Multiply by**	**= Watts**	**Current**		**Multiply by**	**= Watts**
Total Current at 5V dc	*0.905A*	5V	*4.525W*	Total Current at 5V dc	*0.830A*	5V	*4.15W*
Total Current at 24V dc	*0.190A*	24V	*4.56W*	Total Current at 24V dc	*1.220A*	24V	*29.28W*
User Current at 24V dc	*0.500A*	24V	*12.00W*	User Current at 24V dc	*0.500A*	24V	*12.00W*
Add the Watts values to determine Total Power (cannot exceed 70 Watts)			***21.085W***	**Add the Watts values to determine Total Power (cannot exceed 70 Watts)**			***45.43W***

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.

Catalog Number	**Internal Current Capacity**		**Catalog Number**	**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			**1746-P6**		
1746-P7			**1746-P7**		
Required Power Supply	***1746-P1***		**Required Power Supply**	***1746-P4***	