Chapter 1

Selecting Power Supplies, Encoders and Drives

Chapter Objectives

In this chapter we discuss how to select the hardware you need to support an IMC 110 system. We discuss:

- selecting a power supply for the backplane
- selecting a power supply for the user-side
- using fast inputs and fast outputs
- selecting an encoder
- selecting a drive

The amount of hardware you need depends on how many axes your application uses. Consult your local Allen-Bradley sales engineer or distributor to help you select the equipment for your application.

Selecting a Power Supply for the Backplane

Before you select a power supply you must calculate the current requirements for your backplane. Table 1.A lists the backplane current requirements for the control module.

Table 1.A
Current Requirements for the Control Module

Voltage	Current Requirement
+5	.300 A
+24V	.104 A (when using handheld pendant)

In your calculations you must include the current requirements of the I/O modules in your chassis. Refer to your SLC 500 documentation.

Example of Calculations for Backplane Current Requirements

Our example system includes:

- one 7-slot modular rack
- one 1747-L511 CPU module
- one 1746-IB8 dc input module with 8 inputs @ +24 V
- one 1746-OV8 dc output module with 8 outputs @ +24 V
- one 1747-PIC interface module
- an IMC 110 system which includes:
  - 2 control modules
  - 2 termination panels
  - 2 Allen-Bradley 845H encoders
  - 6 fast inputs
  - 2 fast outputs

Table 1.B lists the current requirements of the devices that use backplane power. Those devices that are not included in the backplane calculations are included in the user-side example calculations.

Table 1.B
Current Requirements for the Backplane of the Example System

Device	+5V	+ 24V
1747-L511	.350 A	.104 A (when using handheld pendant)
control module	.300 A	.104 A (when using interface module)
control module	.300 A	0
1746-IB8	.040 A	0
1746-OV8	.125 A	0
	Total +5V	**Total +24V**
	1.115 A	.208 A

Given the current requirements of this system, you can use the power supply included in the fixed-style SLC 500, the 1746-P1 or the 1746-P2 to power the backplane. Table 1.C lists the power supplies Allen-Bradley recommends for the backplane.

Table 1.C
Recommended Power Supplies for Backplane Current Requirements

Power Supply	Output Capacity	AC Line Input Capacity
included with the fixed-style SLC 500 chassis	5V dc @ 2A; 24V @ .2A	85-130, 170-265 V ac or 19.2-28.8 V dc
1746-P1	5V dc @ 2A; 24V @ .2 A	85-130, 170-265 V ac
1746-P2	5V dc @ 5A; 24V @ .2 A	85-130, 170-265 V ac
1746-P3	5V dc @ 3.6A; 24V @ .2 A	19.2-28.8 V dc

Selecting a Power Supply for the User-Side

You must provide a power supply that will meet the user-side requirements of your system. These devices require user-side power:

- the control module
- encoders
- I/O modules
- E-stop circuitry
- fast inputs and fast outputs

The power supply you select must meet the specifications of a NEC Class 2 power supply. The power supply must have +5V, ±15V capacity, and +24V capacity for E-stop circuitry and fast I/O. We recommend that you **do not** use the +24V included with the 1770-P1, P2, or P3 to power your E-stop and/or fast I/O.

Before you select a power supply, you must calculate the user-side current requirements for the system.

Example of Calculations for User-Side Current Requirements

Our example system includes:

- one 7-slot modular rack
- one 1747-L511 CPU module
- one 1746-IB8 dc input module with 8 inputs @ +24 V
- one 1746-OV8 dc output module with 8 outputs @ +24 V
- an IMC 110 system which includes:
  - 2 control modules
  - 2 termination panels
  - 2 Allen-Bradley 845H encoders
  - 6 fast inputs
  - 2 fast outputs