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Chapter 5

CPUs

CPU Types for Series 90-30 PLCs

There are numerous CPU models available for the Series 90-30 PLC which differ in speed, I/O capacity, size of user memory, and advanced features. This variety of models gives a system designer considerable flexibility in choosing the one best suited to the system being designed. There are two basic types of CPUs, **Embedded** and **Modular**. The embedded types fulfill the need for a good low cost PLC, but lack the power, expandability, and versatility of the modular systems. In the embedded types, the CPU is built into the baseplate. In the modular types, the CPU is contained inside a plug-in module.

Embedded CPUs

The embedded CPUs are part of an embedded CPU baseplate. In these products, the CPU and memory integrated circuit chips are soldered to the backplane board of the baseplate. This chapter discusses the CPU features of these products. Details about the baseplate features are located in Chapter 2. There are three different embedded CPUs: Model 311 (IC693CPU311), Model 313 (IC693CPU313), and Model 323 (IC693CPU323). The embedded CPUs have the following basic features:

- The CPU type cannot be changed. It is soldered to the backplane board in the baseplate.
- They do not support the use of Expansion or Remote racks, so an embedded CPU baseplate does not have an expansion connector like the modular baseplates do. This means that if you have an application that requires more than 10 modules, you will have to use a modular CPU system.
- The models 311 and 313 are 5-slot baseplates, and the model 323 is a 10-slot baseplate. Since they do not require a plug-in CPU module, all numbered slots, including Slot 1, can be used for I/O or Option modules.
- The memory back-up battery is located in the Power Supply module; so if the Power Supply is unplugged from the baseplate, the battery will be disconnected from the memory circuits, which are located on the backplane circuit board. However, the backplane circuit board contains a high value capacitor, called a "super capacitor," that can store enough charge to maintain the memory circuits for a short period of time if the Power Supply is removed or its battery is disconnected. See the section "Super Capacitor Memory Backup" in Chapter 6.
- These CPUs do not have a time-of-day (TOD) clock.

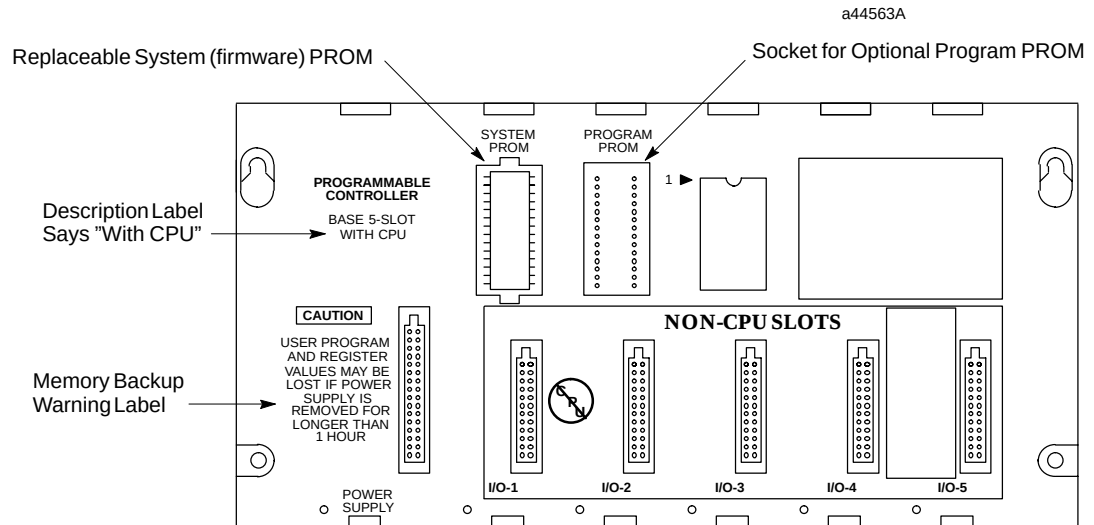


Figure 5-1. Models 311 and 313 (5-Slot) Embedded CPU Baseplates

Modular CPUs

The modular CPUs consist of a CPU, memory, and associated integrated circuit chips soldered to circuit board which is mounted in a plug-in module. The modular CPUs include the model CPU331 and higher. The modular CPUs have the following basic features:

- A CPU module must be installed in Slot 1 of a modular CPU baseplate. Slot 1 is a unique size and type that only fits a CPU module (or special Option modules). Slot 1 is labeled CPU / 1. Details on modular CPU baseplates are located in Chapter 2.
- Modular CPUs support expansion and remote baseplates, so a 25-pin D-type female expansion connector is located at the right end of the CPU baseplate for connection to an expansion or remote baseplate.
- Since the CPU is modular, it can readily be replaced or changed to a different type if desired.
- Only one CPU is allowed per system, and it must be mounted in a CPU baseplate. If more than one baseplate is used in a system, the additional ones must be either expansion or remote types that do not contain a CPU.
- A modular CPU baseplate is always assigned, by default, Rack Number 0.
- All have a time-of-day (TOD) clock.