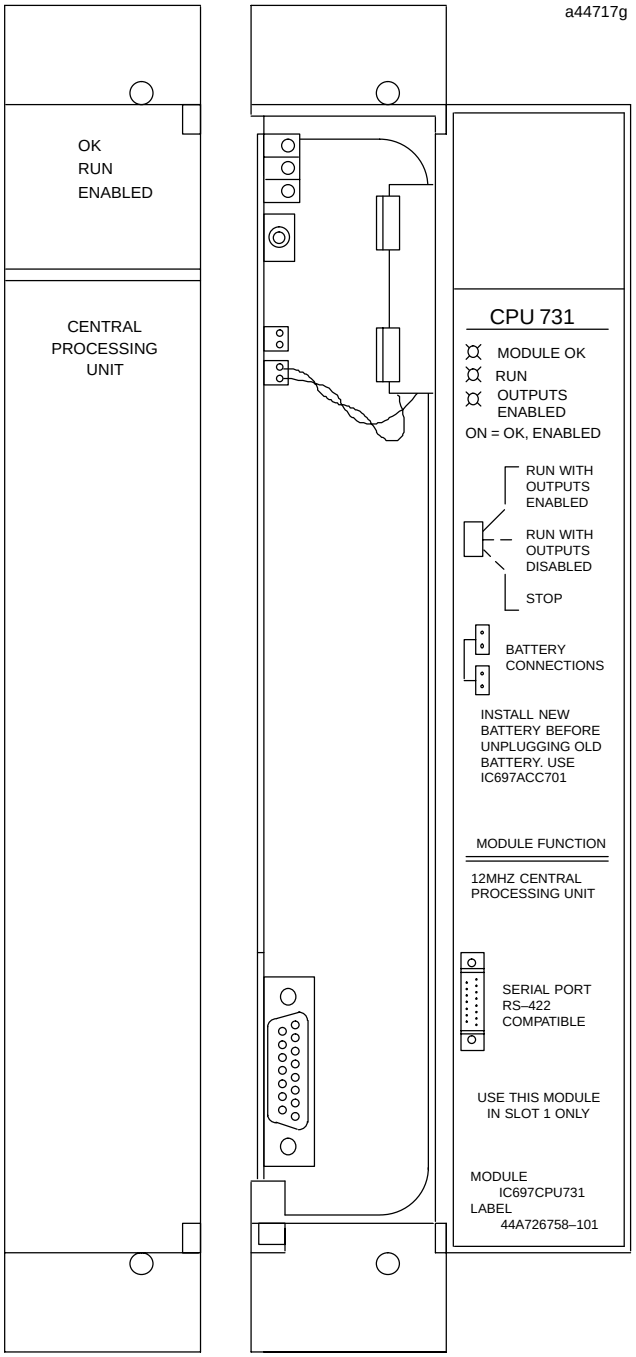
GFK-0159J
*August 1997*

# 12 MHz, 32 Kbyte Central Processing Unit

## Features

- Single slot CPU.
- 512 inputs and outputs (any mix).
- Up to 8K analog I/O.
- 0.4 microseconds per boolean function.
- 12 MHz, 80C186 microprocessor.
- Supports IC660/IC661 and IC697 I/O products
- Programmed by MS-DOS® or Windows based software products running on Windows® 95 or Windows NT® over Ethernet TCP/IP or through the SNP port.
- 32 Kbyte battery-backed CMOS memory (fixed size).
- Configurable data and program memory.
- Battery-backed calendar clock.
- Three position operation mode switch.
- Password controlled access.
- Three status LEDs.
- Software configuration (No DIP switches or jumpers to set).
- Reference information inside front door.




## Functions

The CPU 731 is a single slot PLC CPU which resides in an IC697CHS PLC rack. The CPU 731 is programmed and configured by MS-DOS or Windows based programming software to perform real time control of machines, processes and material handling systems. The CPU 731 communicates with I/O and smart option modules over the rack mounted backplane (IC697CHS750, 782, 783, 790, 791) by way of the VME C.1 Standard format.

Supported option modules include IC697 LAN Interface modules, several Coprocessor modules, Bus Controller for IC660/661 I/O products, Communications modules, I/O Link Interface, and all of the IC697 family of discrete and analog I/O modules.

Module operation may be controlled by the three position switch or remotely by an attached programmer and programming software. CPU status is indicated by three green LEDs on the front of the module.

® MS-DOS, Windows, Windows 95, and Windows NT are registered trademarks of Microsoft Corporation.

GFK-0159J
*August 1997*

## 12 MHz, 32 Kbyte Central Processing Unit

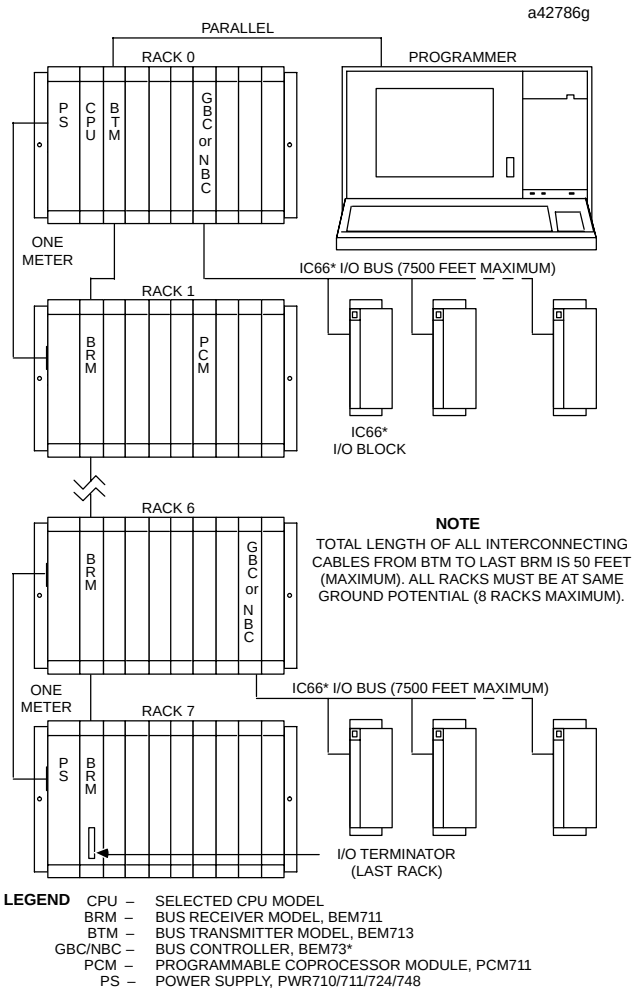



**Figure 1. Typical PLC System Configuration**

# Installation

It is the responsibility of the OEM, system integrator, or end user to properly install the PLC equipment for safe and reliable operation. Product manuals provide detailed information about installation, startup, and proper use of the PLC equipment. The installation manual, shipped with your PLC programming software, describes how to properly install the equipment. If the PLC installation must comply with supported standards, such as FCC or CE Directives, please refer to the *Installation Requirements for Conformance to Standards*, shipped with the PLC programming software, for additional guidelines.

- Be sure that power to the PLC is turned off before installing the CPU 731 module
- Connect the battery to either of the battery connectors on the module (see Figure 2).
- Put toggle switch in the STOP position.
- Install in slot 1 of rack 0. (See Figure 1)
- Turn on power.

The module should power up and blink the top LED. When the diagnostics have completed successfully, the top LED stays on and the second and third LEDs are off. The CPU is now ready to be programmed After the program has been verified the toggle switch may be moved to the appropriate operation mode position. The LEDs indicate the position of the toggle switch, memory protection status, and the state of the program.

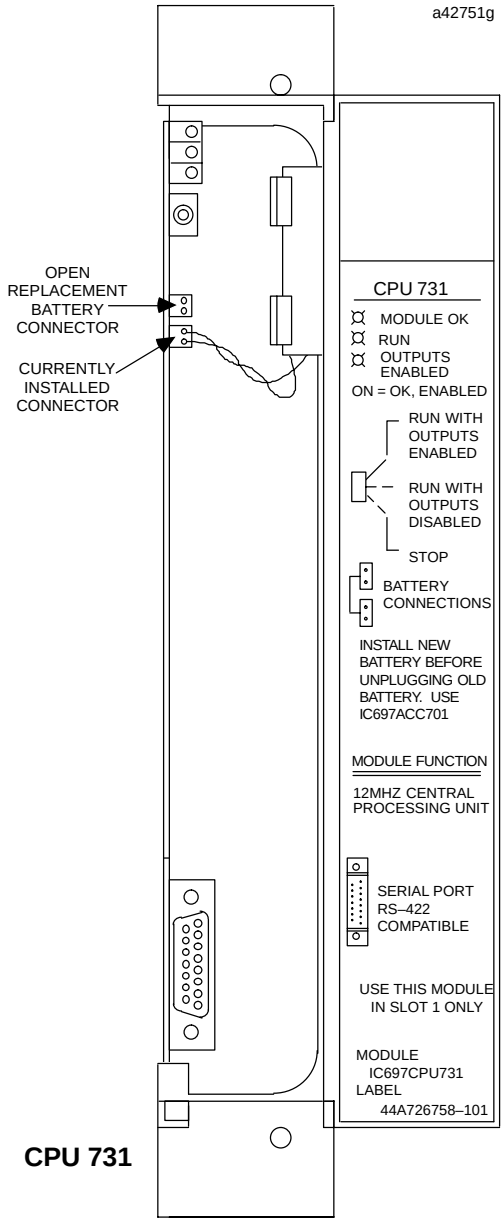



**Figure 2. CPU 731- Location of Major Features**

**12 MHz, 32 Kbyte Central Processing Unit**

GFK-0159J
*August 1997*

## Programmer Connection, Parallel

For a parallel interface (MS-DOS programmer only) connect the programmer to the top port connector on the Bus Transmitter Module (IC697BEM713) as shown in Figure 1. Consult Reference 2 for a description of programming functions.

## Serial Port

The 15-pin D-connector provides the connection to an RS-485 compatible serial port as shown in Figure 3. This port provides a serial connection to a Standard Serial COM port, or to a Work Station Interface board installed in the programming computer. For more information on serial communications, see references 1, 2, and 3.

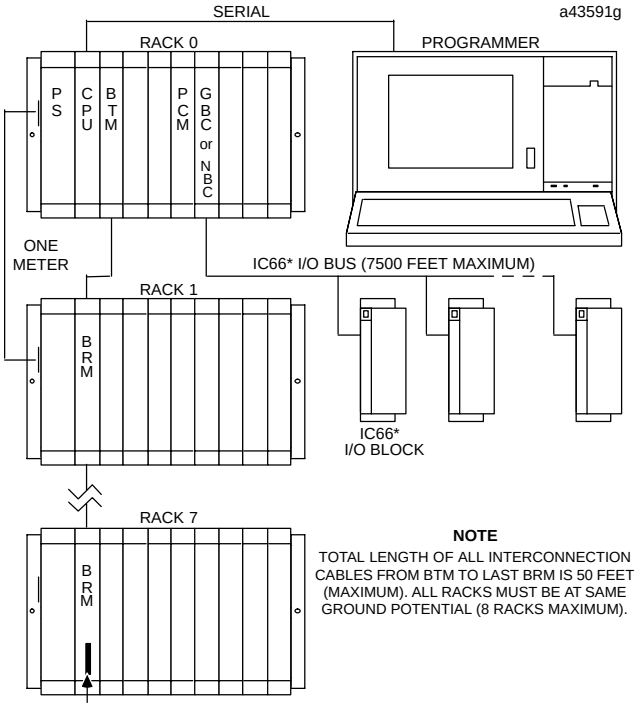



**Figure 3. System Configuration, Serial Connection to Programmer**

## Programmer Connection, Ethernet TCP/IP

Connecting your programmer via an Ethernet TCP/IP network requires installation of an Ethernet Interface module in the PLC. This can be either the Ethernet Controller, IC697CMM741, or Ethernet Interface (Type 2), IC697CMM742. Before connecting your programmer and PLC to the Ethernet TCP/IP network you must set the IP address in the Ethernet Interface. After setting the IP address, connect the PLC and the programmer running Windows software to the Ethernet Interface. For more detailed information on the programmer connection via Ethernet TCP/IP, refer to the *TCP/IP Ethernet Communications (Type 2) User's Manual,* and the Windows programming manual, GFK-1295.

## Configuration

The IC697 CPU and I/O system is configured with MS-DOS or Windows based programming software. There are no DIP switches or jumpers used to configure the system. The CPU verifies the actual module and rack configuration at power-up and periodically during operation. The actual configuration must be the same as the programmed configuration. Deviations are reported to the CPU alarm processor function for configured fault response. Consult Reference 1 for a description of configuration functions.

## Batteries

A lithium battery (IC697ACC701) is installed as shown in Figure 2. This battery maintains program and data memory when power is removed and operates the calendar clock. Be sure to install the new battery before removing the old battery. If during power-up diagnostics a low battery is detected the Module OK LED (top) will not stay on. Specific indication of a low battery state is detailed in Reference 2.

## Removing a Module

The following instructions should be followed when removing a module from its slot in a rack.

- Grasp the board firmly at the top and bottom of the board cover with your thumbs on the front of the cover and your fingers on the plastic clips on the back of the cover.
- Squeeze the rack clips on the back of the cover with your fingers to disengage the clip from the rack rail and pull the board firmly to remove it from the backplane connector.
- Slide the board along the card guide and remove it from the rack.

**Table 1. Specifications for IC697CPU731 †**

| | |
|---|---|
| **Battery Shelf Life** | 10 years at 20° C (68° F) |
| **Memory Retention** | 6 months nominal without applied power |
| **Current required from 5V Bus** | 1.0 Amp |
| **Time of Day Clock (internal timing) Accuracy** | ± 3.5 seconds per day |
| **Elapsed Time Clock** | ± .01% maximum |
| **Serial Port** | RS422 / 485 compatible, programmer serial attachment |
| **VME** | System designed to support the VME standard C.1 |

† Refer to GFK-0867B, or later for product standards and general specifications.

**Table 2. References**

| Reference | Title |
|---|---|
| 1 | Programming Software User's Manual |
| 2 | Programmable Controller Reference Manual |
| 3 | Programmable Controller Installation Manual |

**Table 3. Ordering Information**

| Description | Catalog Number |
|---|---|
| Central processing Unit, 12 MHz, 32 Kbyte, Fixed | IC697CPU731 |
| Lithium Battery | IC697ACC701 |

Note: For Conformal Coat option, or Low Temperature Testing option please consult the factory for price and availability.