Features

- Supports floating point calculations
- Single slot CPU.
- 12K inputs and outputs (any mix).
- Up to 8K analog I/O.
- 0.4 microseconds per boolean function.
- 16 MHz, 80386DX microprocessor.
- Supports IC660/IC661 and IC697 O products.
- Programmed by MS-DOS® or Windows® software products running on Windows® 95 or Windows NT® over Ethernet TCP/IP or through the SNP port.
- Supports up to 512 Kbytes of battery-backed expansion memory in the same slot.
- Configurable data and program memory.
- Battery-backed calendar clock.
- Three position operation mode switch.
- Password controlled access.
- Key switch memory protection.
- Four status LEDs.
- Software configuration (No DIP switches or jumpers to set).
- Reference information inside front door.

Functions

The CPU 782 is a single slot programmable controller CPU which allows floating point calculations. The CPU782 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 782 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 all IC697 LAN interface modules, several Coprocessor modules, Bus ControllerforIC660/IC661/O, Communications modules, and all of the IC697 family of discrete and analog I/O modules.

Program and data memory for the CPU 782 is available by the attachment of an expansion memory board with either 128, 256 or 512 KBytes of battery-backed CMOS RAM, or 256 KBytes of Non-volatile flash.

* MS-DOS, Windows, Windows 95, and Windows NT are registered trademarks of Microsoft Corporation.
Operation of this module may be controlled by the three position RUN/STOP switch or remotely by an attached programmer and programming software. Program and configuration data can be locked through software passwords or manually by the memory protect keyswitch. When the key is in the protected position, program and configuration data cannot be moved to the appropriate operation mode.

When diagnostics have completed successfully, the module should power up and blink the top LED.

**Expansion Memory**

The CPU 781 must have a CMOS expansion memory board. Expansion memory boards are available with 128 KBytes, 256 KBytes, 512 KBytes, and 256 KBytes non-volatile flash memory. The battery which supports the CMOS RAM memory is located on the main CPU board. 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.
PLC CPUs

16 MHz, 32-Bit, Expandable, Floating Point Central Processing Unit

GFK-0767D
August 1997

Programmer Connection, Parallel

The programmer connects to the top port on the bus transmitter (IC697BEM713) system interface module for a parallel interface (MS-DOS programmer only), see 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 an IC647 communications interface board installed in the programming computer.

The serial connection can also be made from the Standard Serial COM port on the CPU to the serial port on the programming computer, or other serial device, through the RS-422, RS-485 to RS-232 Converter (IC690ACC900) or RS-232 to RS-422 Miniconverter (IC690ACC901). This connection can be made with available cables or you may build cables to fit the needs of your particular application. For more information on serial communications, see Reference 3.

Figure 2. CPU 782 - Location of Major Features

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 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 IC697CPU782 †

<table>
<thead>
<tr>
<th>Batter</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Shelf Life</td>
<td>10 years at 20° C (68° F)</td>
</tr>
<tr>
<td>Memory Retention</td>
<td>6 months nominal without applied power</td>
</tr>
<tr>
<td>Current required from 5V Bus</td>
<td>1.6 Amps (includes expansion memory)</td>
</tr>
<tr>
<td>Time of Day Clock (internal timing) Accuracy</td>
<td>±3.5 seconds per day</td>
</tr>
<tr>
<td>Elapsed Time Clock</td>
<td>±0.01% maximum</td>
</tr>
<tr>
<td>Serial Port</td>
<td>RS422/485 compatible, Programmer Serial Attachment</td>
</tr>
<tr>
<td>VME</td>
<td>System designed to support the VME standard C.1</td>
</tr>
</tbody>
</table>

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

Table 2. References

<table>
<thead>
<tr>
<th>Reference</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Programming Software User’s Manual</td>
</tr>
<tr>
<td>2</td>
<td>Programmable Controller Reference Manual</td>
</tr>
<tr>
<td>3</td>
<td>Programmable Controller Installation Manual</td>
</tr>
</tbody>
</table>
### Table 3. Ordering Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU 782, 16 MHz, 32-Bit, Expandable, Floating Point</td>
<td>IC697CPU782</td>
</tr>
<tr>
<td>128 Kbyte, 32-Bit CMOS Expansion Memory</td>
<td>IC697MEM731</td>
</tr>
<tr>
<td>256 Kbyte with 256 Kbyte Non-Volatile Flash Memory, 32-bit CMOS Expansion Memory</td>
<td>IC697MEM732</td>
</tr>
<tr>
<td>256 Kbyte, 32-Bit CMOS Expansion Memory</td>
<td>IC697MEM733</td>
</tr>
<tr>
<td>512 Kbyte, 32-Bit CMOS Expansion Memory</td>
<td>IC697MEM735</td>
</tr>
<tr>
<td>Lithium Battery</td>
<td>IC697ACC701</td>
</tr>
</tbody>
</table>

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