

IMPORTANT PRODUCT INFORMATION

READ THIS INFORMATION FIRST

Product: CPU State Logic® Module
IC697CSE784-JA*

This is the initial production release of the IC697CSE784 State Logic CPU module. The information in this Important Product Information document covers the IC697 State Logic Operating System version 1.02.

* Note that the suffix was changed to add CSA and FM approval. No hardware or software changes were required.

Table 1. Catalog Numbers

New Catalog Number	Replaces
IC697CSE784-JA	IC697CSE784-HA

Identification

Hardware and software identification is summarized in the following tables.

Table 2. Hardware Identification

Catalog Number	Board Identification	Board Revision
IC697CSE784-JA	CPHA2	44A729676G01 R07 or later

Table 3. Software Identification

Catalog Number	EPROM Location	EPROM/Diskette Label	Function
IC697CSE784-JA	U72 U73 U74 U75	397-005C 5.00 397-006C 5.00 397-002E5.00 397-001E5.00	notapplicable

Update Information

Not applicable, since this is the initial version of the IC697CSE784 State Logic CPU module.

Documentation

The following table lists the applicable documentation for the IC697CSE784 State Logic CPU module.

Table 4. User Documentation

Catalog Number	Data Sheet	User Manual
IC697CSE784-JA	GFK-1035	see below

Read this document before installing or attempting to use the IC697CSE784 PLC CPU State Logic Module. For more information, refer to the applicable *State Logic Control System User's Manual*, *Programmable Controller Installation Manual*, *Programming Software User's Manual*, *Programmable Controller Reference Manual*, and *Important Product Information for the IC697CPU782 CPU*.

Operating Notes

1. Storing a New Folder

Whenever the IC641 programming software program folder is stored from the programmer to the controller (stop mode store), the State Logic program must also be downloaded again using the ECLiPS™ program development software.

The reason that the State Logic program must be downloaded again is that the memory location for the State Logic program changes according to the size of the IC641 programming software program folder. Changes to the program folder may corrupt or invalidate the State Logic program.

The State Logic CPU will not recognize State Logic Programs that were stored prior to storing the IC641 programming software program folder.

Run mode store and on-line changes of ladder logic **DONOT** require the State Logic program to be downloaded.

2. Control Program Space

The memory space reserved for the control program is split into two sections. One section is reserved for State Logic programs and the other section for programs entered with IC641 programming software, either Relay Ladder Logic and/or C block programs. There are about 156,000 bytes available for State Logic and about 60,000 bytes for Relay Ladder Logic and /or C block programs.

3. System Status Bits

There are three %M status bits set by the State Logic operating system that can be accessed from other system programs and devices. These bits are:

%M 1030 - Run Status Bit, set to 1 when the State Logic program is running.

%M 1031 - Digital Force Status Bit, set to 1 when a digital point is forced in State Logic.

%M 1032 - Analog Force Status Bit, set to 1 when an analog channel is forced in State Logic.

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The system status bits allow any device that is working at the IC641 programming software level or SNP level to assess the current status of the State Logic CPU program. As an example a program that is using Ladder Logic in addition to State Logic Programming could use %M1030 to make sure that the Ladder program would halt execution if the State Logic program halts, (%M1030 would be turned off).

4. Run-time Error Messages

Run-time error messages are filtered so that a stream of identical messages are not repeatedly displayed filling up the display screen. When an error message is displayed, its contents are stored so that another identical message is not displayed immediately. The stored message is erased every minute on the minute so that if more errors occur, a new message is displayed every minute, on the minute.

5. State Logic CPU Operational Lights

There are three LEDs on the State Logic CPU module which indicate the current state of the CPU. The normal state of these LEDs when a State Logic Program is running in the CPU is ON. The LEDs are off or flashing to indicate special or failure conditions.

Top LED - *System OK*

The top LED, labeled OK, is an indicator of the health of the CPU. It is ON when the CPU is functioning properly. The LED blinks when the CPU executes the power-up diagnostics and when the system has failed. The LED is OFF when the system has failed and the CPU cannot communicate with the programmer.

Middle LED - *Run*

The second LED is an indicator of the run/stop status of the CPU. It is ON when the CPU is in the RUN/ENABLE or RUN/DISABLE mode. The LED is OFF when the CPU is in STOP mode. The CPU must be put into run mode using IC641 programming software. ECLiPS cannot communicate with the State Logic CPU if the CPU is in STOP mode.

Bottom LED - *Enabled*

The bottom LED, labeled ENABLED indicates the state of the outputs. The LED is ON when the outputs are enabled and the State Logic Program is running. The LED is OFF when the outputs are disabled.

NOTE

The CPU will not go into RUN/ENABLED mode using IC641 programming software. Attempting to place the program into RUN/ENABLED mode from IC641 programming software will place the CPU into RUN/DISABLED mode. In order to enter RUN/ENABLED mode the CPU must be loaded with a State Logic Program and the program must be running. ECLiPS programming software is used to create, load, and run the State Logic Programs.

6. Run Enable/Disable Switch

A small switch is located beneath the operation LEDs on the State Logic CPU; the switch can be used to control the Run Status of the CPU. The switch has positions that control the Run Status; Up for Run/Enabled, Middle for Run/Disabled, and Down for Stop.

The switch overrides the Run Status set by IC641 programming software or ECLiPS. If the switch is moved to the down position, the State Logic program and any other programs in the CPU stop execution and outputs are disabled. If the switch is then moved to the Run/Enabled position the outputs become enabled, any ladder logic or C block programs begin execution, but the State Logic program starts execution only if configured to run on power up.

If ladder logic and/or C block programs are used, it is possible to have the ladder logic or C block program executing with the State Logic program halted. There are two ways to avoid this condition:

1. Only use IC641 programming software and ECLiPS to set the run state of the programs.
2. Use the State Logic system status bits described above to control ladder logic or C block program execution.

7. Reserved Memory Locations

Some %P memory locations are reserved for the State Logic Controller. The %P memory locations reserved are in the range of 1 through 300. *Do not use these %P memory locations in other programs.*

8. Loading the State Engine Operating System with IC641 Programming Software

The IC697 State Logic System User's Manual explains in Chapter 2 the procedure for loading the State Engine Operating System into the CPU with IC641 programming software. The description in the manual suggests loading the State Engine directly from the folder on the floppy disk.

A better way to load the State Engine is to first use the IC641 programming software to copy the folder called *ENGINE* from the floppy disk to the hard drive. Then follow the directions in the manual to load the State Engine from the hard drive folder rather than from the floppy drive folder.

The reason for this suggested procedure is that loading the State Engine from the folder on the floppy drive is quite a bit slower than loading it from a folder on the hard drive. Loading the State Engine from the floppy disk works properly, but is slower.

Restrictions and Open Problems

1. Automatic Program Execution

The State Logic program is normally halted when power is first applied to the system. Commands from ECLiPS or OnTOP are used to start the State Logic program executing. The system can easily be configured to start executing automatically when power is applied to the system.

To configure the system to start program execution on power up, select the System Configuration option from the ECLiPS DEFINE menu. Select the CPU module configuration by pressing the **Enter** key with the CPU module highlighted. To configure the system to execute the State Logic program automatically when power is applied to the system, set the *Run Program at Power Up* blank on the form to Y and press **F9** to save the change.

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CAUTION

There is a remote possibility that retentive data in the controller can become corrupted during a power cycle. If there are any variables set to be retentive or any Task is set to restart in the State that was last active using the `Start_In_Last_State` keyword, the controller checks for that corruption possibility on power-up. If the controller detects that there has been some corruption, the controller does not start the program running, sends a message to be displayed by ECLiPS, and clears all memory locations including any retentive memory locations.

If ECLiPS is not connected to the State Logic controller when data corruption is detected, no other indication of the problem is displayed. To start the program executing again, cycle the power using the power switch on the power supply. The program starts executing with every Task starting in the Power-Up State.

If it is important that the program never power up with the program halted, do not use the retentive option for any of the variables and do not set any Task to start in the State that was last active. Ladder Logic programming should be used to save data or to save the active States over a power cycle.

2. State Logic Processor and Serial Communications Module Compatibility

When using a State Logic Processor (SLP) together with a Serial Communication Module (SCM), make sure that the SLP is not installed between the CPU and the SCM. Always install the SCM in slots as close to the CPU as possible.

4. Get User Input Perform Function

This function is used to receive serial input. Any variable type may be used to store the input received into the program. If the serial input data type is not valid for the variable type selected, an error message is displayed and the program will continue to look for the correct type of data.

5. Communication Errors

In the unlikely event that a communications error occurs, ECLiPS displays an option to view error codes. The error codes displayed are of two different types, *major error code* and *minor error code*. The following table provides some more information on the meanings of these error codes. To receive more information on this error contact technical support with the error number displayed.

Major Code	Meaning
01h	Slave doesn't recognize Message type.
02h	Slave doesn't recognize Command.
03h	Received a Type <i>B</i> Message without having previously received a type <i>C</i> Message.
04h	General error, see Minor error code for details.

Minor Code	Meaning
01h	Tried to read from invalid variable type such as %R in DOS State Engine.
02h	Tried to read from data that is outside the total number of the specified Variable.
03h	Trying to write to invalid variable type such as %R in DOS State Engine or Digital I/O point in any State Engine.
04h	Trying to write data to a Variable that will exceed the total number of the specified Variable.
05h	Trying to write more than an 80 character String value without a terminating ASCII Null.
06h	Trying to Force an invalid variable type such as %R in DOS State Engine or an Integer variable in any State Engine.
07h	Trying to Force a Variable that will exceed the total number of the specified Variable.
08h	Trying to force more than 32 variables of one type.
09h	Not used
0Ah	Trying to Clear a Force on a point that isn't currently Forced.
0Bh	Asking for Return of Forces when there are no Forced Variables.
0Ch	Trying to Define in a Datagram an invalid variable type such as %R in DOS State Engine.
0Dh	Trying to Define in a Datagram a Variable that will exceed the total number of the specified Variable.
0Eh	Total data returned could exceed allowable maximum amount of data.
0Fh	No data defined in Datagram.
10h	Tried to change a non-existent Task.
11h	Tried to change to a non-existent State.
30h	No active messages at this time.
31h	No active R term at this time.
32h	No active Write_Buffer messages at this time.
33h	No active Read_Buffer term at this time.
40h	State Engine already in requested operating mode.
41h	State Engine must be in Halt mode for this command.
42h	Date or time asked for is invalid.
43h	Trace Setup parameter is invalid.
44h	Invalid Fault Clearing Parameters.
49h	Invalid State Engine Control command.
60h	Download not allowed because controller is in Run mode.
61h	Program too large for available memory.
62h	Bad state for downloaded trace.
63h	Download did not match the number of type P messages received.
64h	Online Download not allowed because controller is in Halt mode.
65h	Too many States for this Task
66h	No Online Download Task waiting to be started.
67h	Invalid active State number.
68h	Received a message other than a P block during a download.
69h	Function not supported by this State Engine.
6Ah	Bad PSM detected in downloaded data.
6Bh	Bad . type command (G. etc) in downloaded data.
6Ch	Bad download for unknown reason.
6Dh	Unknown error to Online Download Complete.
6Eh	CSE924 memory protection key set.

Problems Resolved by This Upgrade

Not applicable since this is a new module.