

IMPORTANT PRODUCT INFORMATION

READ THIS INFORMATION FIRST

Products: ECLiPS Version 3.13 For Series 90™ -30 CPU
AD641ECL308F
OnTOP Version 3.13 For Series 90-30 CPU
AD641ONT308F
ECLiPS Lite Version 3.13 For Series 90-30 Model 311 CPU
AD641ECL311F
OnTOP Lite Version 3.13 For Series 90-30 Model 311 CPU
AD641OTP311F

Important: This product has tested "Year 2000 capability affected." It is strongly recommended that you read the Year 2000 information contained in this document.

Introduction

This document contains information not available in any other publication; therefore, we recommend you save it for future reference. This document covers two subjects: (1) information on how the Year 2000 issue affects these products, covered in the "Year 2000 Information" section, and (2) information about release 3.13 of the ECLiPS and OnTOP software for GE Fanuc Series 90-30 State Logic CPUs. ECLiPS software provides programming and configuration support for State Logic CPU models 311, 313, 323, 331, and 340. OnTOP provides debug only support for the same CPUs. Also discussed is ECLiPS Lite which provides programming support for only model 311 CPUs.

Compatibility

ECLiPS/OnTOP Version 3.13 is compatible with the following Series 90-30 CPUs:

- IC693CSE311C
- IC693CSE313F
- IC693CSE323F
- IC693CSE331C
- IC693CSE340F

ECLiPS Lite/OnTOP Lite Version 3.13 is compatible with the following Series 90-30 CPU:

- IC693CSE311B

State Logic programs developed with prior versions of ECLiPS for Series 90-30 CPUs are with one exception syntactically compatible with Version 3.13. Version 3.13 syntax for the Send_HSC_Data and COMMREQ perform statements adds an additional parameter beyond V3.0 syntax.

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Programs from prior versions of ECLiPS must be recompiled before they can be downloaded to a Version 3.1 State Engine. Version 3.13 ECLiPS will not establish communication with prior versions of State Engines.

ECLiPS Version 3.13 is not compatible with the Version 1.xx Serial Communications Module AD693CMM301. This module must be upgraded to Version ADM693CMM301 revisions C or D before it will be configured correctly by ECLiPS Version 3.13.

Product Documentation

Series 90™ -30 State Logic Control System User's Manual, GFK-1056C.

Year 2000 Information

Printed Report Date Problem

Products Affected

This problem affects all ECLiPS software products; the ONTOP products are not affected.

Problem Description

This is a benign problem that does not affect PLC operation. Reports generated with the "Project Print" option on projects modified on or after 01-01-2000 will indicate an incorrect project "Last Modified" date. The dates affected will correctly state the day and month of modification, but the year will be incorrect. The year 2000 will be reported as year 100, the year 2001 as 101, etc. The "Last Modified" date is strictly descriptive, is only noted or displayed on these reports, and will not affect program loading, editing, compilation, downloading, or debugging. There are no workaround solutions available for this problem.

New Features of Version 3.13

Support has been added for the following modules.

IC693ALG442 Analog Combo Module

HE693RTU9xx Horner RTU Protocol Communications Modules

HE693SNP9xx Horner SNP Protocol Communications Modules

HE693DNT250 Horner Device Net Scanner Module

Double Precision Integer Math

Mathematical expressions involving double precision integer constants are now permitted. The double precision integer variable type however, has not been implemented. Assignment of a number larger than 32767 or less than -32767 to an integer variable will generate an integer overflow error.

PID Update Rates

PID loops will now update at rates starting at 0.1 seconds, in 0.1 second increments.

Menu Access to "Dumb Terminal" Mode

A programmer menu option has been added to the "Program" menu tree which allows access to "dumb terminal" mode. This will simplify setup of modem operations.

Improvement to "Comm Window" Function

The "Set PLC Comm Window" function will now initialize to the "comm window" currently being used by the PLC. The prior function would always initialize to "0" no matter what comm window was actually in use.

Addition of Parity Parameter for Programming Port Setup

The Comm Port setup for the programmer port has been augmented to permit setting the parity to Odd, Even, or None.

Fault Variables

Fault variables are now read/write and can be used to clear module faults from the control program.

Discontinued Support

Serial Communications Module SNP/CCM Modes

Support has been discontinued only for the SNP and CMM protocols on the AD693CMM301 module. State Logic support for these protocols is provided through the Series 90-30 IC693CMM311 (CMM) module. The SCM still supports ASCII Serial communications via "Write" and "Read" statements.

Operational Notes

Fault System

There are two components of the State Logic CPU fault system, the Event Queue and the Fault Table. There is one entry in the Fault Table for each I/O slot in the system plus a Low Battery entry for the CPU. The Fault Table slot entry is the last incident for that slot. Previous events for that slot are not recorded in the Fault Table. The Event Queue on the other hand records a history of every entry in the Fault Table plus many other system events.

There are two categories of Fault Table entries, ALARMS and FAULTS. A FAULT entry means that the CPU no longer communicates with the module in that slot. That module does not return to service until the faults are cleared. Communication between the CPU and the module continues normally when the Fault Table entry is an ALARM. Faults and alarms are both non-critical errors. The system can be configured to either halt or continue running on a non-critical error.

Inputs Hold Their Last State When Module is Faulted

When an input module faults, the status of the inputs hold their last state. Therefore, if a program halts and the module faults when the program starts execution, the status of

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the inputs is the same as when the program was halted. These values are maintained through any number of run/halt cycles or power cycles. Clearing the faults puts the module back in service. A new program download also clears the input values.

Two Ranges of %G Outputs

%G discrete data points can be either inputs or outputs. Those points configured to be broadcast as global data by either a Genius® Bus Controller (GBC) or Genius Communications Module + (GCM+) module are considered to be outputs. All others are inputs. The output values are controlled by the State Logic program and are therefore OFF by default. Inputs can be controlled by an external device, but they cannot be controlled by the program.

There can be no more than two ranges of %G outputs. If more than two devices are broadcasting %G points, the reference number of these points should be adjusted to be contiguous so that no more than two ranges are created.

Setting the SNP ID Number for a CMM Module

There are two methods of setting the SNP ID number in the CMM module:

1. Set the SNP ID number for the programming port, by selecting the “SNP Setup” option from the Debug Mode PROJECT menu. Then reset the CMM by pressing the reset button or power cycling the system. Using this method, the SNP ID must be reset whenever a new program is downloaded to the CPU.
2. Set the SNP ID number from the State Logic program by executing a Comm_Request perform function.

New Configuration Resets IOM Modules

If a new configuration is sent to an IOM module or the reset button is pressed, the module generates a reset event. The reset event is recorded in the Fault Table and in the Event Queue. The reset is an alarm and is therefore a non-critical error.

CCM Protocol Listing

The CCM protocol listing available as a print option is used only for the programming port and the ports on the Serial Communications Module. Use the SNP listing for all other data access including CCM protocol access through the CMM and PCM modules.

Delayed IOM Module Operation on Power Up

IOM Modules are not operational for up to 15 seconds after power is applied to the system and the program begins to execute. These modules do not respond to Comm_Req function calls or communicate to remote devices during this time period. Com_reqs sent to these modules prior to the modules' initialization will generate an alarm and an entry in the event queue.

Send_HSC_Data Perform Function

The Send_HSC_Data perform function now requires an additional parameter. This parameter indicates the location of an integer variable to contain status information. An

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"execution error" alarm will be issued and the Status_Word will be set to 1 as a result of issuing a Send_HSC_Data perform either prior to the module being operational or while a loss of module condition exists. The Status_Word will be 0 otherwise.

Comm_Request Perform Function

The Comm_Request perform function now requires an additional parameter. This parameter indicates the location of an integer variable to contain status information. An "execution error" alarm will be issued and the Status_Word will be set to 1 as a result of issuing a Comm_Request perform either prior to the module being operational or while a loss of module condition exists. The Status_Word will be 0 otherwise.

New Alarms

Three new alarms have been added to the fault system. These alarms will be generated if a Send_HSC_Data, a Write to a Serial Communications Module, or a Comm_Request is issued before the target module is ready. This circumstance can occur immediately after a power cycle or during a "loss of module" event.

The alarms are:

- High Speed Counter Execution Error
- Comm. Request Execution Error
- Serial Communications Module Execution Error

Error Messages From Mathematical Evaluations

The order of mathematical term evaluation inside the State Engine has changed somewhat from previous releases of the State Engine. This may result in a different message being displayed when there is an error during evaluation of a mathematical equation. For example, a complex term which previously generated an "integer overflow" error may now generate a "zero divide" error or vice versa depending on the ordering of the equation.

Limited Remote Access to Analog Data

Access to analog data through the Ethernet Interface Module, Genius Global Data, PCM, CMM, SNP and CCM Protocols has the following limitations. Analog outputs cannot be changed by using the %AQ reference. Use the register references to analog data to change analog outputs.

When an analog input is forced, the value from the module, not the forced value is transmitted when the %AI location is referenced. Use the register analog reference to access the forced value.

Forcing Double Precision %AQ Locations

Axis Positioning and High Speed Counter modules have associated %AQ pairs which are used to send control information to them. I/O Names associated with these paired analog locations are treated as unscaled "double precision" integers by State Logic English and can therefore be set equal to double precision values. They cannot, however be forced to double precision values in Debug "Force" mode.

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In "Force" mode, the I/O Name associated with the %AQ pair is resolved to the first of the analog output locations. It is treated as though it were a single %AQ and is therefore limited to values -32768 and 32767. Access to the second half of the %AQ pair must be accomplished by giving it an I/O Name as well and forcing it like any other %AQ.

Operation Under Windows NT®

ECLiPS V3.13 will run successfully under Windows NT in an MS-DOS® box. It is recommended that the computer have at least 24 megabytes of RAM and have a Pentium® 66 or better CPU. It is also recommended that other running programs which consume significant computer resources be paused or shutdown while ECLiPS is communicating with the PLC. If too much resource is being consumed by other processes, communications between ECLiPS and the PLC will be erratic or exhibit unusual behavior. ECLiPS will require exclusive access to its "com" port while it is active.

In addition, a device driver and/or an upgraded "NTVDM.EXE" program may be necessary for ECLiPS to properly identify the ECLiPS "key" attached to the printer port. ECLiPS' failure to identify the key will result in the installation being treated as a "demonstration" system. An NT driver and instruction sheet will be provided by request.

Comm Window Setting

Modules which perform communication functions can have a significant effect on the performance of the CPU since they generate large amounts of backplane "mail" traffic which the CPU must service. Under heavy communications loads, comm. modules may experience significant throughput problems unless the CPU is permitted more servicing time.

An increase in servicing time can be accomplished by changing the CPU's "Comm Window" from the F3 Project menu option in Debug mode. The number of milliseconds specified will be reserved at the top of every scan for processing "mail" traffic. The "Comm Window" setting is a part of the project and is downloaded along with the control program. It will also be retained over Run/Halt, a power cycle, and a restart from EPROM.

Limit On State Size

Prior versions of ECLiPS had a limit of approximately 64,000 State Logic® English characters per individual state. This release limits a state to no more than 4,000 characters of "PLC code". The ratio of English to "PLC code" depends on the length of variable names and the amount of filler words used but in general, PLC code is far more compact than State Logic English. This change should not affect individual states with less than 10,000 characters of State Logic English. An error message will be displayed during compilation and download if the limit has been exceeded.

Change In Program Size

In order to increase program scan rates, the format of the program downloaded to the CPU has changed. This change has resulted in a different program size. Program sizes will differ from previous versions from -10% to +15% depending on the nature of the State Logic English statements used and the size of individual "sentences".

Extension to the String_Manipulation Perform

The String_Manipulation perform function has been extended to permit strings input to the "convert to integer" and "convert to floating point" options to be of any legal string length. Conversion of the string to a number will cease after the first non-blank and non-numeric character is encountered. Strings which would convert to non-zero values may be immediately preceded by a single sign character.

Problems Fixed In Version 3.13

PID Tuning Screen

Field widths were expanded to remedy a limit on the number of significant digits displayed for several fields on the PID Tuning screen.

Limit On Write Statements

A bug was eliminated which prevented more than 32 "write" statements in one state.

New Connect Sequence

A new communications sequence is being used to improve a situation in which ECLiPS is unable to connect with the PLC, particularly when it is in SNP communications mode. This situation was frequent in laptop computers, would occur with some desk top PCs, and would occasionally happen under Windows NT even when it had previously connected.

Foreign Module Analog Range Limit

A bug was fixed that limited the Analog Input channel number to two digits.

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Restrictions and Significant Open Problems

Limited Support For APM300 Modules

There is no support provided for Motion Mate™ APM300 Module configuration options intended for use with GE-Fanuc PowerMotion™ products.

No Support For Programming Via the Ethernet Module

No support is provided for downloading programs to the CPU via the Ethernet Module.

Support Limitations for Comm. Requests

No support is provided for "Wait" type Comm. Requests. Support is only provided for transfers to and from data type #08 memory(integers/registers).

Release Files

The following release files are required for ECLiPS V3.13 operation.

- ECL30.EXE (Changed for this version)
- ECLIPS.KWD
- ECLIPS.TPL (Changed for this version)
- ECLERR.HLP
- ECLIPS.HLP (Changed for this version)
- ECLIPS.30M (Changed for this version)
- ECLSE.DAT
- ECLSH.DAT
- ECLSM.DAT (Changed for this version)
- IBMSRUN.OVL
- \$RUN.OVL
- BWSRUN.OVL
- ECLSRUN.OVL
- ECLIPS.BAT (Changed for this version)

Also distributed in the release folder are two Windows® compatible icon files "STLOGIC.ICO", and "SLOGIC.ICO".

The following files are required for OnTOP Version 3.13 operation

- ONT30.EXE (Changed for this version)
- ECLIPS.KWD
- ECLIPS.TPL (Changed for this version)
- ECLIPS.HLP (Changed for this version)
- ECLIPS.30M (Changed for this version)
- ECLSE.DAT
- ECLSH.DAT
- ECLSM.DAT (Changed for this version)
- BMSRUN.OVL
- \$RUN.OVL
- BWSRUN.OVL
- ONTOP.BAT