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GFK-0559K

# IMPORTANT PRODUCT INFORMATION

## READ THIS INFORMATION FIRST

**Product:** **Alphanumeric Display System**
**IC641SWP771J**
**Software Identification: Version 4.11**

**Replaces:**
**Version 4.01 (IC641SWP771H)**
**Version 3.02 (IC641SWP771G)**
**Version 3.01 (IC641SWP771F)**
**Version 2.01 (IC641SWP771E)**
**Version 1.04 (IC641SWP771D)**
**Version 1.03 (IC641SWP771C)**
**Version 1.02 (IC641SWP771B)**
**Version 1.01 (IC641SWP771A)**

Read this document before installing or attempting to use the Alphanumeric Display System Software, IC641SWP771J with your IC697 or IC693 programmable controller system. The Alphanumeric Display System (ADS) is a character-oriented operator interface product which may be hosted on any IC697 Programmable controller and on an IC693 Model 331, Model 340, or Model 341 programmable controller. It is a low-cost system which requires no user programming; all data is entered via simple pull-down and pop-up menus and dialog boxes.

Version 4.11 builds on the feature set introduced as part of version 3.0x. It continues the trend set with the initial release of providing built-in tightly integrated features with the host IC697 or IC693 programmable controller, giving you more and easier access to the strengths of the IC697 or IC693 programmable controller (diagnostics, local data, PID, fault tables, etc.).

Version 4.11 introduces several new important features and fixes several problems in the previous versions.

The various versions of ADS software are compatible only with certain revisions of the host IC697 or IC693 ADC module. Refer to the following table for supported compatibility between the ADS software and the various ADC modules.

| ADC Module | is Compatible With ADS Software Versions | is NOT Compatible With ADS Software Versions |
|---|---|---|
| IC693ADC311D / E / F / G† / H | 3.01 and above | 1.01 through 2.01 |
| IC693ADC311C | 1.01 through 2.01 | 3.01 and above |
| IC693ADC311A / B | 1.01 through 1.04 | 2.01 and above |
| IC697ADC701C / D / E† / F | 3.01 and above | 1.01 through 2.01 |
| IC697ADC701B | 1.01 through 2.01 | 3.01 and above |
| IC697ADC701A | 1.01 through 1.04 | 2.01 and above |

† This version of the ADC module, or higher, ***is required*** to use the new Lucas Deeco® ST2200 target terminal and/or the new TTY printer table. See "New Features and Functionality" for more details.

### Update Kits

44A731223-G05 - IC693 Models 331 / 341 (IC693ADS301)
44A731226-G04 - IC693 Models 331 / 341 (IC693ADC311)
44A731224-G05 - IC697 (IC697ADS701)
44A731227-G04 - IC697 (IC697ADC701)

### Applicable Documents:

1. Alphanumeric Display System User's Manual
2. Alphanumeric Display System Reference Manual

## Operating Notes

### Installation

1. The *Alphanumeric Display System User's Manual* should be consulted for how to install the ADS software onto the ADC module. Note the item below concerning the host ADC module revision level required to support the ADS version 4.11 software.

   You may need to refer to the *Programmable Coprocessor Module and Support Software User's Manual* and the PCM *Development Software (PCOP) User's Manual* for details on installing and using the PCM programming software, PCOP.

#### Note

In order to update the ADS executable files on the ADC module, you MUST first clear the module of all existing files. Ensure that your user system (database) is archived on your computer before doing this; otherwise, you will lose your application. Powering up the ADC module with the battery disconnected is an easy way to clear it of ALL files.

### Host ADC Module

2. The ADS version 4.11 software may only be run on an Alphanumeric Display Coprocessor (ADC) module (IC697ADC701C / D / E / F for IC697 systems; IC693ADC311D / E / F / G / H for IC693 Model 331, Model 340 or Model 341 systems). Upgrade kit 44A731227-G04 may be used to convert an earlier version ADC module to the required revision level (IC697ADC701F); upgrade kit 44A731226-G04 may be used to convert an earlier version ADC module to the required revision level (IC693ADC311H).

   Note that system upgrade kit 44A731224-G05 for the IC697 and system upgrade kit 44A731223-G05 for the IC693 Model 331, Model 340, and Model 341 also contain firmware for upgrading a single ADC module

### IC697 CPU Firmware

3. The Alphanumeric Display System requires that Version 2.02 or higher of the IC697 CPU firmware be installed in the CPU module.

### IC641SWP7 Software

4. The Alphanumeric Display System requires that Version 2.04 or higher of IC641SWP7 programming software be used to configure the host ADC module. Note that IC641SWP7 programming software Version 2.04 erroneously refers to the host ADS Alphanumeric Display Coprocessor (ADC) module as the "ASCII Display Coprocessor" module.

### IC693 CPU Firmware

5. The Alphanumeric Display System requires that Version 2.01 or higher of the IC693 CPU firmware be installed in the CPU module.

### IC641SWP3 Software

6. The Alphanumeric Display System requires that Version 1.04 [1] *OR* Version 2.03 or higher of IC641SWP3 programming software be used to configure the host ADC module.

   [1] IC693SWP3 version 1.04 will allow you to properly configure the ADC module, but will not give you access to the various non-ADC related features of the 2.01 CPU firmware.

### PCOP

7. ADS version 4.11 software requires that Version 2.05 or higher of the PCM programming software (PCOP) be used to communicate with the host ADC module. In particular, the widely distributed version 2.04 of the PCOP software *is NOT* compatible with ADS version 4.11.

### PC-Based Builder

8. Depending on the size of the system (database) that you create or modify with the PC-based version of the ADS Builder, you will likely need to remove various drivers that you typically install through your CONFIG.SYS file, as well as various TSR programs you install through your AUTOEXEC.BAT file. It is recommended that your CONFIG.SYS file settings for files and buffers be set at least to the following.

   ```
   FILES = 20
   BUFFERS = 20
   ```

   Usually, use of MS DOS® 5.0 or higher will significantly increase the amount of memory available for creating systems in the PC-based Builder as compared to the amount of memory available under earlier versions of MS DOS.

   Use of an expanded memory manager, such as QEMM-386™ from Quarterdeck or 386MAX™ from Qualitas®, can also significantly increase the amount of memory available to the PC-based Builder.

## Problems Resolved by This Upgrade (V4.11)

### COMMS Failures

1. In certain situations the ADC module would report a communications failure with the PLC when accessing the last PLC location for a particular memory type (e.g., PLC location %R8192 when the PLC was configured for 8k registers). This no longer occurs.

### PID Deadband

2. On the configuration screen of the PID option module, a PID loop's deadband may be specified. Previous versions of the ADS software applied the defined scaling of the CV variable to the deadband limits, as opposed to that of the PV/SP variables as expected. Also, the deadband limits were treated as absolute scaled values as opposed to scaled values relative to the SP variable as expected. Both of these errors have been corrected.

### PID Loop Save

3. If the loop setup screen of the PID option module was used to save loop definitions to a file (typically on the ADC's RAM: disk), the save was not actually performed. If the ADC module was reset, or the PLC power cycled, the setup information was lost. The file save is now performed as expected.

### Multiple Refresh

4. If a system refresh was performed when no refresh was required (i.e., a refresh had already been performed since the last system change), the initial message "Checking for attached, online ADC" was not removed from the display. Now a "Refresh complete" message is displayed in this situation.

### WAIT_DATA Cmd

5. When a command script, key assignment, alarm source or display format containing a WAIT_DATA command was edited in the PC-based Builder after its initial creation, files could be corrupted on the PC"s hard disk. Files, especially the system's configuration (.CFG) file, could grow very large and / or clusters could be lost on the hard disk (as reported by the DOS "CHKDSK" utility. This problem has now been corrected.

### O's on Reports

6. After initially loading a system to the ADC module, reports would print out properly until the ADC module was next reset. At that point, any report which had been printed prior to the reset would then begin to print "o" (zero) for any dynamic object which had not changed value since the last time the report was printed. This has now been fixed.

### Reports Don't Print

7. If a dynamic object on a report referenced a PLC location that did not actually exist in the PLC (for example, a %R reference greater than what has been configured, a %L reference from a non-existent program block, etc.), and you attempted to print that report, nothing happened. In this situation the software will now log a system fault of the form "Report scan failure for object <dynamic object>"; however, the report will still not be printed.

### REFRSH Command

8. When the REFRSH( ) command was executed via an alarm source action, no refresh of the target terminal's display would occur. This has now been corrected.

### Floating Point

9. If a dynamic object is created for a floating point value (for example, ”999.99”), but that object is animated by a non-floating point source (either the data source was not of type ”Floating point” or an additional calculation is not used to convert to convert ”Floating point”) no error is displayed when the system is executed. However, the ”9” field formating characters to the right of the decimal point will be displayed as static text (that is, always as ”9”). In previous software versions if you were to attempt to fix this problem by modifying your data source to floating point or by introducing an additional calculation which converted to floating point, the change would be ignored when the system was executed. You can now ”fix” this problem when discovered and the system will then execute as expected.

### COMMS Failures

10. In certain situations in IC693 systems with a heavy communications load on its backplane, the ADC module would sometimes report a failure in attempting to gather data from the CPU. The software has now been enhanced to retry communications when the CPU reports it is ”busy”, rather than immediately reporting a communications failure.

## New Features and Functionality

### STRINGs

1. A STRING input data type is now supported for PLC data sources. This feature provides for accessing a 1–19 character ASCII string from the PLC, whereupon it may be displayed, and optionally edited, via a standard dynamic object. The maximum length of the string may be defined when creating the data source, as explained below. To indicate a string of fewer characters than the defined maximum, terminate the string with an ASCII "Nul" character (ASCII code 0). When a string is edited via a dynamic object, and fewer than the defined maximum number of characters has been typed prior to pressing the **Enter** key, an ASCII "Nul" character will be appended automatically by the ADS software prior to the string being sent to the PLC.

   When an input data type of "STRING" is selected for a PLC data source, the PLC location field must be specified as:

   **<PLC memory> <reference> [ <string length> ]**

   where <PLC memory> is one of R, AI, AQ, P or L; where <reference> is the offset in the PLC memory; and where <string length> is the maximum length of the string. If the <string length> is not specified, a 19-character string is assumed. Examples of valid specifications include R12[6], R8000[19], AQ9 (a string length of 19 is assumed) and CONVEY^L20[16]. Note that "custom" location specifications, e.g. R1;R24, are not allowed for STRING specifications; the entire string must reside in consecutive memory locations.

   A STRING is stored in PLC memory with two characters per reference. Thus a specification of R12[6] implies that the string occupies R12, R13 and R14.

   When editing a dynamic object referencing a "string" data source, leading and / or trailing spaces (ASCII blanks, decimal code 32) may be entered, BUT they will automatically be "trimmed" off by the ADS software; embedded space characters are left as entered. If an entire string of blank characters is entered during an edit operation, a blank string will be sent to the PLC.

### Tutorials

2. The tutorials for both touch and non-touch target terminals have been completely rewritten to (a) emphasize many of the new release 3 and release 4 features (including the use of the PC-based Builder) and (b) show how to accomplish many more tasks than did the previous tutorials. Refer to chapter 6, "Development Tutorial– Creating Your First Operator Interface System," in the *Alphanumeric Display System User's Manual*, for more details.

### OI_MENU

3. A new menuing system has been created to allow easier access to the various separate ADS programs and utilities. Refer to chapter 11, "The Operator Interface Products Menu", in the *Alphanumeric Display System User's Manua*l, for more details.

### Load System to RAM

4. Systems can now be loaded to an ADC module from within the PC-based Builder. This loading is "smart" in that it only loads those system files that have been modified since the previous load to the ADC module. In addition, unlike PCOP's folder load function, only those files that are actually part of the system are loaded; unrelated files are not loaded. Related to the new load feature, you can now also easily start a system executing from within the PC-based Builder. Refer to chapter 9, "Load / Save Operations", Section 7: "Refresh System in RAM" and Section 8: "Execute System in RAM" in the *Alphanumeric Display System Reference Manual*, for more details.

### Deeco ST2200

5. A new target terminal, the Lucas Deeco ST2200 is now supported. Sixty (60) touch points per screen are supported in a fixed predefined (by ADS) grid. Refer to chapter 4 "Setting Up and Connecting the Display Terminal", in the *Alphanumeric Display System User"s Manual*, for more details. Also, a new demonstration system, LUDCO, is supplied to demonstrate the capabilities of ADS running on the ST2200 terminal. Refer to chapter 5, "Installing the ADS Software", Section 5: "Executing a Demonstration System on the ADC Module" in the User's manual for details on executing a demonstration system.

#### Note

In order to use the Lucas Deeco target terminal, your ADC module firmware MUST be upgraded to release 4. For an IC697 ADC module, the revision must be "E" or higher; for an IC693 ADC module, the revision must be "G" or higher. Information regarding hardware / software compatibility and upgrade kits is discussed earlier in this document.

### PID Setup

6. Configuration data for the PID option module can now be defined within the PC-based Builder. Refer to chapter 13, "Options PID", in the *Alphanumeric Display System Reference Manual*, for more details.

### Fault Messages

7. The Fault Tables option module has been updated to include text for IC697 redundancy and SFC related faults.

### TTY Printer Table

8. A new printer table, the TTY table, is now supported. This table is identical to the ASCII printer table, *except* that a form feed is not automatically generated after 63 lines are printed. Refer to Chapter 7, "ADS Setup Utility", Section 8: "Specifying the Target Printer", in the *Alphanumeric Display System User's Manual*, for more details.

#### Note

In order to use the TTY printer table, your ADC module firmware MUST be upgraded to release 4. For an IC697 ADC module, the revision must be "E" or higher; for an IC693 ADC module, the revision must be "G" or higher. Information regarding hardware / software compatibility and upgrade kits is discussed earlier in this document.

### Builder Keys

9. The PC-based Builder has been enhanced to use [Alt] keys in addition to the two-key "GOLD" sequence and to support [Esc] as an equivalent to [F10] as "QUIT". Refer to table 2-1 in chapter 2, "Introduction to Using the ADS Builder", in the *Alphanumeric Display System Reference Manual*, for more details.

## Restrictions and Open Problems

### File Server Timeouts

1. When accessing the PC: drive to archive a system, load a system or to log printer output, a computer running TERMF must be attached to the port configured as running the file server (port 1 unless changed by the user). If the computer is not attached or is attached but not running TERMF, the file server will take approximately 1 1/2 minutes to timeout the request; the ADS software will appear to be locked up and will fail to respond to keypresses during the timeout period. By attaching the computer to the appropriate port, accessing the PCOP software package and entering the TERMF function, the file transfer may be recovered if the timeout has not yet occurred, or the transfer restarted if it has.

### Remote I/O Scanner

2. An ADC may be installed in an IC697 programmable controller Remote I/O Scanner rack, but its access to data outside of the Remote I/O Scanner is restricted to the %I, %Q, %AI and %AQ references configured for the Remote I/O Scanner. All references to other memory types (e.g., R, PLC fault tables, TIME, etc.), as well as unconfiguredI/O, will be satisfied from the Remote I/O Scanner module.

   Note that the Remote I/O Scanner must have firmware revision 3.5 or greater to support the ADC module.

### Mini OIT

3. Neither the ADS Menu program, the ADS Builder nor the PID module may be run on either the Mini OIT or the Mini OIT-Touch terminal. This is because of the reduced number of screen lines supported by those terminals.

### Quad Size Characters

4. A form of ”emulation” of quad size characters is supported for the monochrome and color OITs; quad size characters are totally unsupported for the Mini OIT and Mini OIT-Touch terminals.

### Min/Max

5. When using the dynamic attachment functionality in conjunction with field editing, a dynamic object’s minimum and maximum value specifications may not be redefined.

### Refresh, CIBM/MIBM

6. Extreme care must be taken when using the system refresh feature in conjunction with either the CIBM or MIBM terminal tables. Unless a precise sequence of directions is followed, the ADC module will frequently stop responding; it is also possible to lock up your PC. To avoid this problem, when executing the system via the Builder’s Terminal screen *ALWAYS* exit your system (via EXIT( ) command or Ctrl-E key) and WAIT for the ”–>” module reset prompt to be displayed BEFORE using the Alt-Z key to return to the Builder main menu.

### Multiple Locations

7. It is possible to generate erroneous alarms when using a ”custom” PLC location that is made up of multiple STATE (single bit) locations (for example, a PLC location specified as ”M33;M34”. Occasionally one of the PLC references after the initial one will show a single false reading of ” 0” prior to showing the correct reading of ”1”. When using multiple locations in this way you should ensure that (a) only a single alarm range is defined and (b) that the defined range corresponds to all the points being equal to ”1”.

### ATTACH Command

8. If the ATTACH command is used to change the additional calculation associated with a dynamic object, the dynamic object must have been created specifying an additional calculation. If this is not done, the screen file containing the dynamic object will be corrupted when the system is executed. If no additional calculation is needed normally for the dynamic object, it should reference a translation table entry with A=1, B=0 and C=0.

### SCN_EDIT Command, 1

9. The immediate write flag for the last dynamic object edited as part of a SCN_EDIT command MUST be set to "N". Otherwise, when the SCN_EDIT command is executed a "Bad Mailbox" error message will be issued and the ADS Executor will stop executing the user's system. The "last dynamic object edited" is the dynamic object (a) whose available for edit flag is set to "Y" and (b) whose NAME is alphabetically greatest. Note that there is no loss of functionality with the indicated workaround, as the last field is immediately written regardless of the setting of the immediate write flag.

### SCN_EDIT Command, 2

10. When the SCN_EDIT command attempts to edit a dynamic object which (a) references a translation or engineering units conversion additional calculation which specifies an output data type different from the input data type and (b) has its immediate write flag set to "Y", an erroneous error will be detected regarding an inverse calculation problem with a data type mismatch. You must either set the immediate write flag to "N" or alternatively use the DYN_EDIT command to avoid this problem.

### PRN Files

11. Database listings produced by the ADS Builder contain extra unnecessary blank characters on each line when the ASCII printer table is used. This leads to .PRN files which are much larger than expected, though they are printable as is with no visual problems, which in turn leads to longer printing times. A special utility is provided which will trim the .PRN files of these extra characters. It may be accessed at the DOS prompt by typing the following command:

    **`UNPAD <system name> <path>`**

    where <system name> is the name of the ADS system and <path> is the optional specification for where to find the .PRN file.

    This utility should NOT be used when the either the EPSON or LASER printer tables are being referenced.