



iUP/iPDSTM PROGRAMMING MODULES

MAJOR PERSONALITY MODULE FEATURES:

- Fast Support for All Intel EPROM and EPLD Device Types
- Adapts an iUP-200A/iUP-201A Universal Programmer or Intel Personal Development System (iPDS™) to a Family of PROM Devices
- The Fast 27/K-CON Kit Adds the Quick-Pulse Programming™ Algorithm to the Fast 27/K—the Fastest in the Industry
- Includes the iUP-GUPI Module with New Low-Cost Plug-In Adaptors for Programming Intel's Newest Devices
- Program Intel or Intel-Compatible Devices, Including Microcontrollers, EPLDs, CMOS EPROMs, Latched EPROMs, and the New Page-Programmable 27011 One Meg EPROM

Personality modules custom-fit the iUP-200A/iUP-201A Universal Programmer or the iPDS™ system to a family of PROM devices. Each personality module comes ready to use—just plug it into a Universal Programmer or an iPDS system and begin reading or programming parts. The personality modules can be used off-line or controlled from a host or iPDS system using Intel's powerful PROM programming software (iPPS). Selected personality modules support the latest PROM programming features such as the intelligent Programming™ algorithms (reduce programming time up to a factor of 10), the intelligent Identifier™ (automatically selects the correct intelligent Programming algorithm), and the security bit function (protects PROM memory from unauthorized access).



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PROGRAMMING MODULE DESCRIPTION

The personality module and GUI module adapts the universal programmer or the iPDS system to a specific family of PROM devices; it contains all the hardware and firmware necessary to read and program a family of Intel PROMs. The module comes ready to use; the user merely inserts the module into the universal programmer front panel or the side door of the iPDS chassis (refer to Figures 1 and 2).

Each module connects to the universal programmer/iPDS system through a 41-pin connector. LEDs on the module indicate its operational status. A column of LEDs or a hexadecimal display indicates which PROM device type the user has selected. On some modules, an LED below the socket indicates which socket is to be used. A red indicator light tells the user when power is applied to the selected device.

After specifying the PROM device type, the user inserts the PROM to be programmed or read in the socket on the module. The module checks for correct PROM installation. In addition, each module contains diagnostic firmware that performs the following selected PROM tests and indicates status.

- The PROM installation test verifies that the device is installed in the module correctly and that the ZIF socket is closed.

- The PROM blank check determines whether a device is blank. The universal programmer/iPDS system automatically determines whether the blank state is all zeros or all ones.
- The overlay check (performed when a PROM is not blank) determines which bits are programmed, compares those bits with the program to be loaded, and allows programming to continue if they match.

The user can invoke all the PROM device integrity checks except the installation test (which occurs automatically any time an operation is selected).

iUP-GUPI* MODULE DESCRIPTION

The iUP-GUPI is a generic module that enables the iUP-200A/201A Universal Programmer and the iPDS system to accept low-cost plug-in adaptors. These adaptors configure the system to support a wide variety of programmable devices (EPROMs, microcontrollers, and EPLDs) and device package types (refer to Table 1).

The iUP-GUPI module plugs into any compatible Intel PROM programmer (the iUP-200A/201A Universal Programmer or the iPDS system). An opening in the top of the iUP-GUPI is provided for easy plug-in installation of the GUI adaptors (refer to Figure 3).

***NOTE:**

Generic Universal Programmer Interface.

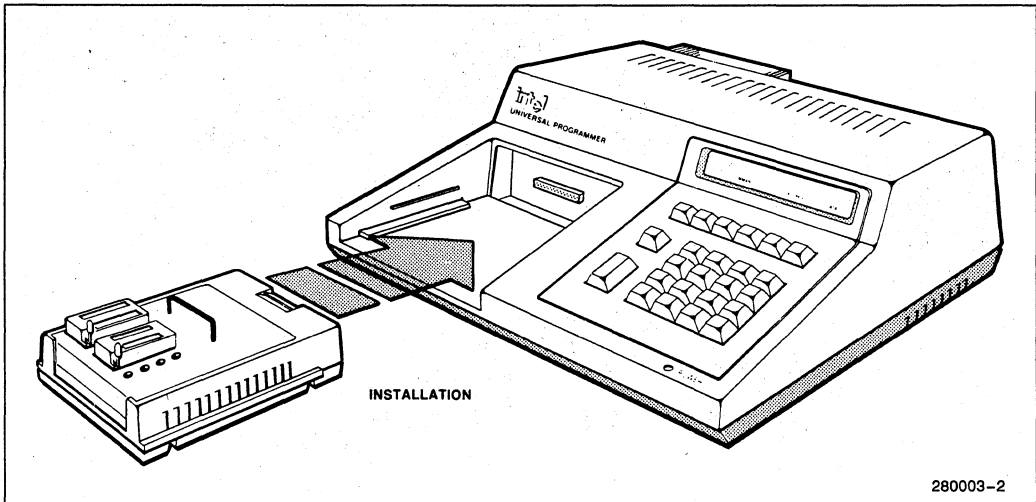
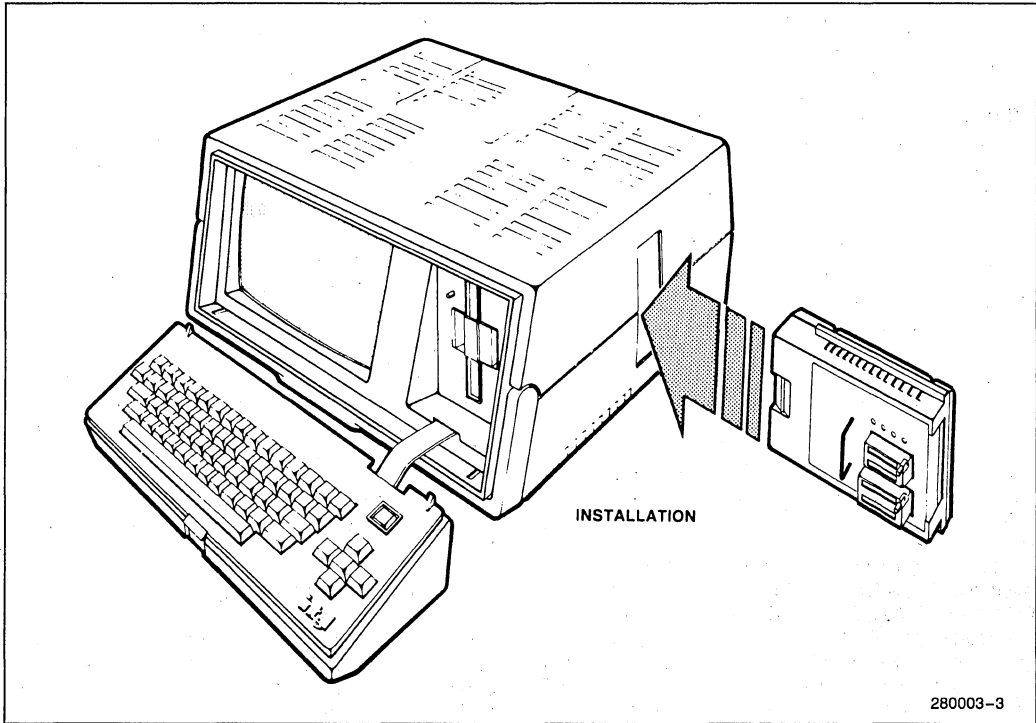


Figure 1. iUP-201A Universal Programmer



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Figure 2. iPDST™ System

Table 1. GUPI Module Adaptors

Device Type	GUPI Logic-09	GUPI Logic-12	GUPI Logic-18	GUPI 27010	GUPI 27011	GUPI 27210	GUPI 8742	GUPI* 8796
EPLD	5C060 5C090	5C031 5C121	 5C180					
EPROM				27010	27011	27210		
Microcontroller							8741AH 8742AH 8041AH 8042AH	8794 8795 8796 8797

*For Pin Grid Array (PGA) and CERDIP packages.

The iUP-GUPI offers all of the same programming performance as earlier personality modules, with the addition of employing Intel's latest, fastest programming algorithms and providing support for several different device types. For example, the iUP-GUPI uses the new Quick-Pulse Programming™ algorithm to program the 1 Meg EPROM in seconds. The initial set of GUIP adaptors and devices supported are listed in Table 1. More adaptors will be announced in the future supporting additional devices and package types.

iUP-GUPI and GUIP LOGIC Adaptors

The iUP-GUPI and assorted GUIP LOGIC adaptors provide an alternative programming solution for Intel's H-series and Altera EPLD devices, when purchased with the iPLS, Intel's Programmable Logic Software. This complete set of software is available separately (i.e., without the iLP programmer pod and IBM interface card).

By selecting a system consisting of the iPLS software, iUP-201A (with iPPS software for the IBM PC, PC XT, or PC AT), and iUP-GUPI, no expansion slots are used in your PC (since the iUP communicates via the PC's RS232 serial port), and a more versatile programming solution is obtained. Some of the added programming advantages are stand-alone operation when several duplicate EPLDs are needed, increased device testing with checksum, verification, and optional programming of EPROMs and micro-controllers with low cost adaptors.

PROM PROGRAMMERS

The modules are used with either the universal programmer or the iPPS system as illustrated in Figure 4. Both the iUP-200A and iUP-201A models of the universal programmer program PROM devices in on-line mode. The iPPS software which controls on-line programming, runs on a variety of host systems. The iUP-201A universal programmer adds an additional feature: off-line programming directly from the universal programmer's keyboard. Figure 1 shows an iUP-201A universal programmer with a module inserted.

The iPPS system features stand-alone on-line programming controlled by the iPPS-iPPS software which runs on the iPPS system. The iPPS system operates in on-line mode only. Figure 2 shows an iPPS system with a module inserted.

Table 2 compares the features of the universal programmer with the features on the iPPS system.

THE iPPS SOFTWARE

The iPPS software, included with both the iUP-200A and iUP-201A models of the universal programmer and with the iPPS system, brings increased flexibility to PROM programming. The iPPS software provides user control through an easy-to-use interactive interface and performs the following functions to make PROM programming quick and easy:

- Reads PROMs and ROMs.
- Programs PROMs directly or from a file.
- Verifies PROM data with buffer data.

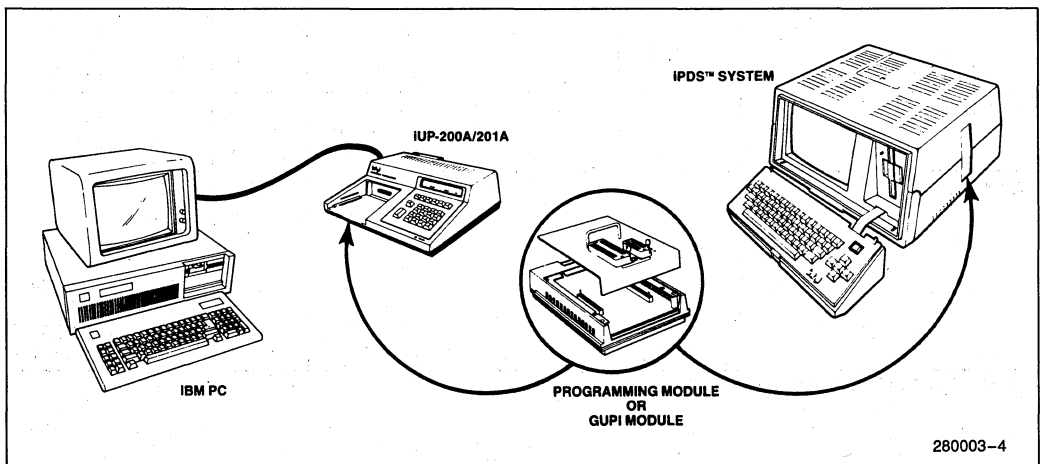


Figure 3. System Configuration

Table 2. PROM Programmers

Features	IUP-200A Universal Programmer	IUP-201A Universal Programmer	IPDSTM System
Function	PROM Programmer	PROM Programmer	Development System and PROM Programmer
Operating Mode	On-Line Mode	On-Line Mode and Off-Line Mode	On-Line Mode
Configuration	Requires Host System Running iPPS Software	Requires Host System in On-Line Mode; Stand-Alone in Off-Line Mode	Stand-Alone Plugged Into iPDS System
Data Display	On CRT of Host System Terminal	On Built-In Single-Line Display in Stand-Alone Mode	On iPDS System CRT
Input Keyboard	From Host System Terminal	Built-In Keyboard	From iPDS System Keyboard

- Locks EPROM memory from unauthorized access (on devices which support this feature).
- Prints PROM contents on the network printer (universal programmer only) or the development system printer.
- Performs interactive formatting operations such as interleaving, nibble swapping, bit reversal, and blocks moves.
- Programs multiple PROMs from the source file, prompting the user to insert new PROMs.
- Uses a buffer to change PROM contents.

With the iPPS software the user can load programs into a PROM from system memory or directly from a disk file. Access to the disk lets the user create and manipulate data in a virtual buffer. This block of data can be formatted into different PROM word sizes for program storage into several different PROM types. In addition, a program stored in the target PROM, the system memory, or a system disk file can be interleaved with a second program and entered into a specific target PROM or PROMs.

The iPPS software supports data manipulation in the following Intel formats: 8080 hexadecimal ASCII, 8080 absolute object, 8086 hexadecimal ASCII, 8086 absolute object, 80286 absolute object, and 80386 bootloadable object. Addresses and data can be displayed in binary, octal, decimal, or hexadecimal. The user can easily change default data formats as well as number bases.

Versions of the iPPS software are available to run on a variety of host microcomputers and operating systems, including the Intel ISIS/INDX and IBM PC-

DOS operating systems. Contact your local field sales office for a complete list of compatible hosts.

PERSONALITY MODULE FEATURES

The personality modules described in the following sections enable a universal programmer/iPDS system to program a wide range of PROM devices, each with its unique needs and requirements: PROMs, EPROMs, E²PROMs, microcontrollers, and microprocessor peripherals. Refer to Table 3 for a comparison of the devices supported by each module.

Note that the user needs one of the following configurations to use the Fast 27/K personality module or to use the security bit function on the iUP-F87/51A and iUP-F87/44A personality modules:

- iPDS System
 - Intel PROM programming software (iPPS-iPDS), version 1.4 or later
 - iPDS-140 EMV/PROM adapter option
- universal programmer
 - on-line
 - Intel PROM programming software (iPPS), version 1.4 or later
 - model 200A or 201A
 - model 201A
 - off-line

The user can easily update an earlier iUP-200/201 universal programmer to an iUP-200A/201A universal programmer with the iUP-200/201 U1 upgrade kit.

Table 3. iUP/IPDSTM Programming Modules

PROM Type	Fast 27/K Module	Fast 27/K U2 Kit	Fast 27/K-CON* Kit	F27/128 Module	F87/44A Module	F87/51A Module
EPLD	2764 2764A 27128 27256	2764 2764A 27C64 87C64 27128 27128A 27256 27C256 27512 27513	2764 2764A 27C64 87C64 27128 27128A 27256 27C256 27512 27513	2716 2732 2732A 2764 27128		
KEPROM		27916				
E ² PROM		2817A	2817A	2815 2816		
Microcontroller					8041A 8042 8044AH 8741A 8742 8744H 8755A	8748 8748H 8749H 8751 8751H 8048 8048H 8049 8049H 8050H 8051

***NOTE:**
Quick-Pulse Programming algorithm.

The iUP-Fast 27/K Personality Module

With the iUP-Fast 27/K personality module the user can program, read, and verify the contents of Intel's newest EPROMs, from the page-programmable (512K) 27513, to the keyed-access 27916, to the CMOS 27C64, 27C256, and 87C64 EPROMs. This personality module supports the intelligent Programming algorithms and the intelligent Identifier. The intelligent Identifier lets the personality module interrogate the PROM device in the program/master socket. It determines whether the type selected matches the type of PROM device installed and

then selects the proper intelligent Programming algorithm. The intelligent Programming algorithms reduce programming time up to a factor of 10.

Low cost, plug-in upgrade kits allow addition of support for Intel's latest EPROMs. The first upgrade kit added support for the 27512 and innovative page-programmable 27513 plus the 27128A and 2817A. It has now been replaced by a second upgrade kit, iUP-Fast 27/K-U2 adding support for Intel's new CMOS EPROMs and keyed-access KEPROM (refer to Table 3).

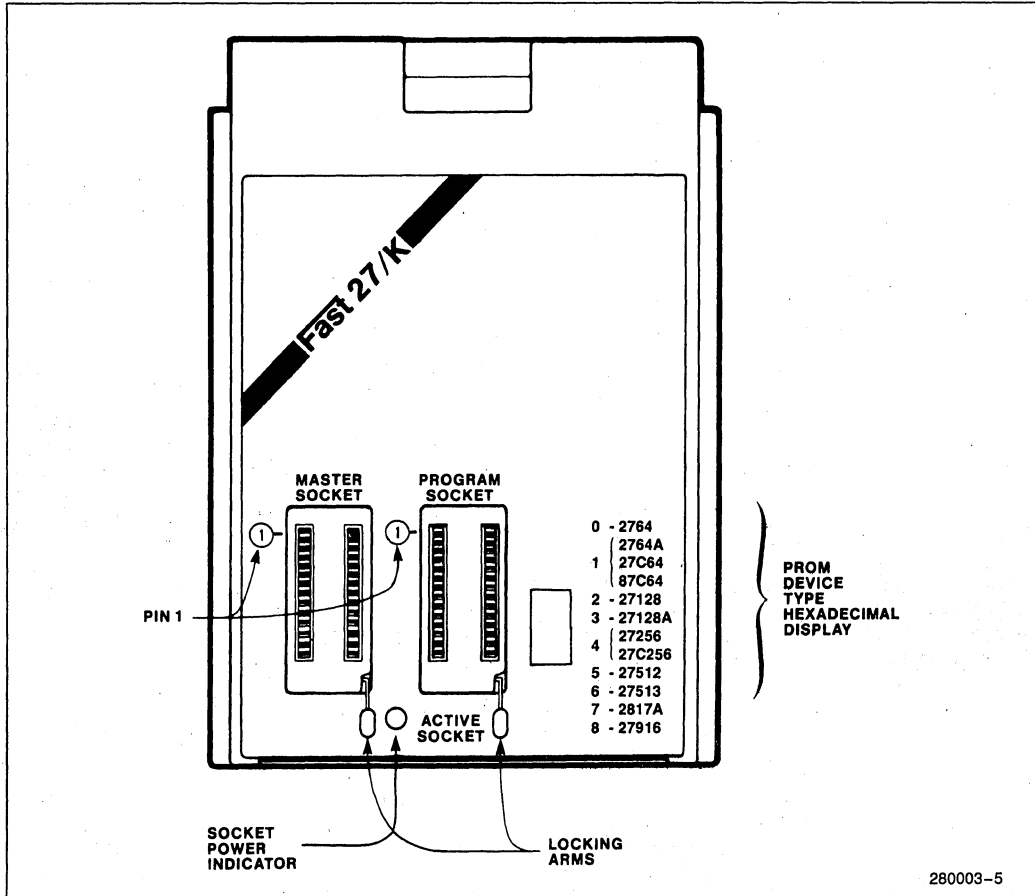


Figure 4. iUP-Fast 27/K Personality Module with U2 Upgrade

As shown in Figure 4, the iUP-Fast 27/K personality module contains two 28-pin sockets, a hexadecimal display (0 through F), and a red LED that indicates when power is being applied to a socket. The program socket holds the device being programmed. The master socket will be used in future upgrades. The hexadecimal display shows the PROM device type selected.

for 28-pin PROM devices. The user can use only one socket at a time. An LED below the socket indicates the correct socket to use based on the PROM device type selected, and a row of green LEDs on the right side of the personality module indicate which PROM type is selected. The ACTIVE SOCKET LED indicates when power is being applied to the PROM device and when the universal programmer/iPDS system is accessing the selected socket.

The iUP-F27/128 Personality Module

The iUP-F27/128 personality module lets the user program, read, and verify the contents of a wide variety of PROM devices, including some of Intel's most popular PROM devices (refer to Table 3).

The iUP-F27/128 personality module contains two sockets: one for 24-pin PROM devices and the other

The iUP-F87/51A Personality Module

The iUP-F87/51A personality module lets the user program EPROM microcontrollers and read the memory contents of ROM microcontrollers. This personality module supports the security bit function on the 8751H microcontroller. The KEYLOCK command locks the 8751H EPROM memory from unau-

thorized access by setting the security bit (which cannot be unlocked without erasing the device). As a safety precaution, the KEYLOCK command requires user verification before locking the security bit (refer to Table 3).

The iUP-F87/51A personality module has two sockets for inserting applicable PROM devices: one for the MCS®-48 family of devices and the other for the MCS-51 family of PROM devices. An LED below the socket indicates the correct socket to use based on the PROM device type selected. One of the green LEDs on the right side of the personality module lights to indicate the PROM type selected. The ACTIVE SOCKET LED lights when power is applied to the PROM device and when the universal programmer/iPDS system is accessing the selected socket.

The iUP-F87/44A Personality Module

The iUP-F87/44A personality module lets the user program EPROM versions of the 8044 family of microcontroller/serial interface units and read the memory contents of ROM versions (refer to Table 3). This personality module supports the security bit function on the 8744H microcontroller. The KEY-LOCK command locks the 8744H EPROM memory from unauthorized access by setting the security bit (which cannot be cleared without erasing the device). As a safety precaution, the KEYLOCK command requires user verification before setting the security bit.

The iUP-F87/44A personality module has two sockets for inserting applicable PROM devices: one for the 8741A, 8742, and 8755A PROM devices and the other for the 8744H PROM device. An LED below each socket indicates the correct socket to use based on the PROM device type selected. One of the green LEDs on the right side of the personality module lights to indicate the PROM type selected. The ACTIVE SOCKET LED lights when power is ap

plied to the PROM device and when the universal programmer/iPDS system is accessing the selected socket.

PROM PROGRAMMING EXAMPLE

The personality module is the interface that lets the user perform a wide variety of PROM programming, data display, and data editing operations. One of the most popular applications is copying data from a master PROM into a blank PROM. Table 4 outlines and compares the steps for both on-line and off-line copying. Notice the easy-to-use, English-language approach of the iPPS commands, which may be shortened to the first letter for faster entry.

The on-line example assumes that the universal programmer/iPDS system has been powered on and is under control of the ISIS software and that the iPPS software has been initialized. The off-line example assumes that the iUP-201A universal programmer has been powered on and initialized.

PERSONALITY MODULE SPECIFICATIONS

Physical Characteristics

Width: 5.5 inches (1.4 cm)
 Height: 1.6 inches (4.1 cm)
 Depth: 7.0 inches (17.8 cm)
 Weight: 1 pound (0.45 kg)

Electrical Characteristics

Maximum power consumption (module): 7.5 watts
 Maximum power consumption (device): 2.5 watts
 Maximum power consumption (total from PROM programmer): 10 watts

Table 4. Typical PROM Programming Sequence

Action	On-Line Command	Off-Line Function Key
1. Select PROM type.	TYPE	DEVICE SELECT
2. Install the PROM to be copied (the master PROM) in the personality module.		
3. Copy the contents of the master PROM to the buffer.	COPY PROM TO BUFFER	ROM TO RAM
4. Verify that the copy was correct.	VERIFY	VER
5. Remove the master PROM; install a blank PROM.		
6. Copy the buffer to the blank PROM.	COPY BUFFER TO PROM	PROG

Environmental Characteristics

Reading temperature: 10°C to 40°C
 Programming temperature: 25°C ±5°
 Operating humidity: 10%–85% relative humidity

DOCUMENTATION

- Appropriate personality module user's guide:
 164376— *iUP-FAST 27/K Personality Module User's Guide*
 165833— *iUP-FAST 27/K-U2 Upgrade Kit Installation Manual*
 162848— *iUP-F27/128 Personality Module User's Guide*
 164855— *iUP-F87/51A Personality Module User's Guide*
 164854— *iUP-F87/44A Personality Module User's Guide*
 166428— *iUP-GUPI Module User's Guide*

ORDERING INFORMATION

Part Number	Description
iUP-FAST 27K*	EPROM personality module
iUP-FAST 27/K-U2	Upgrade Kit
iUP-F27/128	EPROM and E ² PROM personality module

iUP-F87/51A*	Microcontroller personality module
iUP-F87/44A*	Peripheral personality module
iUP-FAST 27/K-CON	Upgrade Kit
iUP-GUPI	Generic module interface
GUPI LOGIC-09	Adaptor
GUPI LOGIC-18	Adaptor
GUPI-27010	Adaptor
GUPI-27011	Adaptor
GUPI-27210	Adaptor
GUPI-8742	Adaptor
GUPI-8796	Adaptor

***NOTE:**

The iUP-FAST 27/K personality module and the security bit function on the iUP-F87/51A and iUP-F87/44A personality modules can be used with an iUP-200A/201A universal programmer; or an iUP-200/iUP-201 universal programmer upgraded to an A with the iUP-200/201 U1 upgrade kit; or an iPDS system, using version 1.4 or later of the iPPS-iPDS software (iPDS-140 units shipped after June 1984 contain this software).