DATA I/O

PROMlink™

Part No. 326-0009-002
Version 2.01 MS-DOS 360K DISK
Copyright 1984,1985

SN 8702863

DATA I/O

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USER NOTES

PROMlink(tm) 2.01

1. BAUD RATES

Low baud rates: This version of PROMlink has been tailored to run at higher baud rates. The selection of baud rates from within PROMlink has been limited to 2400, 4800, and 9600 baud. Lower rates may be selected by editing the configuration file, but operation of PROMlink at these baud rates is not guaranteed.

Changing baud rates: Changing baud rates in the middle of a PROMlink session will cause spurious characters to be sent which can cause the next operation to fail. Performing a "Select programmer type" operation after changing the baud rate or exiting PROMlink to change the baud rate is recommended.

2. TEXAS INSTRUMENTS PROFESSIONAL

Terminal emulator utility: TERM.COM will only work on IBM compatible machines. The stand alone terminal for the TI Professional is named TITERM.COM. TITERM operates at 9600 baud only.

3. USER FUNCTIONS

The user function file shown on page 3-106 of the PROMlink manual is for a GANGPAK.

4. LABEL PRINTING UTILITY

The .HEX command for the label printing utility does not allow an argument of zero (null character).

5. BINARY FORMAT

Model 19: Create file from RAM using the binary format (10) on the Model 19 will not work properly due to the absence of handshaking in this situation. It is suggested that another I/O format be used with this programmer.

Aborting "Load RAM from file" (using control-Z): This operation may result in a "Contact with Programmer Broken" error on the next command. In this case, abort the programmer operation from the front panel and re-enter remote mode. For example on the Model 29 programmer press "SELECT F 1 START START".

Data I/O Corporation 10525 Willows Road N.E.
P.O. Box 97046 Redmond, WA 98073-9746
(206) 881-6444/Telex 15-2167

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6. DISPLAY COLORS

PROMlink checks the display board to determine what colors to set for the display. If a color display card is being used, the colors are set up as defined in the configuration file. If the monochrome card is being used, the color is automatically set to white forground and black background.

7. EXIT REMOTE MODE AUTOMATICALLY

If it is desired that PROMlink always causes the programmer to exit remote mode when PROMlink is exited, this can be done using a batch file like below:

```
pl %1
echo Z>com1:
```

which, when executed, will cause DOS to send the Z command to the programmer after quitting PROMlink.

8. PROMLINK WITH NO PROGRAMMER

It is possible to run PROMlink 2.0 without the computer being connected to a programmer. By pressing F1 when the opening screen is displayed, the main menu will appear. This allows access to functions like setting the serial port parameters and examining files. Once a programmer is connected, it is suggested that a "select programmer type" operation be performed to properly establish contact.

9. CHANGING PROGRAMMERS

Any time the programmer connected to PROMlink is changed (even if it is changed to a programmer of the same type) or powered off during a PROMlink session, a "Select programmer type" operation must be performed. Failure to do so may result in incorrect operation of PROMlink or a slowing of PROMlink response.

10. LOGIC DEVICE PROGRAMMING

When changing to logic device programming using the load configuration operation, it is necessary to also perform a set programmer type operation. Failure to do so will cause PROMlink to use a file transfer format other than JEDEC.

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11. CAUTION

Any changes to device type or operations boundaries, etc. that were not made using a PROMlink menu (i.e. changes made from the programmer front panel, user functions or logic terminal mode) will not be reflected in the PROMlink status block and thus will not be used for any subsequent operations performed within PROMlink.

12. MODEL 120/121

Fill RAM: The fill RAM operation on the Model 121 may not work if the Begin RAM address is set within device word limit of the last programmer RAM address.

Error counters: Some Model 120/121 errors are not counted by error logging. These are errors 34, 38, and 22 which cannot be isolated to the offending device and so are not added to the device error counters. Error 36 (bad insertion) errors are counted, however, even though for some kinds of devices, this error cannot be isolated to the offending device. In this case, all devices in the programmer sockets are counted as bad even though all but one may be inserted properly.

13. LOGIC TERMINAL MODE

Scrollin on Color display: When operating PROMlink in the Logic Terminal mode using a color monitor card in an IBM compatible computer, using the control-S and control-Q keys to control scrolling can cause the monitor to be blank while the text is halted. The information is not lost and will become visible again once control-Q is pressed. If you have this configuration, it is suggested that you use the terminal emulator utility to view data in the Logic Terminal mode.

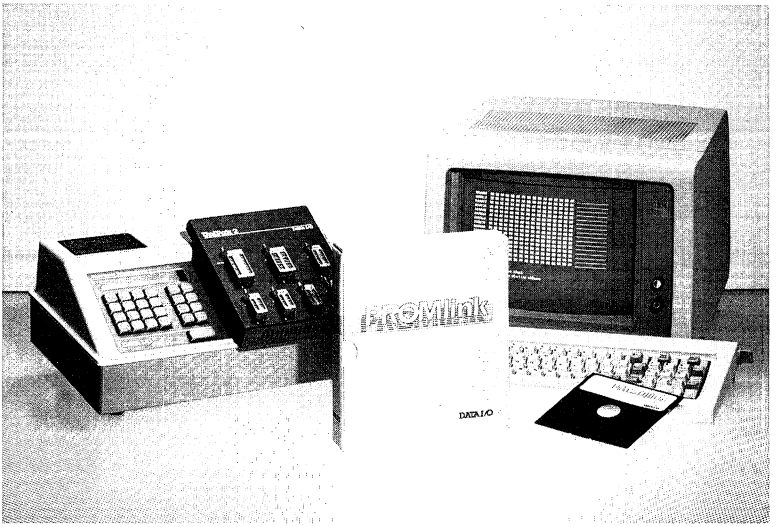
14. BIOS COMPATIBLE COMPUTERS

The feature described in the manual pertaining to using PROMlink with non-IBM compatible computers that have similar BIOS calls (Basic Input/Output System interupt calls) has been removed from the product. This allowed a significant increase in performance for true IBM compatible computers.

PROMlink™

DATA I/O

PROMlink™ 2.0



PC-DOS

MAY 1985

Manual Assembly: 981-0125-003

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SOFTWARE UPDATE SERVICE

Returning the user registration card found in the back of this manual entitles you to a free 90-day trial software update service. The trial software update service entitles you to free application ideas and "bug-fixes" (new software, reflecting correction of errors).

You may purchase an extended 12 month software update service that entitles you to software updates in addition to "bug-fixes" and application ideas. See the software update service card at the back of the manual.

CUSTOMER SUPPORT

Data I/O has Customer Support Engineers (CSEs) who can provide you with additional information about interfacing Data I/O products with other equipment and answer your questions about problems you may have with your equipment. The location of the CSE nearest you is given in the back of this manual. Call your CSE if you have any questions or problems.

LICENSE AGREEMENT AND WARRANTY

The user should completely and carefully read the following terms and conditions before accepting delivery of this product. Possession of this software product indicates the user's acceptance of these terms and conditions. If the user does not agree with them, the user should promptly return the product and the purchase price will be refunded to the original purchaser of this product.

Data I/O Corporation, licensor, provides this set of software programs, and licenses their use. The user assumes the responsibility for the selection of the programs to achieve the user's intended results, and for the installation, use, and results obtained from said program(s).

License

1. The user may use the licensed program on any single machine.

2. The user may copy the licensed program into any machine readable or printed form for backup or archival purposes in support of the user's use of the program on the single machine.

3. The user recognizes the proprietary nature of the licensed programs and materials and agrees to preserve and protect Data I/O Corporation's interest therein. All information relating to the licensed programs and materials provided to the user shall be retained by the user and shall not be used or disclosed except for the purpose of meeting the user's own internal use.

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The license is effective until terminated. The user may terminate the license at any time by destroying the licensed program and materials together with all copies. The license will also terminate if the user fails to comply with any term or condition of this agreement. The user agrees upon such termination to destroy the licensed

program and materials together with all copies in whatever form. Within 30 days after termination, the user shall certify in writing that through his or her best efforts and to the best of his or her knowledge, all copies, in part or in whole, of the terminated and/or discontinued licensed programs and materials relating thereto have been destroyed.

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Data I/O Corporation's entire liability and the user's exclusive remedy shall be as follows:

1. The replacement of any diskette(s) or magnetic tape or cassette(s) not meeting Data I/O Corporation's limited warranty, and which materials are returned to Data I/O Corporation or an authorized Data I/O representative with a copy of the packing slip, or

2. If Data I/O Corporation or a representative is unable to deliver a replacement diskette(s), magnetic tape or cassette(s), which is/are free of defects in materials or workmanship, you may terminate this agreement by returning the programs and their related materials, and your money will be refunded.

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1. The user acknowledges that the user has read this agreement, understands it, and agrees to be bound by its terms and conditions. The user further agrees that it is the complete and exclusive statement of the agreement between the user and Data I/O Corporation, which agreement supersedes any proposal or prior agreement, whether oral or written, and any other communications between the user and Data I/O Corporation relating to the subject matter of this agreement.

2. This license and agreement shall be governed by the laws of the State of Washington.

3. The user may not sub-license, assign, or transfer the licensed program(s) except as expressly provided in this agreement. Any attempt to do otherwise, to sub-license, assign or transfer any of the rights, duties or obligations hereunder is void, except that Data I/O Corporation may assign this license as a part of an assignment of all software assets of its business.

4. The provisions of this agreement are severable and if any one or more of such provisions are judicially determined to be illegal or otherwise unenforceable, whether in whole or in part, those remaining provisions or portions of the license unaffected by such determination shall be binding on and enforceable by and between the licensee, user, and Data I/O Corporation.

5. In the event it becomes necessary to retain the services of an attorney to enforce any provisions of this license agreement, the non-prevailing party to such legal action and/or litigation agrees to pay the prevailing party's costs, including a reasonable attorney's fee, and court costs, if any.

ORDERING

To place an order for software, contact your Data I/O representative. Orders for shipment must include the following:

- Description of the software (see latest Data I/O price list or contact your sales representative for product numbers)
- Purchase order number
- Desired method of shipment
- Quantity of each item ordered
- Shipping and billing address of firm, including zip code
- Name of person ordering software

Compatibility with Available Hardware and Software

Data I/O Corporation does not warrant that its software package will function properly in every hardware and software environment. Data I/O Corporation warrants only that the software package functions properly in combination with the hardware and software described in this manual.

In particular, the software may not be operable in combinations with print-spooling programs or with modified versions of the operating system. The software is designed to run under the operating system(s) described in this manual. But it does not compensate for incompatibilities in operating system revisions or versions of the operating system(s). Running the software under various revisions or versions, or switching between versions at different times may result in drastic data loss or other alteration or disruption of data.

Text Part No. 090-0048-003

INTRODUCTION

DATA I/O

1 INTRODUCTION

This manual describes PROMlink and how to use it.

PROMlink is a menu-driven software interface between Data I/O Corporation's PROM and Programmable Logic Device programmers and a variety of popular personal computers.

PROMlink will run on the following personal computers:

- IBM PC, XT or AT™
- Compaq™ and Compaq plus™
- AT&T 6300™
- Texas Instruments Professional™

Please refer to PROMlink system requirements.

PROMlink supports the following Data I/O programmers and paks:

- Model 19
- Model 29A and 29B
- Model 120/121
- Series/model 22
- Model 60A and 60H
- UniPak™ and UniPak 2™
- MOSPak™
- GangPak™ and Gang Programming Module
- LogicPak™ and FIT Adapters

PROMlink FEATURES 1.1

PROMlink is designed to be an easy to use, menu-driven program that allows communication between a host computer and Data I/O programmers. Some of the features of PROMlink are:

- PROMlink is completely menu driven.
- Data files are easily transferred back and forth from the personal computer to the programmer.
- Many commonly used functions such as *Set Operation Boundaries* and *Select Device Type* are available from several of PROMlink's menus.

COMPATIBILITY WITH PROMlink 1.0 1.2

PROMlink 2.0 is significantly different from PROMlink 1.0. The information in this section will be of interest to those who have used previous versions of PROMlink and who may be upgrading PROMlink 1.0 to 2.0. For example, major differences include:

1. Menu operation has been streamlined by the use of function keys to select the options available from the PROMlink menus. On most menus PROMlink will automatically go to the option you have selected without having to press the RETURN key.
2. Many menus have changed from PROMlink 1.0 to 2.0 and the functions may not be accessed in the same way.
3. The format of the initialize file *INIT.CFN* has been changed and the PROMlink 1.0 *INIT.DIO* files will not work for PROMlink 2.0. Instead, you may have several initialize files (now called *Configuration Files*) that may be loaded or saved at any time during a PROMlink session.

The Section called *Statistics* in PROMlink 1.0 has been changed to *Error Logging* to more accurately reflect the content of the section. The format of the *STATS.DOC* file is different in PROMlink 2.0. (Refer to Appendix B.2 for more information.)

Some New Functions Have Been Added to PROMlink:

- Expanded File Handling Capability:
  Change Default Directory
  Delete and Rename Files
  Display Files

- Enhanced Programmer RAM Edit Functions:
  Full Screen Editor in Hex or ASCII
  Split/Shuffle RAM

- Multiple Configuration Files

- Ability to Change Port Configuration From Inside PROMlink

- Logic Device Support (See Section 1.3)

- Set Size and 16 Bit Mode Capability

- Binary I/O Format Capability

- New User Utility Programs
  Terminal Emulator
  Label Printer
  File Delete Protection

- User-Definable Functions
  This function allows the user to create a custom menu in PROMlink that performs any of the standard computer remote control functions not available from the usual PROMlink menus.

Data files created by PROMlink 1.0 and 2.0 are identical. It is not necessary to change any of your existing data files to accommodate PROMlink 2.0.

LOGIC DEVICE PROGRAMMING FEATURES 1.3

PROMlink 2.0 has increased the capability to program logic devices. These new features are:

- Updated Device List
  The *Select Device Type* menu for PROMlink 2.0 now contains all of the logic devices supported by the Data I/O Model 60 and LogicPak.

- Transfer of JEDEC Formatted Data
  When the LogicPak or Model 60 are used with PROMlink, the JEDEC logic data transfer format is automatically selected. The other I/O formats are disabled.

- Terminal Emulator for the Model 60 and LogicPak The Logic Terminal mode or *E?* Mode of the LogicPak or Model 60 may be entered from a PROMlink menu. This provides access to most of the logic-specific programmer functions.

CONTENTS OF THE PROMlink PACKAGE 1.4

The PROMlink software package contains:

- One disk in a plastic pouch labeled:

  PROMlink

- The PROMlink User's Guide manual

- 25-pin cable for connection between a personal computer's RS-232-C port and the Data I/O programmer

If any of the above items is missing, please contact your Data I/O representative. Table 1-1 shows the files residing on the PROMlink disk.

Table 1-1. Files on the PROMlink Disk

File Name	Description
PL.EXE	Executable PROMlink program
LABL.EXE	Label printing utility
RONLY.EXE	File delete protection
RW.EXE	File delete protection removal utility
TERM.COM	Terminal Emulator
INIT.CFN	PROMlink default configuration file
INITPC.CFN	PROMlink IBM PC, XT, AT default configuration file
INITTI.CFN	PROMlink Texas Instruments Professional default configuration file
INITBIO.CFN	PROMlink default configuration file for other BIOS compatible computers
PLMENUS.STR	PROMlink menu text
PLERROR.STR	Error Messages
PLDEVLST.DAT	Device List
LOGIC.UFN	Example User Function File
GANG.UFN	Example User Function File
DISKS.LAB	Example for Label Printer
PROMS.LAB	Example for Label Printer

GETTING STARTED

DATA I/O

GETTING STARTED 2

This section is dedicated to minimizing the effort required to learn and work with PROMlink and to maximize your resultant productivity. This manual has been designed to provide you with easy access to the information it contains about PROMlink, to serve as a tutorial for the new user, and to provide an overview of the product for those who want to survey PROMlink features and functions prior to purchase.

If you have used PROMlink before, you may want to go directly to Section 3 MENUS AND FUNCTIONS and begin your programming session. Make sure that you make a backup disk of PROMlink.

The primary goal of this section is to set the foundation from which you can build an understanding of PROMlink, rapidly access this manual as an information resource, and begin working almost immediately with PROMlink.

The first time user can be working productively with PROMlink within fifteen minutes of opening this manual.

Please read the following paragraphs, take care of the necessary system requirements (configuration and installation), and then perform the PROMlink sample session. The sample session is located at the end of this section.

NOTATION CONVENTIONS 2.2

Table 2-1 shows notation conventions used in this manual.

Table 2-1. Notation Conventions

Notation	Usage
italics	Indicates references by name to computer or programmer keyboard keys and items contained in examples, figures, listings and tables. This includes screen titles, field names, and messages that appear on the screen.
quotation marks	Surround items when some ambiguity exists about what is italicized.
UPPERCASE	File names and extensions are referred to in upper-case in the text. In examples, file names and extensions are shown exactly as they would be entered by the user.
lower-case	PC-DOS and MS-DOS recognize upper-case and lower-case as being identical. In general, user input is shown in lower-case, as most users would enter it.
RETURN	This symbol represents the return or enter key on the computer keyboard. This key is represented by the symbol, ↵ , on the IBM PC keyboard and called the enter key in IBM documentation.

An example of italics used in text:

The message, *Operation successfully completed,* appears below the System Status field after the operation is finished.

MAKING A BACK UP 2.4

Before you proceed any further, make a backup of the PROMlink disk to protect against accidental erasure of files or damage to the disk. This is very important and will only take a few minutes. Following are the procedures required to create a backup disk for a personal computer with either one or two disk drives, or to put a copy of PROMlink on the fixed disk of a personal computer.

Backup Procedure for One Floppy Disk Drive 2.4.2

1. Place a DOS (version 2.0 or later) disk in drive A and turn the power on. (If the computer is turned on and DOS is started, you do not have to perform this step.)

2. Make sure that the prompt on the screen is "A>". If it is not "A>", type *a:* and press the RETURN key.

3. Type:

   format /s [RETURN]

   and follow the directions. Put the blank disk that you want to contain the backup files in drive A when asked.

4. When asked *Format another (Y|N)*, type:

   n

5. Remove the DOS formatted disk from drive A.

6. Place the original PROMlink program disk in drive A.

7. Type:

   copy *.* b: [RETURN]

   and when prompted, remove the original PROMlink disk from drive A and insert the backup disk.

8. When the "A>" prompt reappears after the copy is complete, remove both disks and label the backup disk.

   You have now created a backup of the PROMlink program disk, and the disk has a copy of the DOS operating system on it. Put the original PROMlink program disk in a safe place and use the backup copy to run PROMlink. If anything should ever happen to make the backup disk unusable, the above procedure can be followed to create another backup disk. Never use the original disk as a working copy.

Edit AUTOEXEC.BAT 2.4.4

The following procedure is intended for users with a hard disk computer system. It permits you to call PROMlink from the DOS prompt without having to specify a path.

1. Return to the root directory by typing "*cd* \", if you are not already there.

   If there is no "AUTOEXEC.BAT" file on your operating system, you will need to make one.

2. Enter into the editor of your choice (for example Edlin).

3. Edit the DOS file "AUTOEXEC.BAT" by adding the following lines to the bottom of the file:

   path c:\promlink

   set PLMSG =c:\promlink

   Typing these two lines allows you to start PROMlink from any directory by typing:

   pl RETURN

4. Save the edited "AUTOEXEC.BAT" file.

Placing these lines in autoexec.bat makes it unnecessary to type them in at system power up. The first line tells DOS where to find PROMlink. The second line tells PROMlink where its message and configuration files are located.

Note: If a path command already exists in the AUTOEXEC.BAT *file, you will need to append it by adding:*

;c:\promlink

Example: If you have the following path at the prompt

c:\DOS

Typing the ";c:\promlink" after the path will create a new path looking like this:

path c:\DOS;c:\promlink

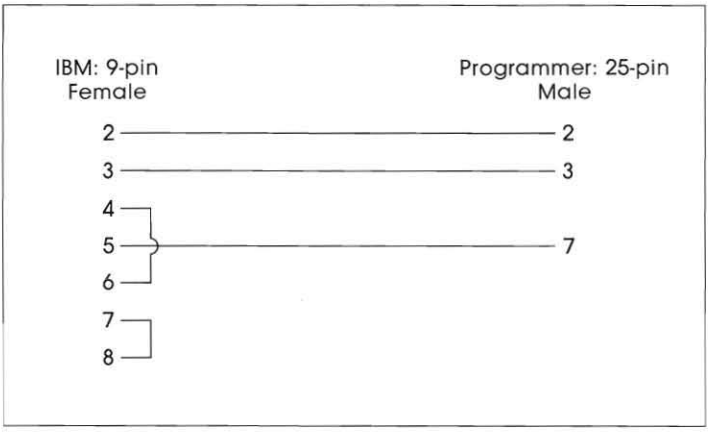

Figure 2-2. Serial Cable for IBM-AT

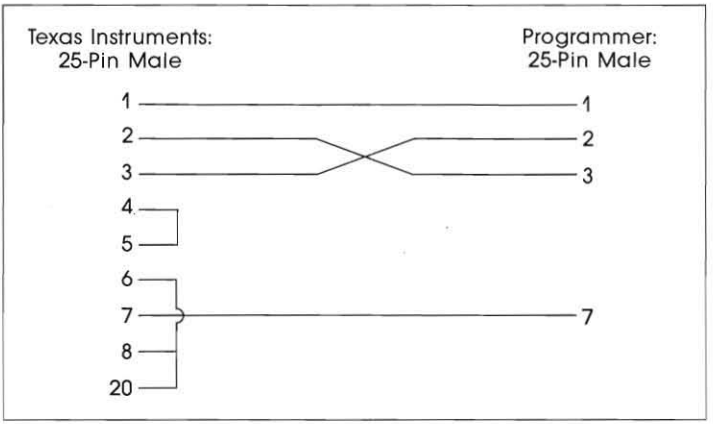

Figure 2-3. Serial Cable for Texas Instruments Professional

3. In order to run PROMlink on your computer, the programmer must be in *Remote Control* Mode. To select the *Remote Control* Mode, on the programmer keyboard press the following keys for these Programmers: System 19, Series 22, and Models 29 and 60:

   [SELECT] [F] [1] [START] [START]

   And press these keys for the following Programmers: Models 120 and 121:

   [SELECT] [0] [9] [START]

Note: Refer to Appendix B.5 for Serial I/O Configuration information.

5. Put the PROMlink disk in the default drive. The prompt on the screen will be for drives A, B, C, or E (for the TI). When PROMlink starts up, it will expect to be running in an IBM PC, XT or AT. To run on a TI Professional computer, the customer simply copies INITTI.CFN to INIT.CFN. Type:

   pl or

   pl filename.cfn (configuration file)

   RETURN

   PROMlink will start, and after approximately 30 seconds the *Opening* or first menu will be displayed. You will see start up messages on your screen before the first menu is displayed.

   Note: The PROMlink program disk must be in the default drive. If you have a hard disk, and PROMlink resides on the hard disk, the current directory must be set to the one containing PROMlink unless you have set the path and the value of PLMSG. *See your DOS manual for more information.*

OPENING MENU 2.8

The *Opening screen* (figure 2-6) displayed after PROMlink is started consists of title and copyright information and also indicates whether proper contact with the programmer has been established. (The programmer must be in *Remote Control* mode and be connected to the serial port of the computer with the correct communications protocols set before PROMlink will communicate.

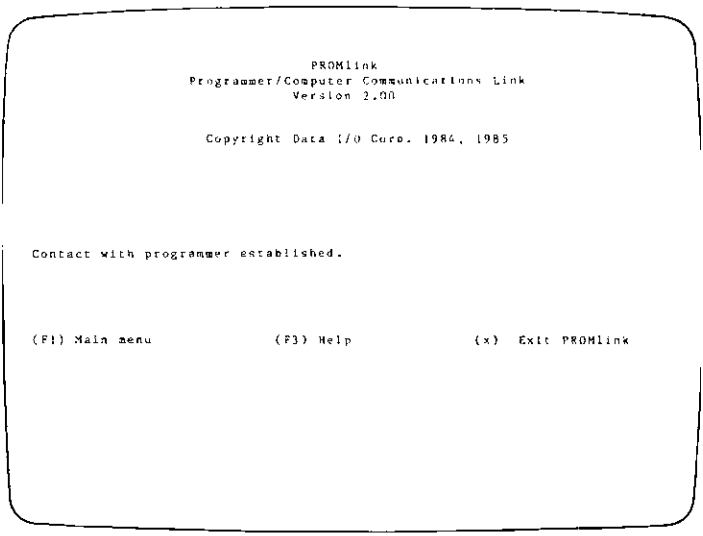

Figure 2-6. Opening Screen

If proper contact has not been established, the message, *cannot contact programmer,* is displayed below the copyright.

Once contact has been made, press the *F1* key on the computer keyboard to go to the *Main* menu.

*Note: At the bottom of every screen is a reverse video help line with the keys highlighted that will move you from menu to menu (*F1 *and* F2*), and to get help for a particular function (*F3*).*

Note: The option (X) to exit PROMlink is available only on the opening screen, the MAIN *menu screen and the* Help Message *screen for the MAIN menu.*

GETTING STARTED

This section is dedicated to minimizing the effort required to learn and work with PROMlink and to maximize your resultant productivity. This manual has been designed to provide you with easy access to the information it contains about PROMlink, to serve as a tutorial for the new user, and to provide an overview of the product for those who want to survey PROMlink features and functions prior to purchase.

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The first time user can be working productively with PROMlink within fifteen minutes of opening this manual.

Please read the following paragraphs, take care of the necessary system requirements (configuration and installation), and then perform the PROMlink sample session. The sample session is located at the end of this section.

HOW TO USE THIS MANUAL 2.1

The PROMlink manual is organized to provide you with convenient application and reference information.

Section 1. INTRODUCTION: A basic introduction to PROMlink and its features that provides information about PROMlink's primary functions. It also will direct you to related manuals and gives service and ordering information.

Section 2. GETTING STARTED: If you are a first-time user of PROMlink, you will want to pay particular attention to this section. Here there are:

- Step by step procedures for making a backup disk of PROMlink
- How to make the Data I/O programmer to personal computer cable connections
- How to start PROMlink and become familiar with notation conventions and PROMlink screens and menus
- A sample session that guides you through a typical programming session

Section 3. MENUS AND FUNCTIONS: Provides detailed descriptions of all the PROMlink screens and menus and how to use them. Descriptions are organized in menu groups as they stem off the Main menu. There are ten sub-menus available from the Main menu and each of these may have one or more functions available from it. Each menu lists its functions in frequency-of-use order, not necessarily in the order you would first use the item in a start up session.

Section 3 also includes descriptions of User Support Utilities that are on the PROMlink disk.

Section 4. USER SUPPORT UTILITIES: Provides descriptions of utilities that the user will find useful in the operation of PROMlink.

Section 5. INDEX/APPENDICES: In the Appendices you will find reference and special configuration and compatibility information. The main body of the PROMlink manual will guide you to these appendices. The manual's index is also located in this section.

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RETURN	This symbol represents the return or enter key on the computer keyboard. This key is represented by the symbol, ↵, on the IBM PC keyboard and called the enter key in IBM documentation.

An example of italics used in text:

The message, *Operation successfully completed,* appears below the System Status field after the operation is finished.

PROMlink SYSTEM REQUIREMENTS 2.3

To use PROMlink, you must have:

- An IBM PC, XT or AT, Compaq or AT&T 6300, or Texas Instruments Professional with at least 192K of RAM
- MS-DOS versions 2.0 or later
- One or more double-sided floppy disk drives
- An RS-232-C port. The correct cable is provided with PROMlink. (This cable will not work with the TI or the AT 9-pin port.)
- One of the following Data I/O programmers:
  Model 22 and Series 22, all revisions
  Model 29A with CRC and 16K RAM or less, revision C and above
  Model 29A with CRC and 64K RAM or less, revision B and above
  Model 29B, all revisions
  System 1902, revision G and above
  Models 120 and 121, revision G and above
  Model 60 or 60H, all revisions

These are the minimum requirements. For ease of use it is suggested that you have two disk drives, one from which to run PROMlink, and another to contain data files.

Note: The Model 120 and Model 60 programmers do not allow PROMlink to perform the following operations:
Display of programmer RAM size
Fill RAM with data byte
Edit RAM
Split RAM
Shuffle RAM
Set operations boundaries functions
Model 120 does permit I/O offset

Note: The GangPak and Gang modules do not indicate to PROMlink the number of correctly programmed devices. PROMlink normally keeps a count of correctly programmed devices and errors. These counts will not be updated when a GangPak or Gang module is in use.

MAKING A BACK UP 2.4

Before you proceed any further, make a backup of the PROMlink disk to protect against accidental erasure of files or damage to the disk. This is very important and will only take a few minutes. Following are the procedures required to create a backup disk for a personal computer with either one or two disk drives, or to put a copy of PROMlink on the fixed disk of a personal computer.

Backup Procedure for Two Floppy Disk Drives 2.4.1

1. Place a DOS (version 2.0 or later) disk in drive A (usually the left drive) and turn the power on. (If the computer is already on and DOS is started, you do not have to perform this step.)

2. Make sure that the prompt on the screen is "A>". If it is not "A>", type *a:* and press the RETURN key.

3. Type:

   format b: /s RETURN

   and follow the directions. Put the blank disk that you want to contain the backup files in drive B when asked.

4. When asked *Format another (Y|N),* type:

   n

5. Remove the DOS disk from drive A.

6. Place the original PROMlink program disk in drive A.

7. Type:

   copy *.* b: RETURN

8. When the copy is complete, remove both disks and label the backup disk.

   You have now created a backup of the PROMlink program disk, and the disk has a copy of the DOS operating system on it. Put the original PROMlink program disk in a safe place and use the backup copy to run PROMlink. If anything should ever happen to make the backup disk unusable, the above procedure can be followed to create another backup disk. Never use the original disk as a working copy.

Backup Procedure for One Floppy Disk Drive 2.4.2

1. Place a DOS (version 2.0 or later) disk in drive A and turn the power on. (If the computer is turned on and DOS is started, you do not have to perform this step.)

2. Make sure that the prompt on the screen is "A>". If it is not "A>", type *a:* and press the RETURN key.

3. Type:

   format /s RETURN

   and follow the directions. Put the blank disk that you want to contain the backup files in drive A when asked.

4. When asked *Format another (Y|N)*, type:

   n

5. Remove the DOS formatted disk from drive A.

6. Place the original PROMlink program disk in drive A.

7. Type:

   copy *.* b: RETURN

   and when prompted, remove the original PROMlink disk from drive A and insert the backup disk.

8. When the "A>" prompt reappears after the copy is complete, remove both disks and label the backup disk.

   You have now created a backup of the PROMlink program disk, and the disk has a copy of the DOS operating system on it. Put the original PROMlink program disk in a safe place and use the backup copy to run PROMlink. If anything should ever happen to make the backup disk unusable, the above procedure can be followed to create another backup disk. Never use the original disk as a working copy.

Backup Procedure for a Hard Disk System 2.4.3

1. Turn the personal computer on and make sure that DOS is started. How you do this will depend on your system configuration. If you have the DOS operating system on your fixed disk, simply turn the personal computer on, and the system will boot from the fixed disk. If DOS is not on your fixed disk, follow step one of the backup procedure for either the one- or two-drive systems.

Note: Use drive E if you have the TI Professional.

2. Determine the directory on the fixed disk in which you want the PROMlink programs to reside. Use the change directory command, *cd*, described below:

   TYPE:
   C>cd \ (puts you in the root directory)

   C>mkdir promlink (makes a new directory for PROMlink files)

   C>cd promlink

Note: The PROMlink directory is used as an example but you may define another directory.

3. Place the original PROMlink program disk in drive A.

4. Type:

   copy A:*.* c: RETURN

5. After the files are copied, remove the original PROMlink program disk from drive A.

You have now put a copy of PROMlink on your fixed disk, where it can be used whenever needed. Put the original PROMlink program disk in a safe place. If anything should ever happen to make the copy of PROMlink on the fixed disk unusable, the above procedure can be followed to recopy it. Never use the original disk as your working disk.

Edit AUTOEXEC.BAT 2.4.4

The following procedure is intended for users with a hard disk computer system. It permits you to call PROMIink from the DOS prompt without having to specify a path.

1. Return to the root directory by typing "*cd* \", if you are not already there.

   If there is no "AUTOEXEC.BAT" file on your operating system, you will need to make one.

2. Enter into the editor of your choice (for example Edlin).

3. Edit the DOS file "AUTOEXEC.BAT" by adding the following lines to the bottom of the file:

   path c:\promIink

   set PLMSG =c:\promlink

   Typing these two lines allows you to start PROMIink from any directory by typing:

   pl RETURN

4. Save the edited "AUTOEXEC.BAT" file.

Placing these lines in autoexec.bat makes it unnecessary to type them in at system power up. The first line tells DOS where to find PROMIink. The second line tells PROMIink where its message and configuration files are located.

Note: If a path command already exists in the AUTOEXEC.BAT *file, you will need to append it by adding:*

;c:\promIink

Example: If you have the following path at the prompt

c:\DOS

Typing the ";c:\promlink" after the path will create a new path looking like this:

path c:\DOS;c:\promlink

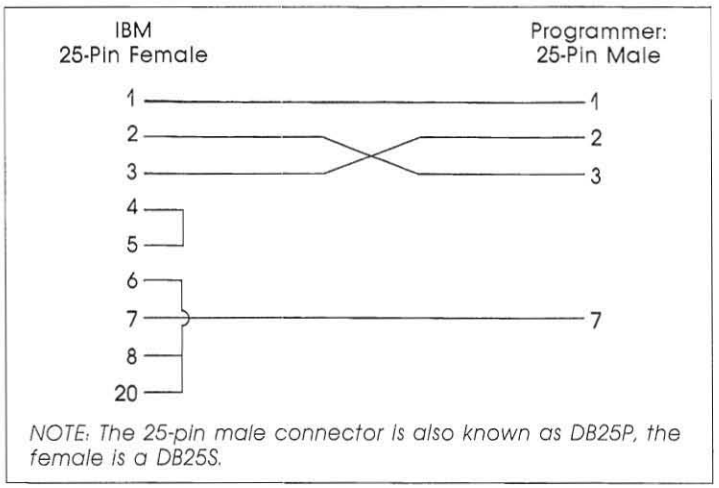
PROGRAMMER CONNECTION 2.5

An appropriate programmer (System 19, Series 22, and Models 29, 120, 121, 60) must be connected to your personal computer and the correct communications protocols must be set.

The following steps must be followed to achieve this with a Model 29. If you have a programmer model other than the Model 29, refer to the appropriate programmer manual for connection instructions.

1. Connect one end of the supplied cable (25-pin) to the COM1: port of the computer. Connect the other end to the serial port of the programmer. See Figure 2-1. (See Appendix B.1 for information on using the COM2: port.) Figure 2-2 shows the cable connection for the AT and figure 2-3 shows the cable connection for the Texas Instruments Professional (TI).

Note: Data I/O supplies a 25-pin connector cable which will work except for the following personal computers: IBM AT, and TI Professional. Data I/O does not supply the 9-pin connector, and if you have a computer requiring a 9-pin connector, for example the AT, you can purchase a 9- to 25-pin adapter from your dealer. (The IBM part number for the 9-pin connector is 828-6170.)



NOTE: The 25-pin male connector is also known as DB25P, the female is a DB25S.

Figure 2-1. Serial Cable for IBM PC/XT

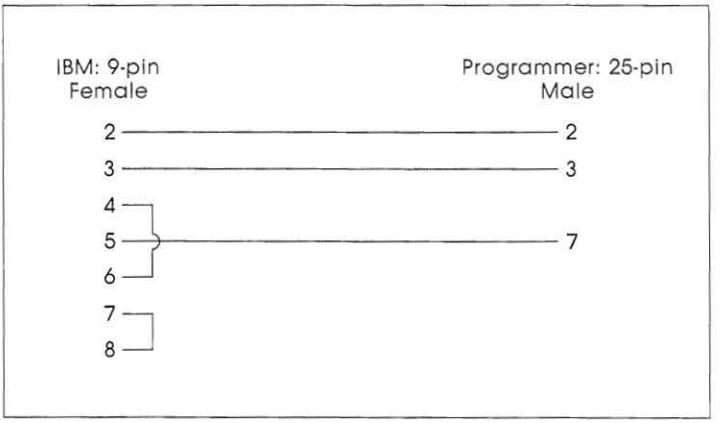


Figure 2-2. Serial Cable for IBM-AT

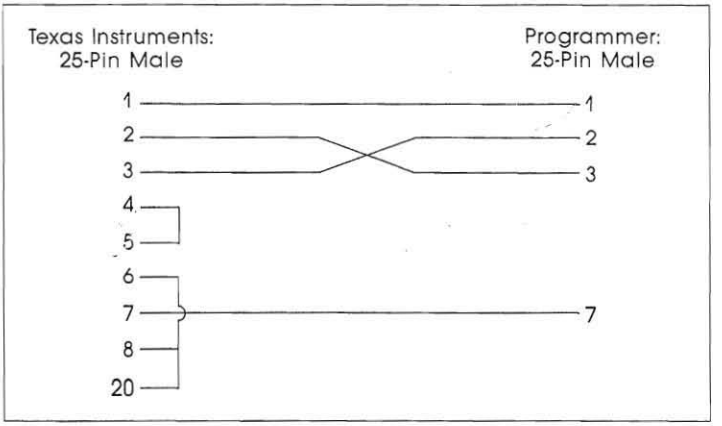
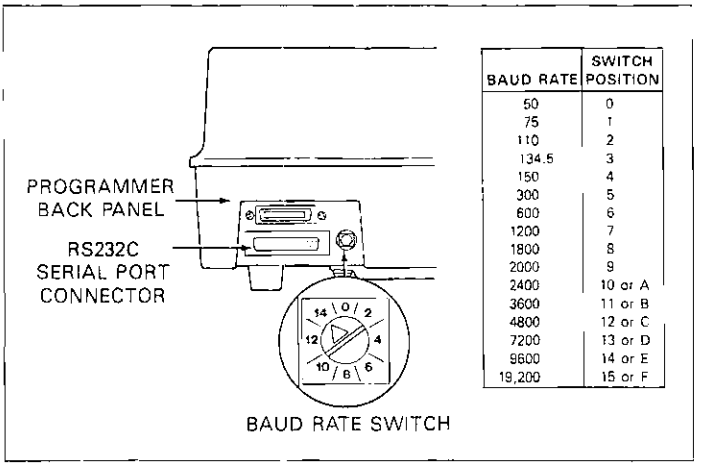


Figure 2-3. Serial Cable for Texas Instruments Professional

2. Set the programmer protocol to 9600 baud, 8 bits, no parity. Figures 2-4 and 2-5 show the switch settings for the Model 29 programmer. Consult your programmer manual or Appendix B.5 to achieve the correct setting for your programmer.



BAUD RATE	SWITCH POSITION
50	0
75	1
110	2
134.5	3
150	4
300	5
600	6
1200	7
1800	8
2000	9
2400	10 or A
3600	11 or B
4800	12 or C
7200	13 or D
9600	14 or E
19,200	15 or F

Figure 2-4. Selecting the Baud Rate on the Model 29

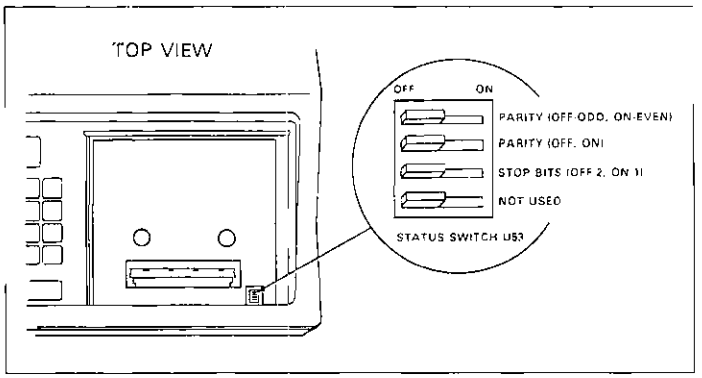


Figure 2-5. Selecting the Parity on the Model 29

3. In order to run PROMlink on your computer, the programmer must be in *Remote Control* Mode. To select the *Remote Control* Mode, on the programmer keyboard press the following keys for these Programmers: System 19, Series 22, and Models 29 and 60:

   [SELECT] [F] [1] [START] [START]

   And press these keys for the following Programmers: Models 120 and 121:

   [SELECT] [0] [9] [START]

Note: Refer to Appendix B.5 for Serial I/O Configuration information.

STARTING THE PROGRAM 2.6

1. Place a DOS system disk, or your PROMlink disk with DOS on it, in Drive A (usually on the left) and turn the power on. (If you have a personal computer where DOS resides on the hard disk, turn the power on without putting a disk in drive A.)

Note: The DOS operating system is not included on the PROMlink disk. If you want to have both PROMlink and DOS on the same disk, you can do this when you make the backup disk. Refer to your computer operating system manual for backup procedures. Assure that proper programmer to computer contact is established.

2. The programmer must be turned on and in *Computer Remote Control* mode. This is selected from the programmer's front panel, as described in the programmer's manual.

3. The correct cable must be connected to the correct port. Use the cable provided with PROMlink and connect it to the COM1: port of the computer.

4. The communication protocol must be set correctly. Set the programmer protocol to 9600 baud, 8 bits, no parity, as described in your programming manual.

5. Put the PROMlink disk in the default drive. The prompt on the screen will be for drives A, B, C, or E (for the TI). When PROMlink starts up, it will expect to be running in an IBM PC, XT or AT. To run on a TI Professional computer, the customer simply copies INITTI.CFN to INIT.CFN. Type:

   pl or

   pl filename.cfn (configuration file)

   RETURN

   PROMlink will start, and after approximately 30 seconds the *Opening* or first menu will be displayed. You will see start up messages on your screen before the first menu is displayed.

   Note: The PROMlink program disk must be in the default drive. If you have a hard disk, and PROMlink resides on the hard disk, the current directory must be set to the one containing PROMlink unless you have set the path and the value of PLMSG. *See your DOS manual for more information.*

SELECTING A START UP CONFIGURATION 2.7

Unless you have saved a configuration during a previous programming session, PROMlink will start up using the default configuration contained in *INIT.CFN*. (See Appendix B.1 for configuration file format and default configurations.)

You have the option of specifying your own configuration file for PROMlink to use when it is started up. This configuration file must be one you have created earlier by using the *Save Configuration* function from PROMlink or is an edited file that follows the format described in Appendix B.1.

Example:

To enter PROMlink using the file *CONFIG.CFN that you created earlier, type the following from your command line:*

Command Line	Type	
C>	pl config.cfn	RETURN

You will enter PROMlink with the configuration specified by the file *CONFIG.CFN* already in effect.

The following items show the two possible conditions that occur when you either enter PROMlink by typing *pl* from the prompt or when you enter into a specific configuration file.

1. >pl (no file name)

   PROMlink first looks for *INIT.CFN* in the default directory. If *INIT.CFN* is not there, PROMlink looks for *INIT.CFN* in *PLMSG*.

   If *INIT.CFN* is in neither location, the configuration is set to the default. No error message will be displayed.

2. >pl file name (file name or entire path name)

   The search procedure PROMlink performs is the same as in the first item. You may enter either just a file name or an entire path name. An error message will be displayed if the file or path name are not found.

OPENING MENU 2.8

The *Opening screen* (figure 2-6) displayed after PROMlink is started consists of title and copyright information and also indicates whether proper contact with the programmer has been established. (The programmer must be in *Remote Control* mode and be connected to the serial port of the computer with the correct communications protocols set before PROMlink will communicate.

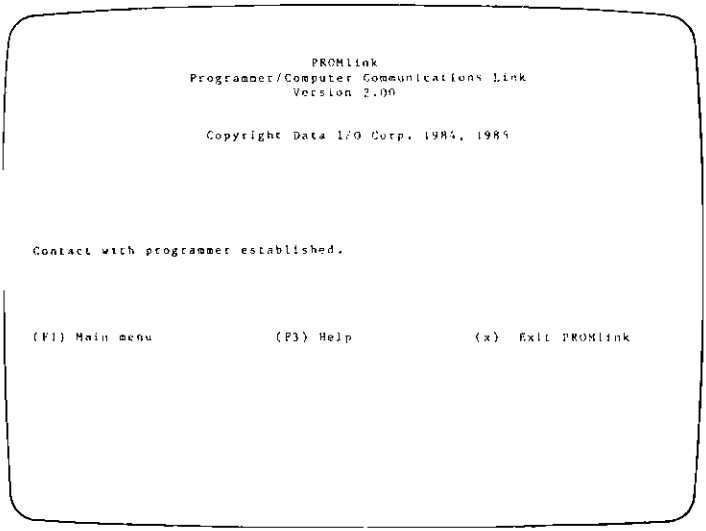


Figure 2-6. Opening Screen

If proper contact has not been established, the message, *cannot contact programmer,* is displayed below the copyright.

Once contact has been made, press the *F1* key on the computer keyboard to go to the *Main* menu.

Note: At the bottom of every screen is a reverse video help line with the keys highlighted that will move you from menu to menu (F1 and F2), and to get help for a particular function (F3).

Note: The option (X) to exit PROMlink is available only on the opening screen, the MAIN *menu screen and the* Help Message *screen for the MAIN menu.*

MAIN MENU 2.9

Function: Select a major function
Required Input: Function number
Options: Any of the PROMlink functions
Completion Message: (none)

Notes: Exit with X key from the help line. Then press Y in response to the screen prompt

Figure 2-7 shows the *Main* menu. The *Main* menu provides the system status at the top of the screen and the menu of PROMlink's major functions.

```
MAIN MENU

Title: International Widget     Job # 765-4321
Programmer: Model 29 with UniPak            Programmer Size: 64K
Device Type: Intel 2764                     I/O Format: Motorola Exormax
Port: COM1/9600 baud                        Data File: u6.p87
Directory: a:\


          (1)  Program device               (6)  Error logging
          (2)  Verify device                (7)  File functions
          (3)  Load RAM from device         (8)  Edit functions
          (4)  Load RAM from file           (9)  Configuration functions
          (5)  Create file from RAM         (0)  User functions

Press key in () for desired function:




(F3) Help                                 (x)  Exit PROMlink
```

Figure 2-7. Main Menu

The system status area provides information about the current configuration: programmer and device type and I/O Format; programmer to computer connection status; current file data: RAM size and data file title; and the current directory. Select the desired function by typing its number. Each function displayed on the *Main* menu is described in the following subsections.

SAMPLE SESSION

DATA I/O

PROMlink SAMPLE SESSIONS 2.10

The following set of examples are recommended if you are a first time user of PROMlink. Before you proceed with this session, check that you have successfully connected the programmer to your computer, made a backup disk of PROMlink, started PROMlink, and are now looking at the *Main* menu. If everything else has been done and the *Main* menu (figure 2-8) isn't on the screen:

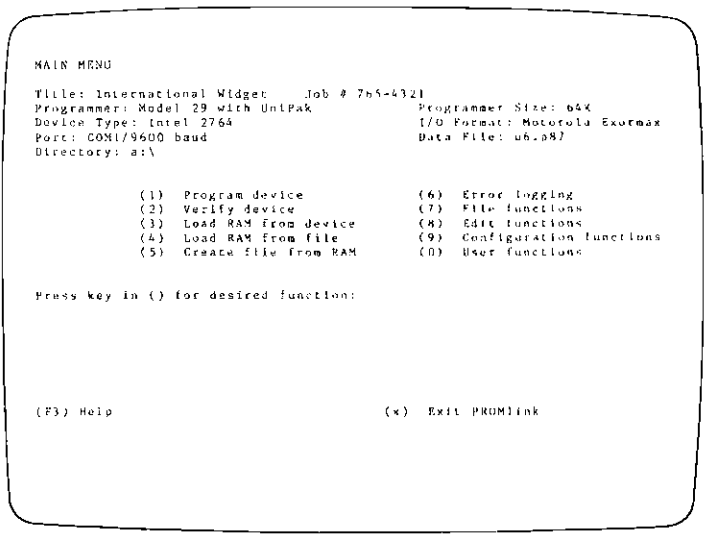


Figure 2-8. Main Menu

Press:

F1

(on your computer keyboard)

Note: If you are already familiar with PROMlink, you may want to skip the rest of Section 2 and begin a programming session with PROMlink.

Figure 2-9 is a flow diagram of the procedures covered in the next several exercises. The complete breakdown of the relationship among all of PROMlink's screens and menus is shown in figure 3-1 at the beginning of Section 3.

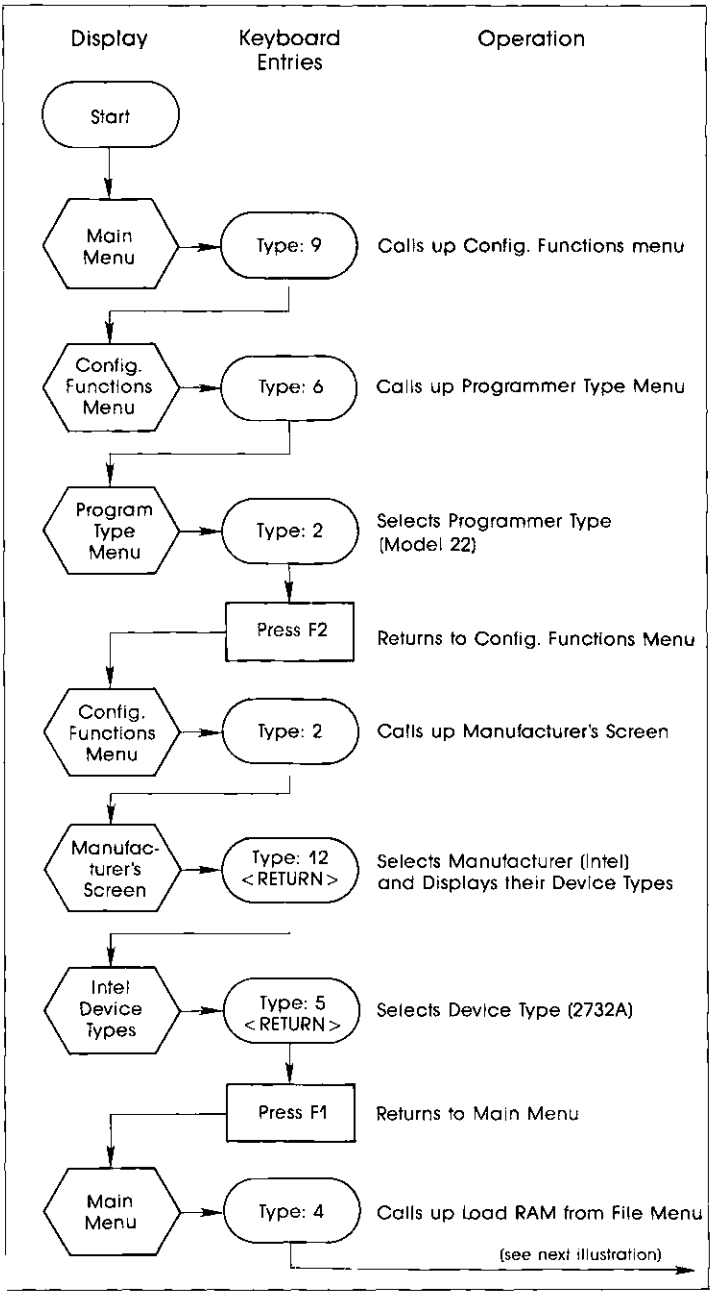
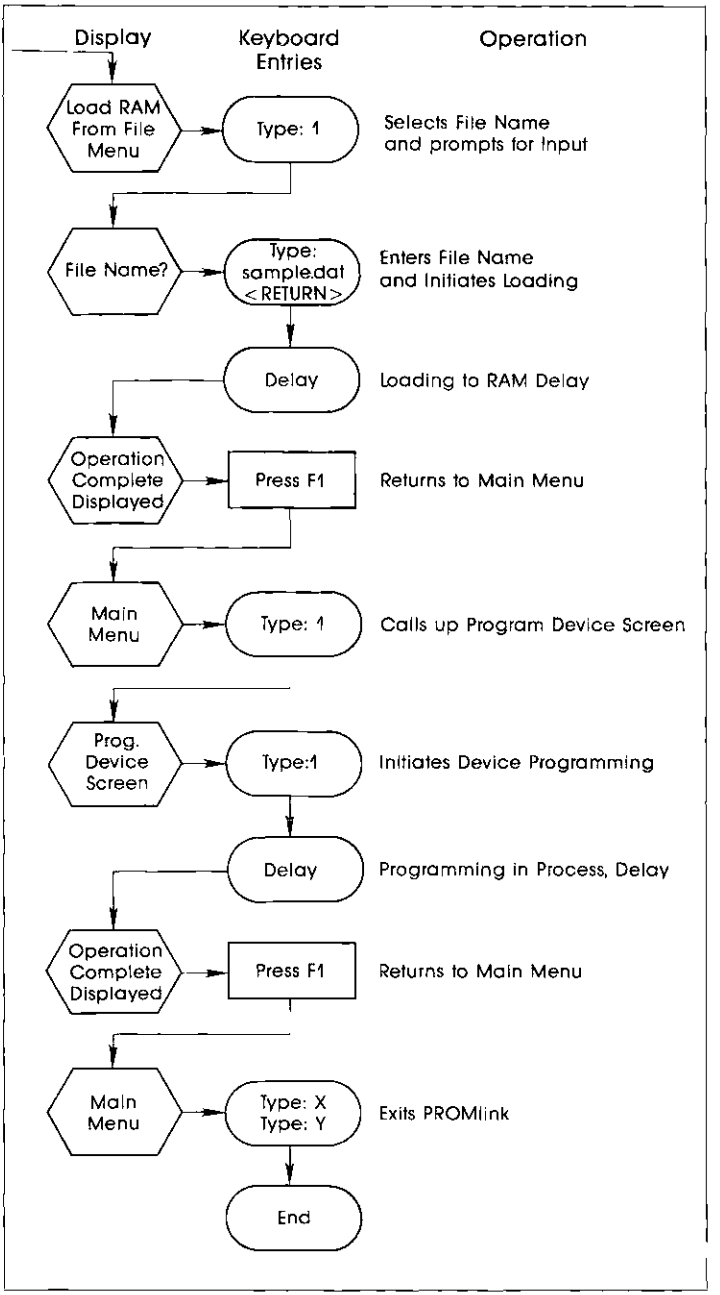


Figure 2-9. Example Session



Figuire 2-9. Example Session (Continued)

Introduction 2.10.1

Study the *Main* menu displayed on your screen and notice the status area at the top portion of the screen. The information displayed there reflects the configuration parameters for the current programming session.

This menu allows you to select any of the major PROMlink functions. In the following steps you will select and become familiar with functions 9 and 1 from the *Main* menu.

After studying the *Main* menu, you will go directly to the *Configuration Functions* menu and become familiar with its options. Figure 2-10 shows the *Configuration Functions* menu. You will be using functions 6, 2, and 7 from this menu.

At start up, PROMlink will use the default configuration *INIT.CFN* unless you have loaded a configuration created during a previous programming session. This configuration can be modified using the *Configuration Functions* menu.

The information displayed there reflects the configuration parameters for the current programming session.

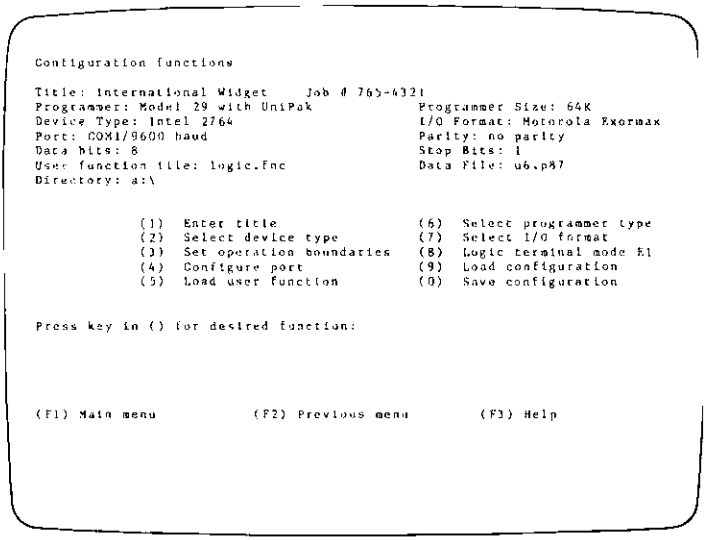


Figure 2-10. Configuration Functions Menu

Selecting the Programmer Type 2.10.2

The status area of the screen reflects the programmer and pak type (if any) that you are using. If they are not correct, you should change them by:

Selecting the *Configuration Functions* menu by typing:

9 (from the *Main* menu)

The *Configuration Functions* menu is displayed as shown in figure 2-10.

Then type:

6

To display the *Programmer Type* menu.

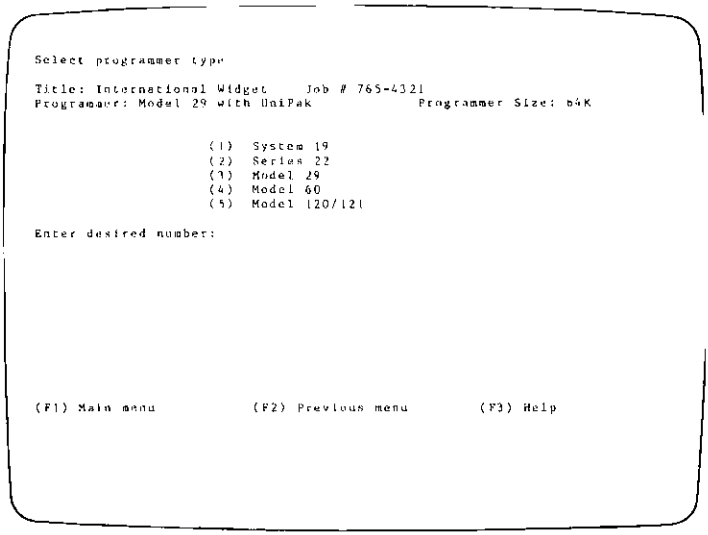


Figure 2-11. Programmer Type Menu

In this sample session the Model 22 will be chosen as the programmer that is connected to the computer running PROMlink. The Model 22 has Computer Remote Mode selected.

Type:

2 to select the Model 22 and after a short delay press:

F2

to return to the *Configurations Functions* menu. Note that the *Programmer Type* field now shows the Model 22 as the current programmer.

Note: Pressing F2 *anytime will return you to the menu you were using prior to the current one displayed on the screen. And pressing* F1 *will return you to the* Main *menu.*

Selecting the Device Type 2.10.3

You should be back at the *Configuration Functions* menu. The status area of the screen will indicate the current "Device Type." Once the programmer type has been chosen, the next item to select is the device type. If the device type indicated in the status area is not the one you desire, choose the *Select Device Type* (2) option from the menu.

The first of two *Select Device Type* screens is displayed, as shown in figure 2-12.

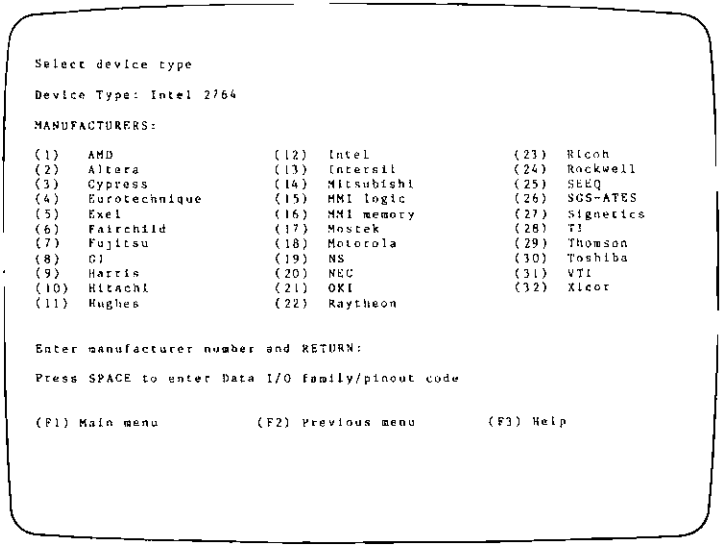


Figure 2-12. Select Device Manufacturers Screen

You can choose the device type that you will be using from this menu. Following is an example of the procedure. In this sample session an INTEL 2732A will be chosen.

Type:

12

(or the number corresponding to the manufacturer)

RETURN

to select INTEL as the manufacturer of the device. The second *Select Device Type* screen is displayed, as shown in figure 2-13. This screen allows you to select the correct device from a list of INTEL devices supported by Data I/O products.

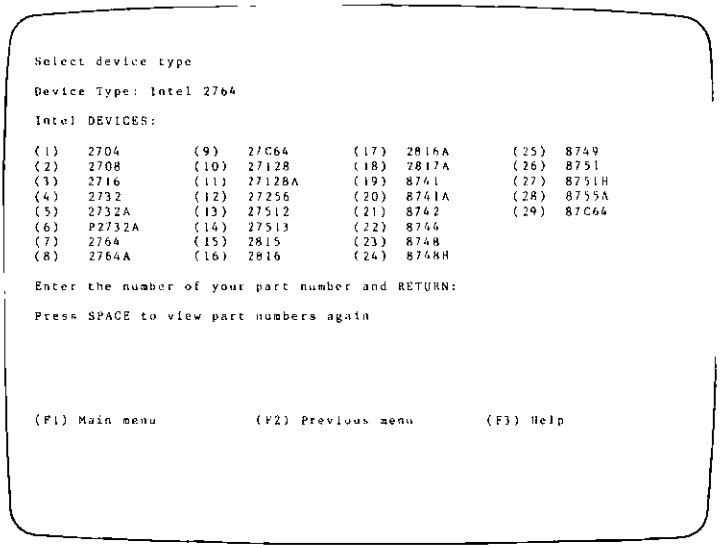


Figure 2-13. Select Device Type Number Screen

Note: Because Data I/O is continually updating and revising the Manufacturer's list, the numbers corresponding to the manufacturer may not be the same as they are on the example screen. Look for the manufacturer's name on the list, and enter that number when prompted.

Select the 2732A by typing:

5

(or the number corresponding to the 2732A)

RETURN

The screen changes to show the selected device, its family and pinout code, and its size. Press the:

F1

key to return to the *Main* menu.

Note: Devices can be selected using Family/Pinout Codes *also.*

Notes on the I/O Format 2.10.4

When you program a device, you will either be programming the device from files you already have on your data disk, or you will be using PROMlink to make files that you will store on the data disk to program the device later.

NOTE: The data in any file is always formatted in some way. If you have formatted data files, you must check in the status section of your screen to see if the I/O format *is the same as that of the files.*

If it is not, you must go to the *Set I/O Format* option from the *Configuration Functions* menu.

If you have no preference for the format of the data file, the default format (87) is a good one in terms of simplicity, density and error checking. *Binary* format (10) takes up the least disk space and has the quickest transfer but has minimal checking functions.

Note: Any binary file including MS-DOS. COM files may be transferred to the programmer if the I/O format is set to binary (10). PROMlink will do no interpretation of the file data, however, and the data in programmer RAM will be byte for byte the same as the data in the binary file.

MS-DOS. EXE files differ from .COM files in that they must be processed by a loader before they can be executed. It is therefore unlikely that transferring .EXE file data to the programmer would yield useful results.

Programming the Device 2.10.5

Once you have set the *Programmer Type, Device Type,* and *I/O Format;* you are ready to perform a number of operations. The operation that you will be using most frequently, is "Programming the Device."

This session is only an example of how you might use PROMlink to program a device. If you want to follow the session and program a real device, substitute the correct programmer for the one given in step 1 and the correct manufacturer and device for the ones given in steps 3 and 4 of the Sample Session instructions. Also, the file name entered in step 5 should be the name of a real data file stored on disk. If you don't already have a data file stored on disk, one can be created from a master device using the fuctions *Load RAM from Device* and *Create File from RAM*. The Sample Session proceeds as follows:

Note: Whenever the menu indicates "RAM", it is referring to the memory in the programmer only. The RAM in the computer is never required.

Load RAM from File 2.10.6

Select the *Load RAM from File* function by typing:

4

The *Load RAM from file* menu is displayed, as shown in figure 2-14.

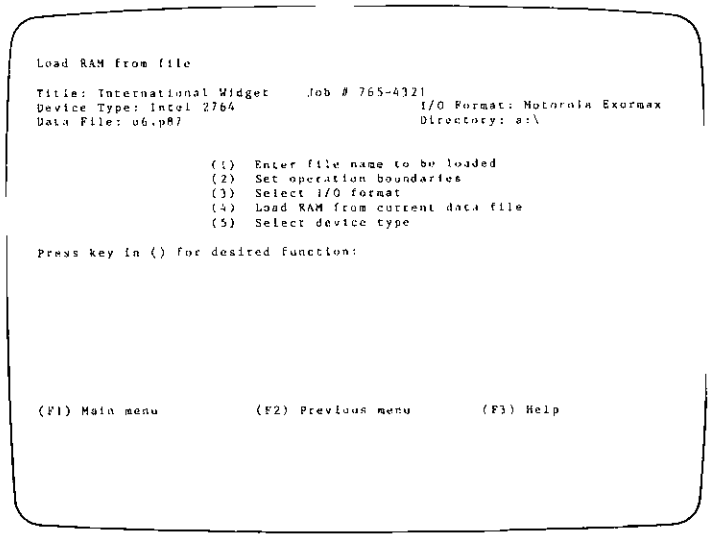


Figure 2-14. Load RAM From File Menu

In this sample session the data file name is *data.p87*

Type:

1

To enter the name of the file to be loaded. Then type:

data.p87 RETURN

Note: If you frequently deal with data files that are in more than one I/O format, we recommend adding a dot extension to your file name that reflects the format of the

data in the file. For example, for files in the Motorola Exormax *format, (format 87) a file name might be* "data.p87". *This will help to avoid confusion about which format a file has.*

A flashing asterisk appears on the screen during the load from disk data file to programmer RAM. When the load is complete, the message, *Operation successfully completed* appears.

Type:

F1

to return to *Main* menu.

If you were really programming the 2732A, it would have to be inserted in the textool socket on the programmer.

Select the Program Device function by typing:

1

The *Program Device* screen is displayed, as shown in figure 2-15.

```
Program device

Title: International Widget  Job # 765-4321
Programmer: Model 29 with Unipak          Programmer Size: 64K
Device Type: Intel 2764                   Device test: illegal bit test
Parts correctly programmed: 0             Data File: data.p87

     (1)  Begin programming          (4)  Select blank/illegal bit test
     (2)  Select device type         (5)  Setup handler binning
     (3)  Set operation boundaries   (6)  Begin handler programming


Press key in () for desired function:




(F1) Main menu          (F2) Previous menu          (F3) Help
```

Figure 2-15. Programmer Device Screen

At this point, care should be taken to make sure that all entries in the system status fields are correct. Table 2-2 shows each status field name and what should appear in that field for proper operation of PROMlink and the programmer. If any field contains incorrect data, return to the *Main* menu and redo the step for the instructions indicated in the third column of the table.

Table 2-2. System Status Fields and Contents for the Sample Session

Field Name	Required Contents	Instruction
Device Type	Intel 2732A	3
Data File	data.P87	5
Programmer	Series 22	1

If the system status fields are correct, type:

1

to begin the programming operation. A flashing asterisk will appear near the bottom of the screen to indicate that the device is being programmed. When the device is programmed, the message, *Operation successfully completed,* appears.

Press:

F1

to return to the *Main* menu.

Exit PROMlink 2.10.7

Type:

X

from the help line and

Y

when the screen prompts to exit PROMlink.

This concludes the Sample Session.

MENUS AND FUNCTIONS

DATA I/O

FUNCTIONS

UTILITIES

INDEX

MENUS AND FUNCTIONS 3

This section is a reference guide and provides descriptions of all of PROMlink's menus and functions. Organization of the information is in the order each function appears on the *Main* menu.

MAIN MENU FUNCTIONS AND SECTIONS 3.1

For any given task, you will proceed through one or more operations to accomplish that task. Figure 3-1 shows the relationship among PROMlink operations and their related screens and menus. Each rectangle represents a PROMlink operation and its screen or menu.

Note: The term "menu" refers to a PROMlink display offering a choice of menu functions and "screen" refers to a PROMlink display presenting function operation information or requiring a specific user response.

Many of PROMlink's functions can be reached from several menus and levels and the most direct route is shown in the diagram. Also, there are some sub-level menus not indicated on the menu tree which are less frequently used or used only for special circumstances.

The relationships among the screens and menus are shown as an inverted tree with lines or branches showing the connections between them. Many of the screens and menus can be reached only by proceeding downward through the tree via other screens and branches of the tree. For example, the complete file directory screen is reached from the *File Functions* Menu (7).

However, there are several functions that are accessible from more than one level. For instance, *Select Device Type* can be accessed from the following menus:

Program Device
Verify Device
Load RAM from Device
Configuration Functions
Load RAM from File

This is done for your convenience during a programming session. Each menu is described only once and the section that provides that information is indicated in figure 3-1. This number is given directly below the rectangle representing the screen.

Notice in figure 3-1 the *File Functions* menu, the *Edit Functions* menu, and the *Configuration Functions* menu and the several operations and functions available from each. These three functions, which are options from the *Main* menu, provide many of PROMlink's basic operational and parameter functions. In this manual, sub-tabs labeled *File/Edit Functions* and *Configuration Functions* provide quick access to these screens and menus.

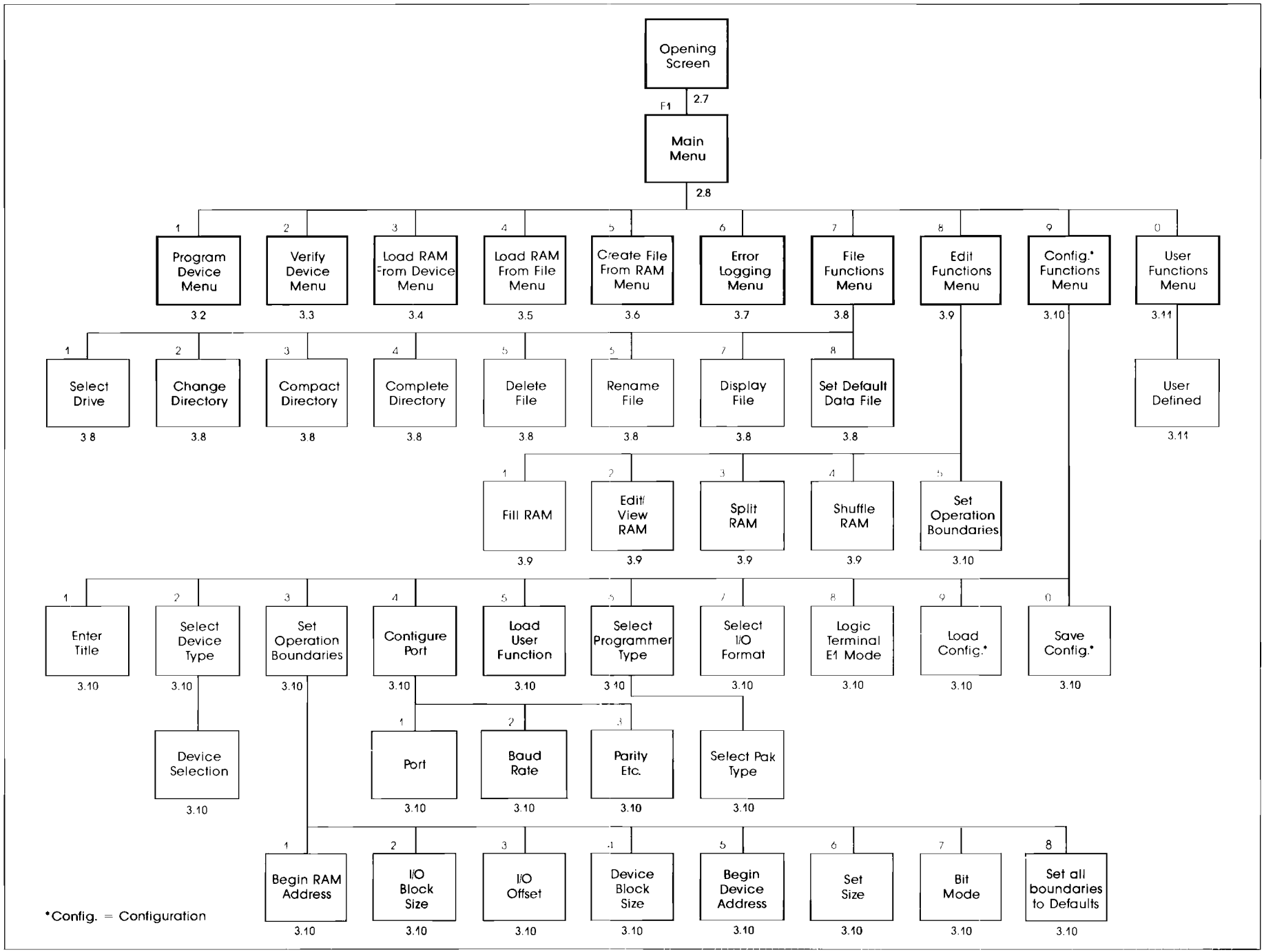


Figure 3-1. Relationship Among PROMlink Screens

General Operation and Screen Format 3.1.1

Most of the PROMlink screens and menus present the system status and a menu. PROMlink prompts you for a response to perform an operation or select another menu. Figure 3-2 shows a sample menu and the components of it. The system status area appears across the top of the display. Messages and prompts appear below the status area of the display.

Most screens and menus prompt you to either enter a value to select a function or to enter specific information which will set a particular parameter. You can return to the *Main* menu anytime by pressing the *F1* key. Pressing the *F2* key will return you to the previous screen or menu. If you are unsure about what to enter, or want more information, press the *F3* key from anywhere in the program. A help screen will be displayed with information about the current operation or error condition displayed on the PROMlink screen.

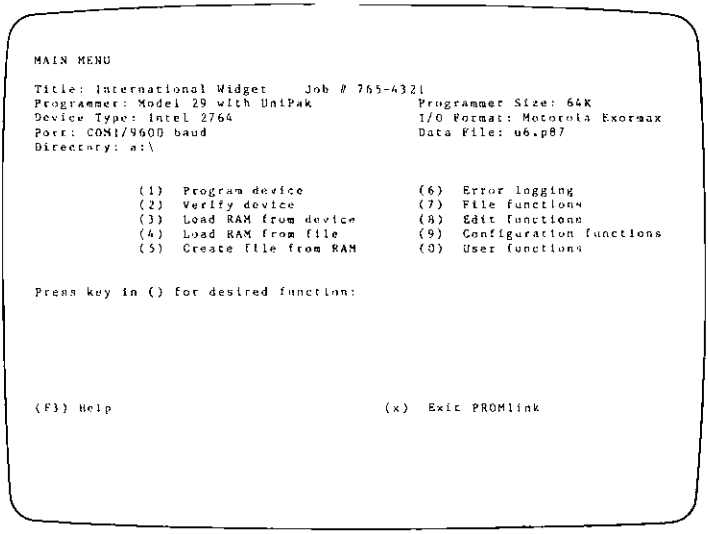


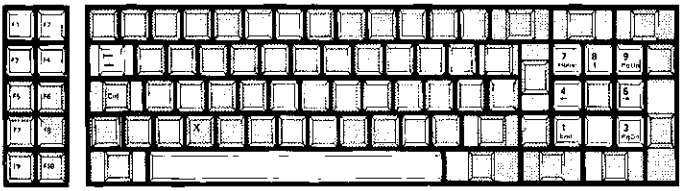
Figure 3-2. Main Menu

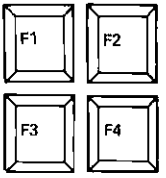
To allow quick scanning of menus, the primary identifiers are highlighted in reverse video. These are the menu name, the function key definitions, and the prompt line. (See figure 3-3 for PROMlink Function keys and callouts.)

To make a selection from any of the options presented on the menu, type the number in ( ) representing that option. Some screens and menus require that you press the RETURN key after you have made your numerical selection while others will automatically execute your selection. The highlighted prompt line will explain the status and prompt you for any action required. You can correct a typing error when making your selection by using the backspace key (unless the selection is made automatically).

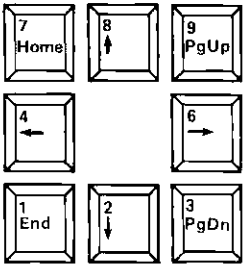
Many of the screens require you to enter a value in hexadecimal notation. Appendix A contains a table of commonly used hexadecimal numbers and their decimal equivalents.

Holding down the *CTRL* key while pressing the *Z* key during an operation will abort the operation, (except for Split and Shuffle RAM functions). PROMlink will return you to the previous menu.

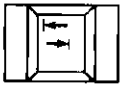




F1: Main Menu
F2: Previous Menu
F3: Help
F4: Restore Current Block (Edit Mode)



End: Last Block (Edit Mode)
Home: First Block (Edit Mode)
Arrows: Move Cursor (Edit Mode)
PGUP: Previous Block (Edit Mode)
PGDN: Next Block (Edit Mode)



Tab: Switch Cursor Between
Hex and ASCII Field (Edit Mode)

Space: Show next page of a menu.

Figure 3-3. PROMlink Function Keys

Main Menu System Status 3.1.2

The *main* menu system status area provides the following information:

- Menu Name
- Configuration Title
- Programmer Type
- Current Device Type
- Programmer and PC Connection
- Current Directory
- RAM size
- Current I/O Format
- Current Data File
- Current User Function File

When you first start PROMlink, the set of internal system status values shown in figure 3-2 is displayed. PROMlink accesses these values from a "Configuration File" called *INIT.CFN* that is on the PROMlink disk. You may create your own configuration file by using the *Save Configuration (0)* command from the *Configuration Functions* menu. The new configuration can then be reloaded at a later time with the *Load Configuration (9)* command from the *Configuration Functions* menu. This allows you to set up programming sessions quickly. If you name your configuration file *INIT.CFN* then PROMlink will automatically load that configuration at start up.

Note: When PROMlink is started, the system status values are loaded from the disk in the default drive or in PLMSG in a file named: INIT.CFN

If this file has been erased or for any other reason does not exist, the PROMlink program uses its own internal set of status values. INIT.CFN *default values are shown in figure 3-2. The contents of* INIT.CFN *and all configuration files are described in appendix B.1.*

Note: The programmer RAM size is not displayed in the system status area for the Model 120 and Model 60 programmers.

The following sections describe the PROMlink screens and menus and their functions. The shaded block at the beginning of the menu description provides you with a synopsis of the function, input, and options of that menu or screen.

PROGRAM DEVICE (1) 3.2

Function: Program the device in the programmer socket

Required Input: Function number

Options: Program a device or set up programming configuration

Notes: Verify that the correct device type is displayed in Current device type before programming.

The *Program device* menu allows you to begin programming the device (1), select the device type to be programmed (2), set the operation boundaries (3), select the kind of testing to be performed on the device prior to programming (4), set up handler binning (5), and begin handler programming (6). (See figure 3-4.)

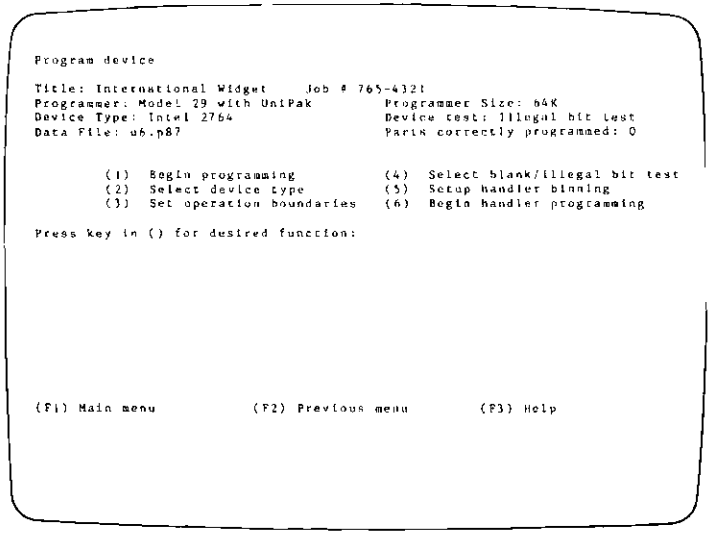


Figure 3-4. Program Device Menu

Begin Programming (1) 3.2.1

When the programmer programs a device, it actually performs these operations: testing the device to assure that new information will be accepted by the device, programming the device, and then verifying that the device has accepted the correct RAM information. See figure 3-5 for a flow diagram of the relationship of the data that will be programmed into the device.

During programming, PROMlink will display a message on the screen indicating that the device is being programmed.

The programming operation can take several minutes. When the procedure is complete, PROMlink displays a message indicating successful completion. If there is some difficulty in programming the device, an error message will appear.

Error numbers generated by the programmer are always less than 100. Refer to your programmer manual for listings of these messages. PROMlink errors are numbered 100 or greater.

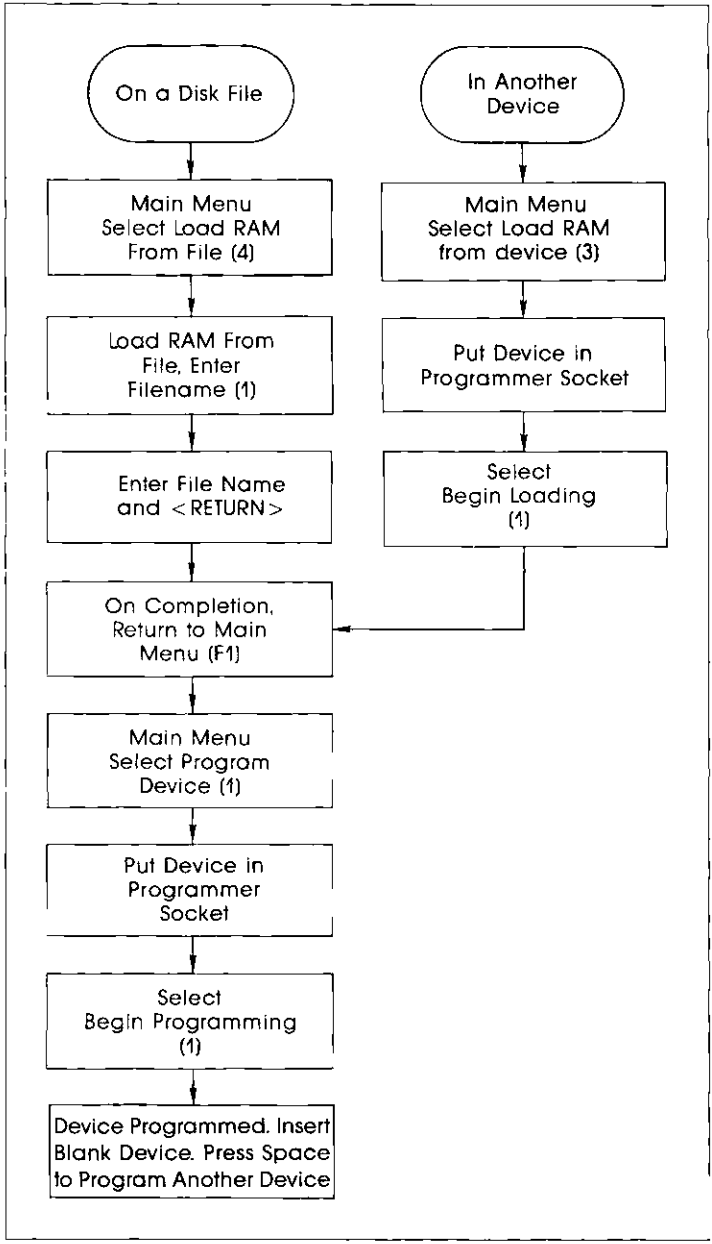


Figure 3-5. Flow Diagram

Select Device Type (2) 3.2.2

The *Select Device Type* function is available from the following menus:

Configuration Functions
Verify Device
Load RAM from Device
Load RAM from File
Program Device

Set Operation Boundaries (3) 3.2.3

The *Set Operation Boundaries* function is accessible from the following menus:

Program Device
Verify Device
Load RAM from Device
Load RAM from File
Create File from RAM
Edit Functions
Configuration Functions

Because there are many parameters you can set from this option, detailed discussion of the functions listed below are in *Configuration Functions*.

Begin RAM Address
I/O Block Size
I/O Offset
Device Block Size
Begin Device Address
Set Size
Bit Mode
Set All Boundaries to Defaults

Select Blank Check/Illegal Bit Test (4) 3.2.4

When you select (4) from the Program Device menu, PROMlink will go to the *Blank Check/Illegal Bit Test* menu shown in figure 3-6. From this menu, you can choose the following options:

(1) Illegal Bit Test
(2) Blank Check
(3) None (This allows the user to disable the test before programming.)

These functions refer to the device test that will be automatically performed in a program device operation before the device is actually programmed.

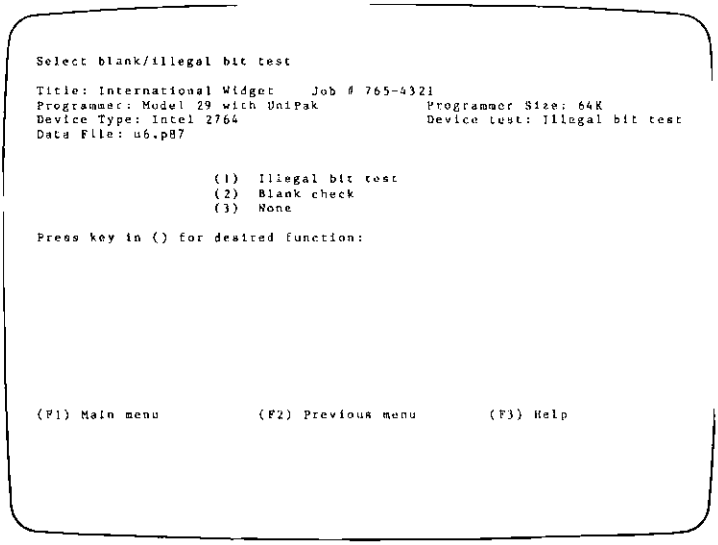


Figure 3-6. Blank Check/Illegal Bit Test

The Illegal Bit Test 3.2.5

In some cases it is not necessary that the device be blank to program or add new information. However, for programming to be successful, all the programmed bits (or fuses in logic devices) in the non-blank device must match those in the programmer's RAM (including the new or additional information).

Selecting the *Illegal Bit* Test instructs the programmer to look for programmed bits that appear in the device but are not specified in RAM. If a programmed bit in the device does not match its corresponding bit in RAM, an illegal bit error will be displayed. This is a fatal error, causing the programming session to abort.

Blank Check (2) 3.2.6

A Blank Check test is initiated prior to programming to assure that there are no programmed bits in the device to be programmed. If no programmed bits are detected, the device is blank, and programming will continue.

Set Up Handler Binning (5) 3.2.7

Function: Allows the user to select which error conditions will correspond to the category signals sent to the Handler

Required Input: Category number for each error condition

Notes: (None)

The *Handler* is an attachment to the programmer that automatically moves devices through a socket connected to the programmer where they are programmed and then sorted.

Figure 3-7 shows the *Set Up Handler Binning* menu. There are six error conditions displayed on the menu. The numbers on the screen corresponding to the six error conditions are the binning categories. You may enter a number from 1 - 5 (depending on your *Handler*) to select the binning signal given to the *Handler* during *Handler* programming for each of the error conditions.

An example of category selection follows:

Programmed Correctly: 1
Bad Device/Continuity: 4
Illegal Bit/Non-Blank: 2
Programming Error: 2
Data Verify Error: 3
Functional Verify Error: 3

If you entered these category numbers during *Set Up Handler Binning*, the *Handler* would drop all acceptably programmed devices into bin 1, all *Illegal Bit/Non-Blank* and *Programming Errors* into bin 2, all *Data Verify* and *Functional Verify Errors* into bin 3, and *Bad Device/ Continuity Errors* into bin 4. Bin 5 would not be used during this session. (See the *Handler* manual for set up instructions.)

Begin Handler Programming (6) 3.2.8

Function:	Dispense multiple devices for programming
Required Input:	Number of devices to program
Completion Message:	Operation successfully completed
Notes:	(none)

The *Begin Handler Programming* function menu (figure 3-8) is similar to the *Program Device* function and menu except that the *Handler* will automatically load the devices, program them and deposit the devices into the appropriate bin according to the selections made at the *Handler* set up menu, and continue with the procedure until the number of devices you specified at the screen prompt have been correctly programmed. The *Handler* will continue with the programming until either the specified number of devices have been correctly programmed or an unrecoverable error has occurred.

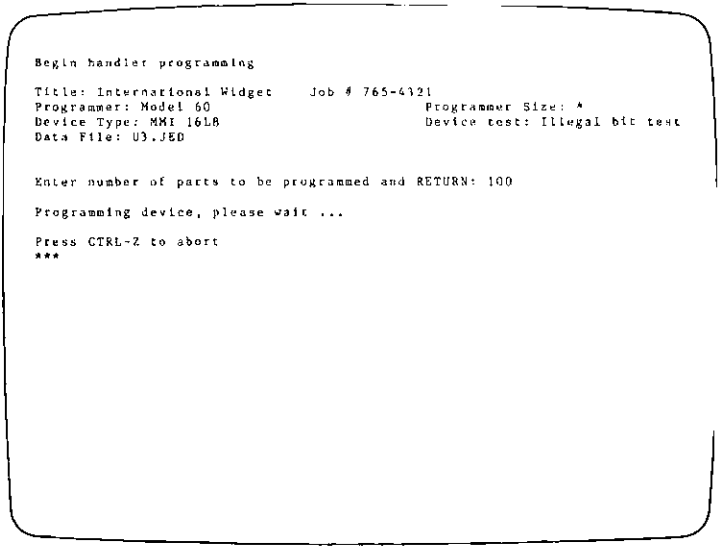


Figure 3-8. Begin Handler Programming Screen

VERIFY DEVICE (2) 3.3

Function: Check device data against programmer RAM data

Required Input: 1

Options: Perform the verification, set up the device verify configuration, or return to the Main menu

Completion Message: *(Result of verification)*

Notes: The device type shown in the system status area should match that of the device in the socket. Make sure that the correct data is in the programmer RAM.

All data bits in a device are checked for a match with data bits in programmer RAM. (See figure 3-9.) A message stating whether the data matches the RAM data is displayed when the verification is complete. This check is used to verify that a device has been correctly programmed.

During the verification, operation status is *Verifying device with RAM.* The message, *Operation successfully completed,* is displayed below the system status area upon completion of the RAM verify. If any errors occurred during the operation, an error message is displayed in place of the completion message. The RAM verify can be aborted by holding down the *CTRL* key while pressing the *Z* key at any point during the operation.

The following functions are also available from this menu:

(2) Select Device Type
(3) Set Operation Boundaries

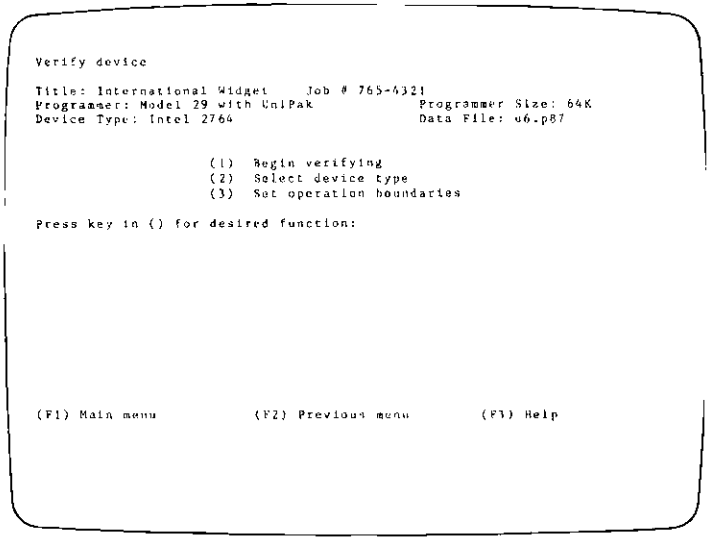


Figure 3-9. Verify Device Menu

LOAD RAM FROM DEVICE (3) 3.4

Function:	Load the programmer RAM with the data contained in the device in the programmer socket
Required Input:	Function number
Options:	Load the programmer RAM, set up device load configuration, or return to the Main menu
Completion Message:	Operation successfully completed
Notes:	Verify that the device type shown in the status area matches that of the device in the socket.

The *Load RAM from device* screen (figure 3-10) displays the system status and allows you to load the programmer RAM with the data contained in a device in the programmer socket. Before loading the RAM, verify that the device type displayed in the system status area is the same as that of the device plugged into the socket. Initiate the RAM load by pressing 1. During the load, operation status is Loading RAM from device. The message, *Operation successfully completed,* is displayed below the system status area upon completion of the RAM load. If any errors occurred during the load, an error message is displayed in place of the completion message. The RAM load can be aborted by holding down the *CTRL* key while pressing the *Z* key at any point during the load.

Loading the programmer RAM from a device is particularly useful when you want to duplicate a programmed device. The data in the device is loaded into RAM where it can then be used to program other devices of the same type or transferred to a PC disk for storage.

The following functions are also available from this menu:

(2) Select Device Type
(3) Set Operation Boundaries

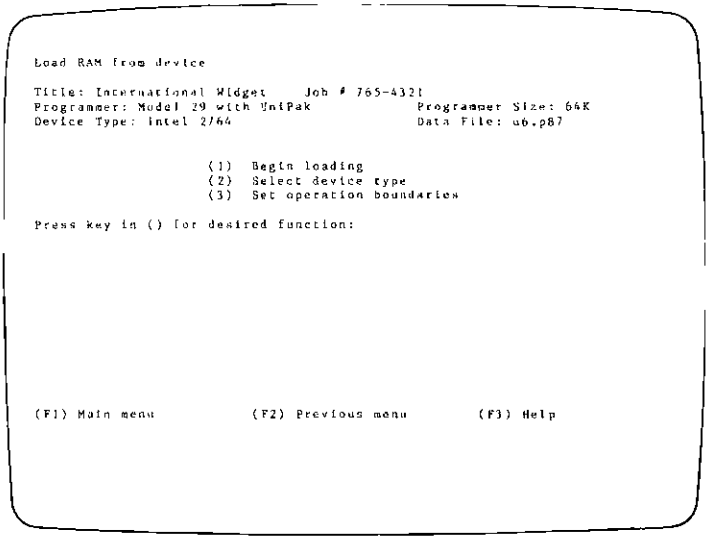


Figure 3-10. Load RAM From Device Menu

LOAD RAM FROM FILE (4) 3.5

Function: Load the programmer RAM with data from a PC file

Required Input: Function number

Options: Load RAM or set up load configuration

Notes: Check for the correct data format in the I/O Format field

The *Load RAM from File* screen (figure 3-11) displays the system status and prompts you to select a menu item. By typing a *1*, PROMlink will prompt you to enter the name of a PC file containing the data to be downloaded to the programmer RAM. This data is then transferred to the programmer. The programmer receives the data using the I/O format number you select and places the data in the programmer RAM. Before initiating the load, check the I/O format shown on the screen to see that it matches the format of the file. The I/O format can be changed, if necessary, by pressing 3.

```
Load RAM from file

Title: International Widget     Job # 765-4321
Device Type: Intel 2764                    I/O Format: Motorola Exormax
Data File: u6.p87                          Directory: a:\


                    (1)  Enter file name to be loaded
                    (2)  Set operation boundaries
                    (3)  Select I/O format
                    (4)  Load RAM from current data file
                    (5)  Select device type

Press key in () for desired function:









(F1) Main menu          (F2) Previous menu        (F3) Help
```

Figure 3-11. Load RAM From File Menu

Press the RETURN key after entering the drive specification and path (if necessary), and file name to initiate the RAM load. PROMlink will display

Loading RAM from file:

file name, and a flashing asterisk will flash at the bottom of the screen during the load. You may abort the RAM load by holding down the CTRL key while pressing the Z key which causes the operation to end immediately and displays the message *Operation aborted.* When the RAM load is complete, the message, *Operation successfully completed* is displayed. If any errors occur during the load, an error message is displayed in place of the completion message.

Loading the programmer RAM from a computer file allows you to program devices with data that has been saved on a floppy disk.

The following functions are also available from this menu:

(2) *Set Operation Boundaries*
(3) *Select I/O Format*
(4) *Load RAM from Current Data File*
(5) *Select Device Type*

CREATE FILE FROM RAM 3.6

Function: Create a computer data file containing the contents of the programmer RAM.

Required Input: Function number

Options: Create the file

Completion Message: Operation successfully completed

Notes: Check for correct data format in the system status area.

The *Create File from RAM* menu (figure 3-12) displays the system status and allows you to create a computer data file from data contained in the programmer RAM. This menu allows you to create a file (1), to set operation boundary addresses (2), or to select the I/O format (3). PROMlink will prompt you for the name of a computer data file that will contain the RAM data if you press *1*. The file name may contain a drive specification and path in addition to the file name and extension. If you specify a file that already exists, you are given a choice of writing the RAM data on top of the data currently in that file (replacing it) or entering a different file name.

The amount of data stored in the file depends on the I/O block size and current device size. A different I/O block size can be specified with the *Set Operation Boundaries* function (Function 2 of this menu). Before creating the file, verify that the I/O format displayed in system status is the desired one for the file you are creating. If it is not, change it by selecting function (3) from the menu.

The following functions are also available from this menu:

(2) *Set Operation Boundaries*
(3) *Select I/O Format*

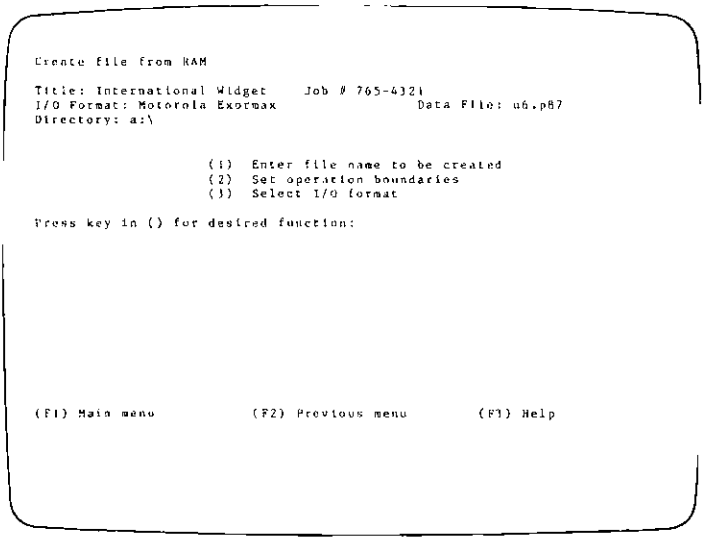


Figure 3-12. Create File From RAM Menu

ERROR LOGGING 3.7

Function:	Display, save, and clear the programming session error counts
Required Input:	Option selection
Options:	Clear the error counts or save and clear the error counts
Completion Message:	Operation successfully completed
Notes:	(none)

Error counts are saved to a file named STATS.DOC on the default drive of the computer.

Programming session error counts can be saved to disk or cleared from the *Error Logging* screen (figure 3-13). Session statistics include the number of devices that have been successfully programmed, and the number of illegal bit/non-blank errors, programming errors, verify errors, and bad device/continuity errors detected, since the PROMlink session was started or the error counts were last cleared. The session statistics are updated after every programming operation.

The error counts will be saved to a file called "STATS.DOC" on the default directory. If that file already exists, the current error counts are appended to that file.

The *Error Logging* menu gives you two options: clear the current error counts or save the error counts and then clear them. Clearing the error counts (with or without saving them) resets all the counts to zero. Further programming operations are then recorded in the error counts as usual.

Operation successfully completed is displayed after the operation is completed.

Note: The GangPak and Gang modules cannot indicate to PROMlink the number of correctly programmed devices. Therefore, PROMlink does not update the error counts when a GangPak or Gang module is in use.

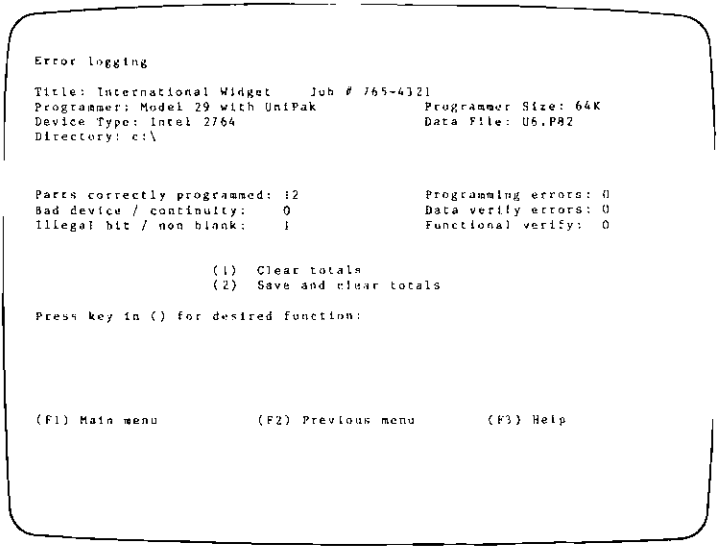


Figure 3-13. Error Logging Menu

FILE/EDIT FUNCTIONS

DATA I/O

FILE FUNCTIONS 3.8

Section 3.8 describes PROMlink file manipulation and associated directory functions. (See figure 3-14.) The file functions that you can access from the *File Functions* menu are deleting, renaming, displaying, and setting the default data file. You can also select the operating disk drive, view the complete or compact working directory, and change the directory.

The screens and menus defining these functions are presented in the following sections.

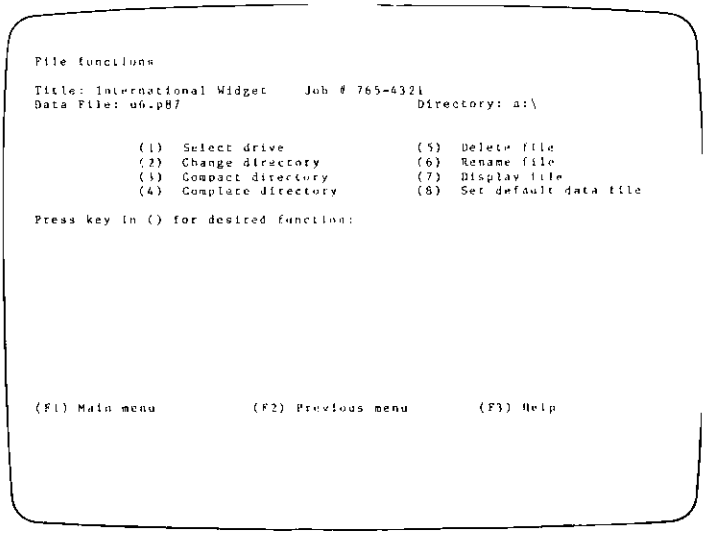


Figure 3-14. File Functions Menu

Select Drive and Change Directory 3.8.1

The first two functions on this menu are *Select Drive* (1) and *Change Directory* (2). They provide you with the flexibility to move from one directory to another and to change your disk drive. (See figure 3-15 and 3-16.)

Function	Change working directory or operating disk drive
Required Input:	Type name of new working directory or letter designation of new disk drive
Options:	Remain in current drive/directory
Completion Message:	Current directory: \
Notes:	(none)

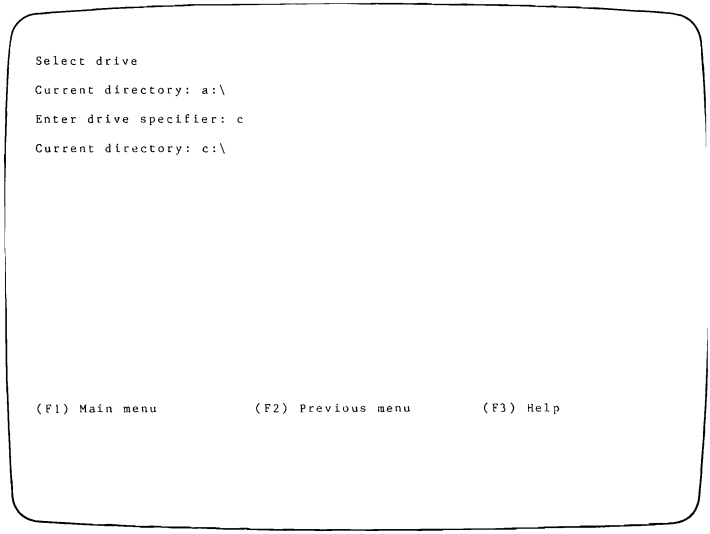


Figure 3-15. Select Drive Screen

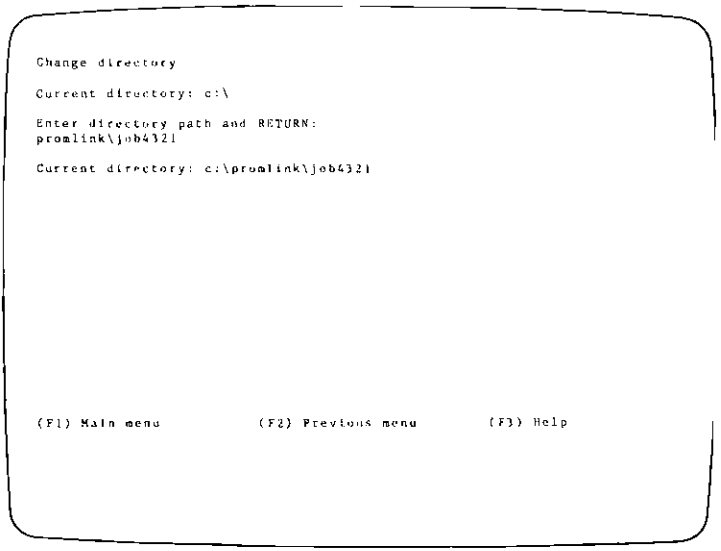


Figure 3-16. Change Directory Screen

Displaying the Directory 3.8.2

PROMlink offers two directory listings. Each provides a list of the data files in the directory specified. The Complete Directory lists, in addition to the file names and amount of free working space, other information. The following two sections explain the contents of each.

Function: Display listing of directory

Required Input: Directory path and/or filename and RETURN

Options: Select (3) for compact directory listing

Select (4) for complete directory listing

Completion Message: None. Directory is displayed.

Notes: (none)

Compact Directory 3.8.3

The *Compact Directory* screen (figure 3-17) displays a complete list of files currently in the directory that you specified. You can list the files on your current directory by entering RETURN without having to type the path name.

You can indicate a specific file or group of files to list. To list specific files, enter the search key according to the DOS rules for file specifications and wildcard characters. If no files exist that match the search criteria, a message indicating that PROMlink is unable to display the directory will appear.

For example, the search key *b:*.xyz*

would display information for all files on drive B that have the extension,

xyz.

The default drive is the drive indicated in the system status area as part of the default directory.

If the disk or hard disk in the default drive is divided into subdirectories, information for the files contained in the current directory is displayed. For more information concerning file specifications, default drives, and directories, refer to your DOS manual.

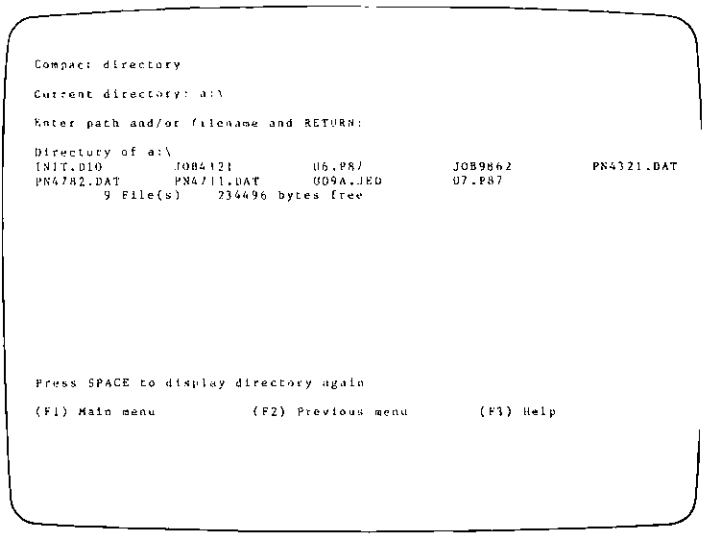


Figure 3-17. Compact Directory Screen

Complete Directory 3.8.4

The *Complete Directory* screen (figure 3-18) displays a complete list of files currently in the directory that you specified. Additional information displayed on the screen is listed below:

- Amount of space (number of bytes) used by each file
- Date and time the file was last edited

The procedures on listing the directories is the same for both directory list functions. Refer to the information in the *Compact Directory* discussion above.

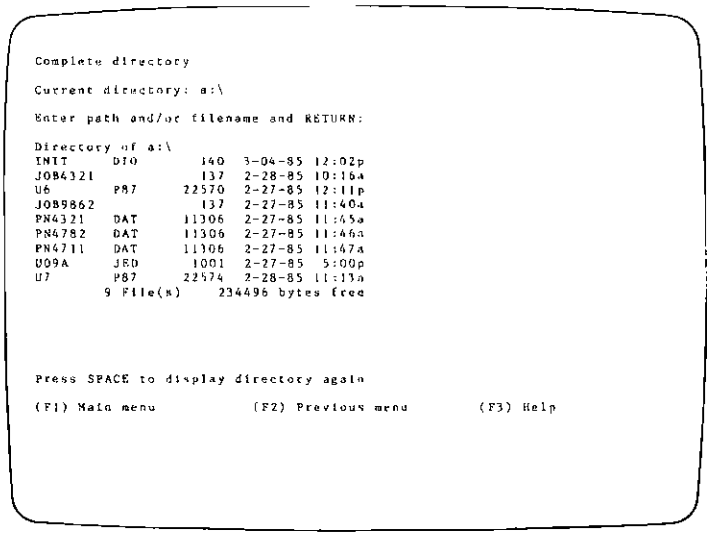


Figure 3-18. Complete Directory Screen

Delete File 3.8.5

Function: Deletes a data file from directory

Required Input: File name

Options: (none)

Completion Message: Operation successfully completed

Notes: (none)

This function allows you to delete data files from any directory. It is good practice to periodically clear your working directory of configuration files and data files that you no longer use. The *Delete File* screen shown in figure 3-19 lists all of the files currently in the directory. Enter a file name from the list and press the RETURN key. The file you named will be gone.

CAUTION

Make sure that you really want to delete the file before pressing the RETURN key: this procedure is not reversable.

```
Delete file

Current data file: u6.p87

Directory of c:\
INIT.CFN        J084321         U6.P87          J089862         PN4321.DAT
PN4782.DAT      PN4711.DAT      U09A.JED        U7.P87          LOGIC.UFN
GANGPAK.UFN
        11 File(s)     1237426 bytes free




Enter file name and RETURN: u09a.jed

File(s) deleted.

(F1) Main menu          (F2) Previous menu      (F3) Help
```

Figure 3-19. Delete File Screen

Rename File 3.8.6

Function: Changes the name of a current file to a different name

Required Input: Original-filename new-filename

Options: (none)

Completion Message: Operation successfully completed

Notes: (none)

This function allows you to change the name of a file you have previously stored in a directory. The *Rename File* menu shown in figure 3-20 allows you to change the name of a file within your current working directory. This function is useful for taking a previously named data file and changing the file name to reflect more adequately the contents of the file. Changing the name of a data file does not affect the contents of the file in any way.

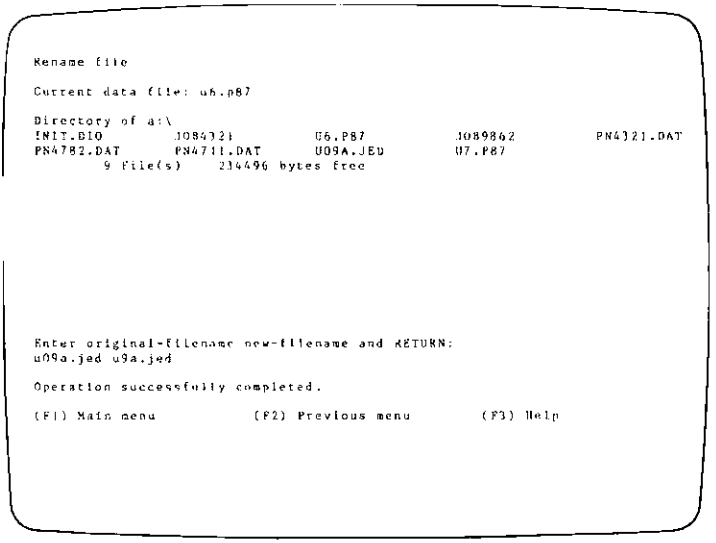


Figure 3-20. Rename File Screen

Display File 3.8.7

Function:	Shows the contents of the data file
Required Input:	File name
Options:	Display file, return to the File Functions menu, or return to the Main menu
Completion Message:	(none)
Notes:	(none)

This function allows you to view the contents of the data file. PROMlink will prompt you for the file name you want to view. (See figure 3-21.) After you enter the file name and press the RETURN key, a second display containing the data file you specified appears. Figure 3-22 shows the screen with a sample file displayed on it.

```
Display file

Current data file: u6.p87

Directory of a:\
INIT.DIO        J084321         U6.P87          J089862         PN4321.DAT
PN4782.DAT      PN4711.DAT      U9A.JED         U7.P87
        9 File(s)     234496 bytes free



Enter filename and RETURN: u9a.jed

Press SPACE to display directory again

(F1) Main menu          (F2) Previous menu      (F3) Help
```

Figure 3-21. Display File Menu

```
U09A for Part # 765-4321
JEDEC file for: P14H4
Created on: 26-Feb-85 09:54 AM
International Widget Inc.   Silicon Valley, Ca.*
QP20* QF448*
LQ000
11111111001101111111111111111
11111101111011111111101111111
11111111110111111101111111111
00000000000000000000000000000
11101101110111111111111111111
11111101111011111011111111111
11111111110111111111111011111
00000000000000000000000000000
01111110111011111111111111111
11111101111011011111111111111
11111111110111111111111111011
00000000000000000000000000000
11011110111011111111111111111
11111101111001111111111111111
11111111110111111111111110111

Press SPACE continue to display file

(F1) Main menu          (F2) Previous menu      (F3) Help
```

Figure 3-22. Display File Screen

Set Default Data File 3.8.8

Function:	Selects the name of the data file that will appear in the system status area
Required Input:	File name
Options:	(none)
Completion Message:	Operation successfully completed
Notes:	(None)

This function allows you to set the file that PROMlink will show in the system status area. By typing the name of the file you want and pressing the RETURN key, (figure 3-23) PROMlink will indicate that name in the system status area. The function is useful for setting up configurations in preparation for saving a configuration. The data file is normally set any time a file is loaded or created.

Note: This operation does not load the file. If you want to load a file, go to the Load RAM from file (4) from the Main menu.

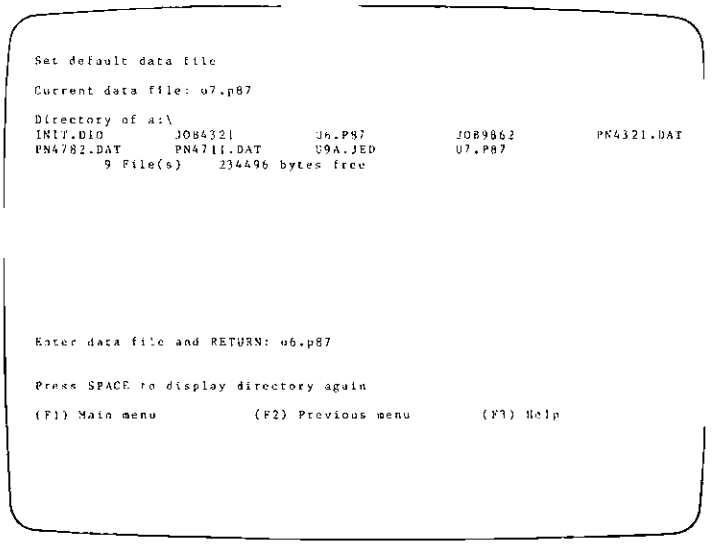


Figure 3-23. Set Default Data File Screen

EDIT FUNCTIONS 3.9

This section describes PROMlink edit functions. (See figure 3-24.) The *Edit RAM* functions allow you to modify the RAM in the programmer. RAM may be filled with an 8-bit hexadecimal pattern or may be edited using the full screen editor. *Split and Shuffle RAM* are two commands used for rearranging RAM data for 16-bit programming. See your programmer manual. (This option is not available for all programmers.)

You can also access *Set Operation Boundaries (5)* from the *Edit Functions* menu.

The screens and menus defining these functions are presented in the following sections.

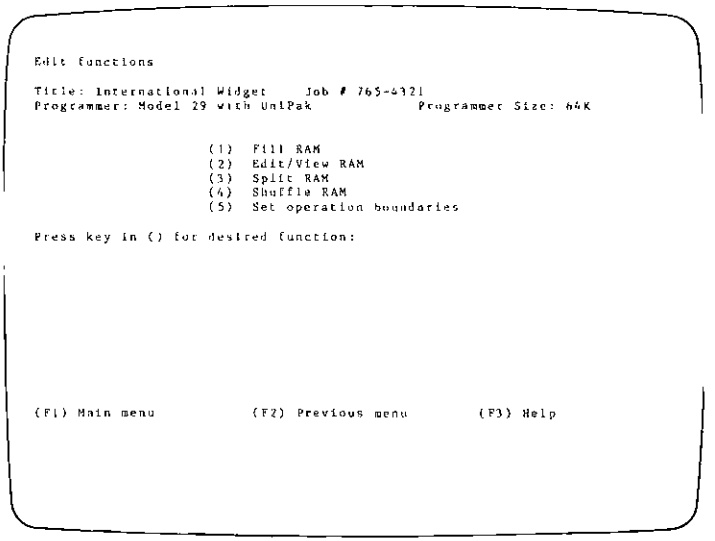


Figure 3-24. Edit Functions Menu

Fill RAM 3.9.1

Function:	Fill the programmer RAM with specified data
Required Input:	Data to fill RAM, specified as one byte in hexadecimal format
Options:	Fill the RAM with specified data, return to the *Edit Functions* menu, or return to the *Main* menu
Completion Message:	Operation successfully completed
Notes:	This function destroys and replaces the current contents of the programmer RAM.

The programmer RAM can be filled with a specific data byte from the *Fill RAM* screen (figure 3-25). Access is from the *Edit Functions* menu (8) on the *Main* menu. After the fill RAM with data byte operation is complete, all bytes in the programmer RAM contain the specified data byte. Enter the data byte used to fill the RAM in hexadecimal notation. (See appendix A for a table of ASCII characters and their hexadecimal codes.)

CAUTION

This operation destroys and replaces the current contents of the programmer RAM. If you decide not to fill RAM, before you begin the operation, press the F1 *key to return to the* Main *menu. Pressing the* F2 *key will return you to the Edit Functions* menu.

Fill RAM with 0 can be done in a few seconds with all programmers except the System 19.

This operation takes approximately one minute per 16K of RAM to be filled. You can limit the portion of RAM affected by this operation and the amount of time it takes to complete by setting a different *Begin RAM Address* and *I/O Block Size* (select *Set Operation Boundaries* from this menu). Or, you may find it more useful to perform the Fill RAM operation directly from the programmer front panel.

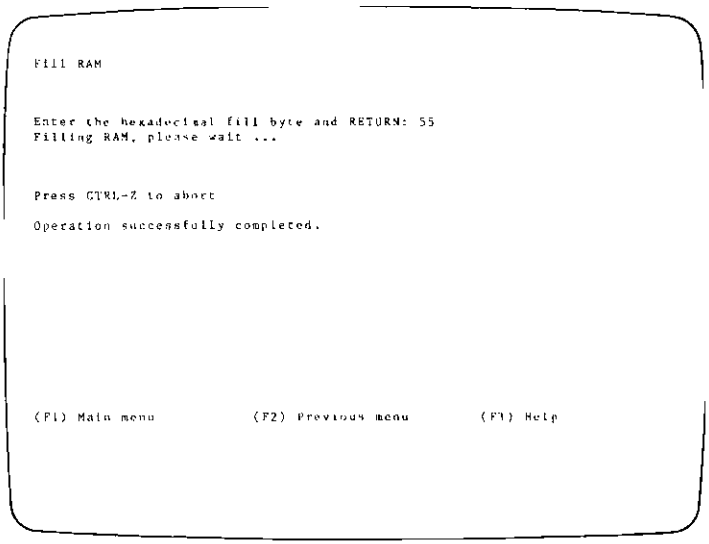


Figure 3-25. Fill RAM Screen

Edit/View RAM 3.9.2

Function:	Edit the contents of programmer RAM
Required Input:	RAM address and new data
Options:	Edit the RAM or return to the *Main* menu
Completion Message:	(none)
Notes:	(none)

The *Edit RAM* function is an expanded Edit feature of PROMIink 2.0 and is a powerful tool for manipulating data. The Edit RAM function is a full screen editor that lets you look at and edit the programmer RAM contents in blocks of 256 bytes. (See figure 3-26.)

Note: The term RAM only refers to the RAM in the programmer, not the RAM in the PC.

By pressing 2 from the *Edit Functions* menu, you will be prompted for the first address where you want to start your editing session. Enter a hexadecimal address and press the RETURN key. If you do not specify a starting point, pressing the RETURN key will move you to the address 0.

While PROMIink is reading RAM, a message to wait will appear on the screen. After a slight delay, the full screen editor will appear with the cursor placed at the beginning address that you specified.

Parts of the Full Screen Editor 3.9.3

1. The top line of the screen is the cursor address. At any point, it shows what address you are editing.

2. The middle and largest portion of the screen is the editing area. This is the 256 byte display of RAM data that begins (upper left-hand corner) with the beginning address you specified. This 256 byte area is the *"editing block"*. To the right of this block is the *ASCII* equivalent codes column. This column is an *ASCII* representation of the hexadecimal codes that you are editing. Each time a change is made in an 8-bit address, the *ASCII* column will change to reflect the new input.

   Note: This function operates in reverse also. If you edit the ASCII column, the corresponding hex address will change. The TAB key toggles between ASCII and Hex areas.

3. The *edit* menu is directly below the editing block. This area provides instruction on cursor movement within the editing block, going from *ASCII* to *Hex* columns, changing blocks, and leaving the editor.

4. Help functions are highlighted in reverse video at the bottom of the screen. In addition to F1 (return to *Main* menu), *F2* (return to previous menu), and *F3* (Help), a fourth help function has been added for the Edit RAM session. This function, *F4*, will restore the current block you are editing to its original state before you started the editing session. If, for instance, you make some changes in your data and decide, before you move to another block, that you want to keep the original data, by pressing *F4*, the current block will return to its original state.

CAUTION

Once you either move to another block or leave the editor, any changes that were made were saved and the new data replaced the original data in programmer RAM.

Editing a Data Block 3.9.4

Figure 3-26 shows an editing session starting at the address 35C. You can move around in this block by pressing the ARROW keys on your computer keypad. The cursor will move vertically by one line at a time and horizontally by one nibble at a time. Each time you move to a new 8-bit location, the address will be displayed at the top of the screen. When you change the value of a data byte, the ASCII column to the right of the editing block will be changed to reflect the new data.

The TAB key will toggle you between the ASCII and Hex columns. Changes made in either section will be reflected in the other. All of the changes you make to a block of data will be highlighted in reverse video so you can easily see what modifications have been made before you move to the next block of data or exit the editor.

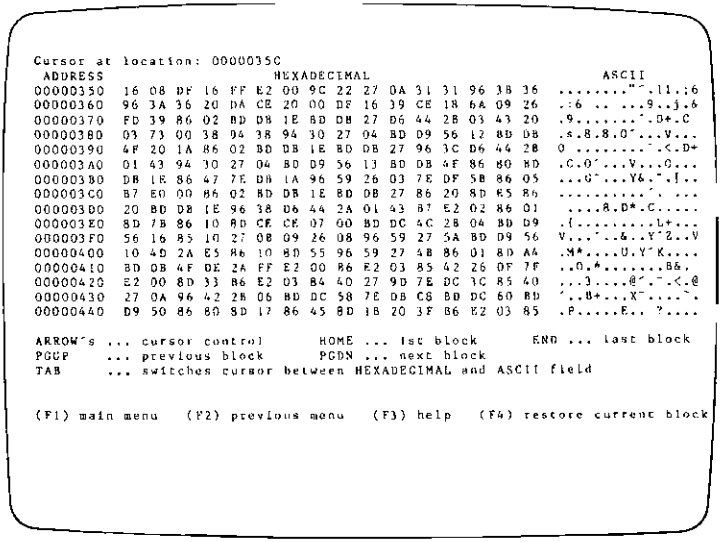


Figure 3-26. Edit/View RAM Screen

Note: When you are editing a 256 byte block of data, programmer RAM is not changed until you either:

Leave the editor or
Go to another 256 byte block of data

The PGUP and PGDN keys on your keypad will load the next 256 byte block of data. When you press PGUP, PROMlink will go to the previous 256 bytes of data. When you press PGDN, PROMlink will advance to the next 256 byte block of data.

Note: If you perform a PGUP or PGDN move, be certain that you are ready to move on. Any changes made to the current data block will be recorded in programmer RAM.

Once the new block has been displayed, using the ARROW keys will again move the cursor vertically by one line at a time and horizontally by one nibble at a time.

The HOME and END keys on your computer keypad move the cursor to address 0 and the last programmer RAM address, respectively. Pressing the HOME key will move you to the first 256 bytes of the programmer RAM. The cursor will be at address 00. Pressing the *END* key will move you to the last 256 bytes of your programmer *RAM*. The cursor will be at the top left-hand corner of this block.

To exit the editor, press the *F2* key. PROMlink will return to the *Edit/View RAM* menu.

Note: Leaving the editor by pressing the F3 key does not cause the changes you have made (if any) to be written in programmer RAM.

Split RAM 3.9.5

Function: Separates a block of 16-bit data in programmer RAM into two blocks of 8-bit data

Required Input: Hexadecimal center point (must be an even power of 2)

Options: Select a center point or return to the Main menu

Completion Message: Operation successfully completed

Notes: Unless you specify a center point, PROMlink will choose the RAM center point and this operation could take a long time if you have a lot of RAM.

The *Split RAM* function (figure 3-27) allows you to separate data that you have organized as 16 bits wide into two 8-bit devices. The *Split RAM* screen prompts you to enter a center point and then to press the RETURN key. There will be a delay while PROMlink is separating the odd and even data bytes and loading them into two separate blocks of RAM.

With data beginning as 16 bits wide, all 8-bit bytes occupying even addresses will go to the block of RAM whose addresses are lower than the specified midpoint and the 8-bit bytes occupying odd addresses will go to the block of RAM whose addresses are equal to and higher than the specified midpoint.

Note: The RAM center point address that you specify must be an even power of two.

Note: Split RAM cannot be aborted by pressing control Z.

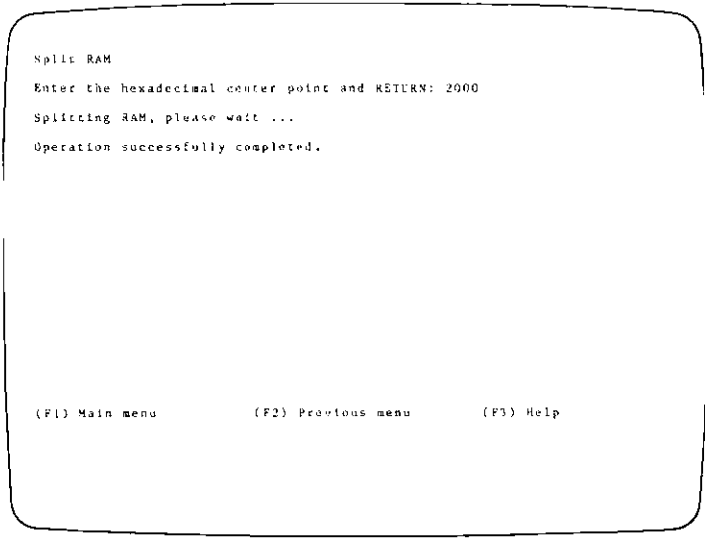


Figure 3-27. Split RAM Screen

Shuffle RAM 3.9.6

Function: Interweaves data in two equal sized blocks of 8-bit data back into one block of 16-bit data

Required Input: Hexadecimal center point (must be an even power of 2)

Options: Select a center point or return to the *Main* menu

Completion Message: Operation successfully completed

Notes: (none)

The *Shuffle RAM* function is essentially the opposite function of Split RAM and allows you to interweave two blocks of 8-bit data back into one block of 16-bit data. The *Shuffle RAM* screen prompts you to enter a center point and then to press the RETURN key. There will be a delay while PROMlink is combining the odd and even data bytes and loading them into one 16-bit block.

One of the 8-bit data blocks contains all of the data at even addresses and the other 8-bit data block contains all of the data at odd addreses. *Shuffle RAM* will take the data from the center point and higher and combine it with data below the center point such that the block of 16-bit data will now have data that was before the center point on even addresses and data that was after the center point on odd addresses.

The *Shuffle RAM* screen is similiar to the *Split RAM* screen; the only difference is that the top of the screen will indicate which function is being performed.

Note: Shuffle RAM cannot be aborted by pressing control Z.

Set Operation Boundaries 3.9.7

The *Set Operations Boundaries* function defines the block of memory currently being worked on. This function is available from the following menus:

Program Device
Verify Device
Load RAM from Device
Load RAM from File
Create File from RAM
Edit Functions
Configuration Functions

Because there are many parameters you can set from this option, detailed discussion of the functions listed below are in Configuration Functions.

Begin RAM address
I/O Block size
I/O offset
Device block size
Begin Device Address
Set Size
Bit Mode
Set All Boundaries to Defaults

CONFIGURATION FUNCTIONS 3.10

The options and functions available from this menu let you set all parameters you will need to define a data file configuration and save it for loading at another time, set all data entry parameters (*Set Operation Boundaries* (3)), and configure the computer serial port. Figure 3-28 shows the *Configuration Functions* menu and the 10 options available from it.

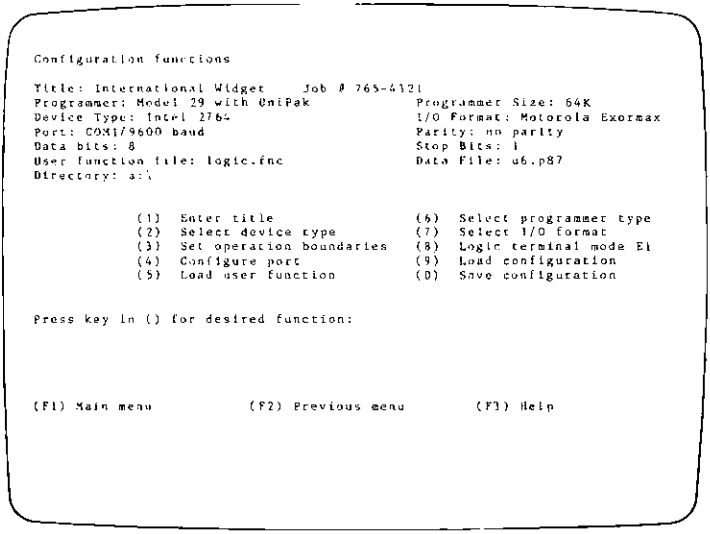


Figure 3-28. Configuration Functions Menu

Enter Title 3.10.1

Function: Defines the title displayed as the first line of the system status area

Required Input: Descriptive title

Options: (None)

Completion Message: Operation successfully completed

Notes: (none)

This option allows you to assign a unique title to the configuration information. This title will be displayed as the first line of the system status area. (See figure 3-29.)

```
Enter title

Current title: International Widget   Job #432-6321

Enter title and RETURN:
International Widget   Job #654-3210


Operation successfully completed.









(F1) Main menu          (F2) Previous menu        (F3) Help
```

Figure 3-29. Enter Title Screen

Select Device Type 3.10.2

The system status area of the PROMlink screen will indicate the current configuration parameters. If the device type indicated is not the one you want to use, choosing the *Select Device Type* option will let you pick the manufacturer from the *Manufacturer Selection* screen and the device type from the *Select Device Type* screen.

Function: Specify the current device type

Required Input: Selection of a manufacturer and a device from menus

Options: Manufacturers and their devices or Family/pinout code

Completion Message: (none)

Notes: This resets the *Current device* type field

The device name displayed in the Device Type field of the system status is changed by choosing *Select Device Type* from the *Program Device* menu and the following sub-menus:

Configuration Functions
Verify Device
Load RAM from Device
Load RAM from File
Program Device

You will use this function often so be sure to check the system status area of the screen to assure the correct device type is indicated. You have a choice of different programmable device manufacturers and the supported devices that each of them offers. Device type selection is performed with the help of two menus, described in the sub-sections following.

Manufacturer Selection 3.10.3

Function: Select the manufacturer of the device

Required Input: Selection of a manufacturer from the menu, or a Data I/O *Family/Pinout code*

Options: Select a manufacturer or return to the *Main* menu

Completion Message: (none)

Notes: After the manufacturer selection, the device must be specified on the next menu.

The *Manufacturer Selection* screen (figure 3-30) appears first when the *Select Device Type* operation is chosen. This screen provides a list of the PROM, PAL, IFL, EPROM, and EEPROM manufacturers whose devices are supported by Data I/O programmers. You can select a manufacturer by entering the number listed next to its name, or you can enter the *Family/Pinout code* of the device by pressing the space bar.

The *Family/Pinout code* directly specifies both the manufacturer and device. The *Family/Pinout* codes of the devices supported by Data I/O programmers can be found in the programmer manuals.

Choosing a manufacturer by number causes a list of that manufacturer's devices to be displayed on a second screen. This second screen is described in the following sub-section.

If you decide to enter the *Family/Pinout code* of the device, the screen shown in figure 3-31 is displayed. Enter the *Family/Pinout code* and press the RETURN key. A check to see if the device is supported by the selected programmer is performed as described in the next section.

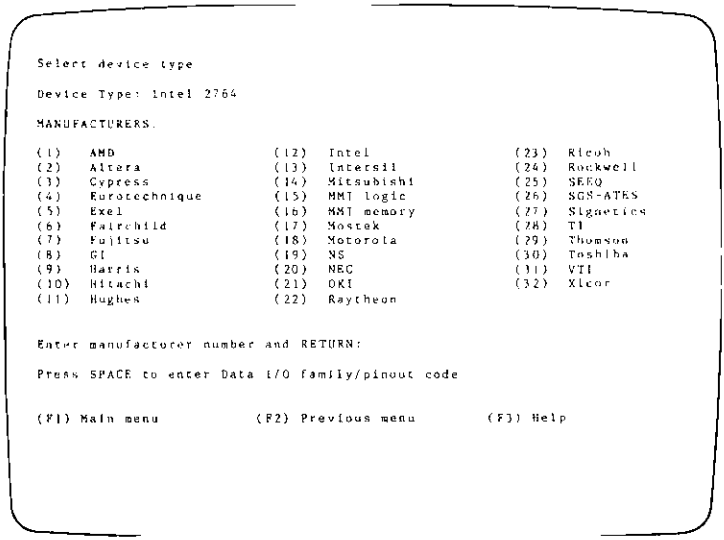


Figure 3-30. Manufacturer Selection Screen

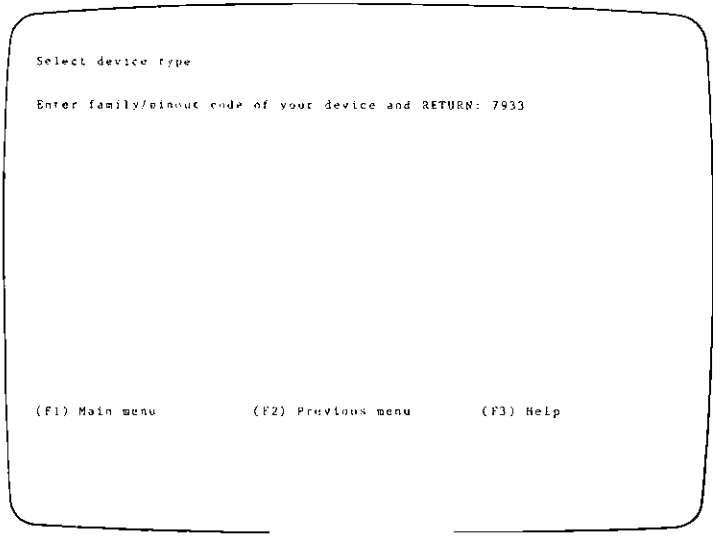


Figure 3-31. Family /Pinout Code Screen

Device Selection 3.10.4

Function: Select a device type

Required Input: Selection from a menu of devices available from the specified manufacturer

Options: Select a device or return to the *Manufacturer's Selection* menu

Completion Message: Device type was accepted by the programmer

Notes: For some manufacturers, the devices will span more than one screen; in this case, press the space bar to view more devices

The *Device Selection* screen (figure 3-32) displays the supported devices manufactured by the chosen manufacturer. Choose a specific device from this screen by entering the number listed next to that device and pressing the RETURN key.

```
Select device type

Device Type: Intel 2764

Intel DEVICES:

(1)   2704        (9)   27C64       (17)  2816A       (25)  8749
(2)   2708        (10)  27128       (18)  2817A       (26)  8751
(3)   2716        (11)  27128A      (19)  8741        (27)  8751H
(4)   2732        (12)  27256       (20)  8741A       (28)  8755A
(5)   2732A       (13)  27512       (21)  8742        (29)  87C64
(6)   P2732A      (14)  27513       (22)  8744
(7)   2764        (15)  2815        (23)  8748
(8)   2764A       (16)  2816        (24)  8748H

Enter the number of your part number and RETURN:

Press SPACE to view part numbers again




(F1) Main menu          (F2) Previous menu          (F3) Help
```

Figure 3-32. Device Selection Screen

Not all Data I/O programmers support all the devices listed. Once a device is selected, the device is checked to see if it is supported by the currently selected programmer. (The type of programmer being used is displayed in the Programmer field of the system status area.)

A message indicating whether the device was accepted is displayed after this check is performed. This message includes the device's Family/Pinout code and the size of the device. If the device was not accepted for the selected programmer, you can return to the *Device Selection* menu by pressing the F2 key, or to the *Main* menu by pressing the F1 key.

Note: If a device that you know is supported by your programmer does not appear on the device selection screen, you may select that device by entering the Family/Pinout code, rather than by selecting the manufacturer and the device from screens. A list of the Family/Pinout codes is given in your programmer manual.

Note: Because Data I/O is continually updating and revising the Manufacturer's list, the numbers corresponding to the manufacturer may not be the same as they are on the example screen. Look for the manufacturer's name on the list, and enter that number when prompted.

Set Operation Boundaries 3.10.5

Function: Specify various boundaries that limit the effect of programmer and device operations

Required Input: Selection of the boundary to change from the *Set Operation Boundaries* menu

Options: Select a boundary to change, set all boundaries to their default values, or return to the *Main* menu

Completion Message: (none)

Notes: Not supported for model 60 and LogicPak.

```
Set operation boundaries

Title: International Widget     Job # 765-4321
Programmer: Model 29 with UniPak            Programmer Size: 64K
Device Type: Intel 2764


     (1)  Begin RAM Address          Current value: 0
     (2)  I/O Block Size             Current value: 0
     (3)  I/O Offset                 Current value: FFFFFF
     (4)  Device Block Size          Current value: 0
     (5)  Begin Device Address       Current value: 0
     (6)  Set Size                   Current value: 1
     (7)  Bit Mode                   Current value: 8
     (8)  Set all boundaries to defaults

Enter desired number:




(F1) Main menu          (F2) Previous menu        (F3) Help
```

Figure 3-33. Set Operation Boundaries Menu

The *Set Operation Boundaries* menu (figure 3-33) lets you select any of seven operation boundaries to set to a new value. You can also access this menu from the following menus:

Program Device
Verify Device
Load RAM from Device
Load RAM from File
Create File from RAM
Edit Functions

The current operations boundaries are displayed on the screen. Operation boundaries are limits on the effect of PROMlink and programmer operations. Select the operation boundary that you want to set by entering the number displayed to the left of the boundary name. Another screen will be displayed that allows you to change the boundary. The seven boundaries that can be set are:

Begin RAM Address
I/O Block Size
I/O Offset
Device Block Size
Begin Device Address
Set Size
Bit Mode
Set All Boundaries to Defaults

Note: Set Size *and* Bit Mode *are options available only if you have the Model 121, or the System 19 or Model 29, with the GangPak.*

Once a boundary has been set to anything other than its default value, it is displayed in the system status area. The boundaries and their associated screens are described in the following sub-sections.

Note: If your programmer is a model 120 I/O OFFSET is the only parameter allowed to be changed.

Begin RAM Address 3.10.6

Function: Specify a new beginning programmer RAM address. Addresses before this address will not be used in subsequent programmer operations.

Required Input: A new address, or the RETURN key

Options: Set new beginning address, set beginning address to default value, or return to Set Operation Boundaries menu

Completion Message: Begin RAM address has been changed to:

Notes: Default beginning address is zero.

The first RAM address that will be affected by programmer operations is specified with the *Begin RAM Address* screen (figure 3-34).

Other than for the *Edit RAM* operation, no PROMlink or programmer operations will affect any address before the beginning RAM address. For example, if the beginning RAM address is set to 100hex and 200hex bytes of data are downloaded from a computer file, those bytes will be written to locations 100 through 2FF in programmer RAM. The default value for the beginning RAM address is 0.

Set a new beginning RAM address by entering it in hexadecimal notation on the *Begin RAM Address* screen. The beginning address can be set to the default value of 0 by pressing the RETURN key. PROMlink will update the value you have selected when you press the return key. Beginning RAM addresses other than 0 are displayed in the system status. The beginning address value remains in effect until it is reset by this function or by loading in a new configuration file, or until PROMlink is restarted.

Note: This operation cannot be performed from PROMlink for the Model 60 or the LogicPak with either the Model 19 or 29.

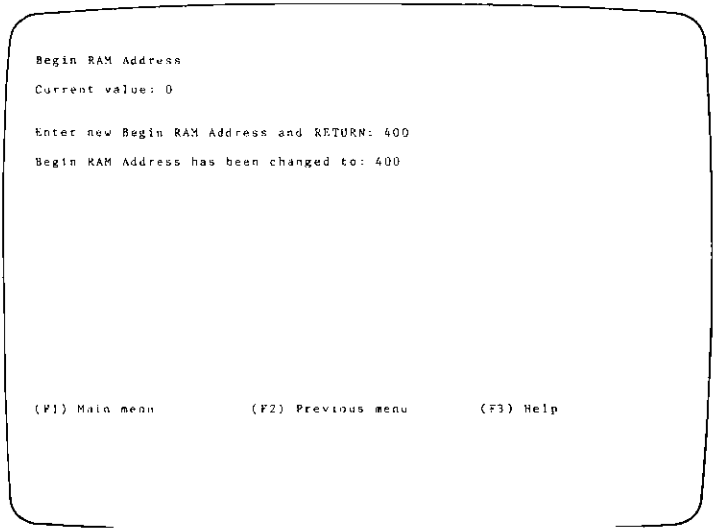


Figure 3-34. Begin RAM Address Screen

Function: Specify the input/output block size for transfers from programmer RAM to computer data files

Required Input: A new block size, or the RETURN key

Options: Set a new block size, set the block size to its default value, or return to the *Set Operation Boundaries* menu.

Completion Message: I/O Block Size has been changed to:

Notes: The default block size is zero, which means that the device size determines the amount of data transferred.

The input/output block size is set from the *I/O Block Size* screen (figure 3-35). The block size determines how many bytes of programmer RAM data will be transferred to a personal computer data file during a *Create File From RAM* operation.

Set the *I/O Block Size* by entering the number of bytes to be transferred during creation of computer data files. Set the input/output block size to its default value (0), (the word limit of the device selected) by pressing the RETURN key. Pressing the *F2* key returns you to the *Set Operation Boundaries* menu.

The default *I/O Block Size* is 0. This does not mean that 0 bytes are transferred, but that the number of transferred bytes depends on the current device type displayed in the *Device Type* field of the system status. For example, if a 2764 device, which contains 8K data bytes, is selected and a *Create File From RAM* operation is selected, exactly 8K (8192 decimal) data bytes will be transferred from RAM to the computer file.

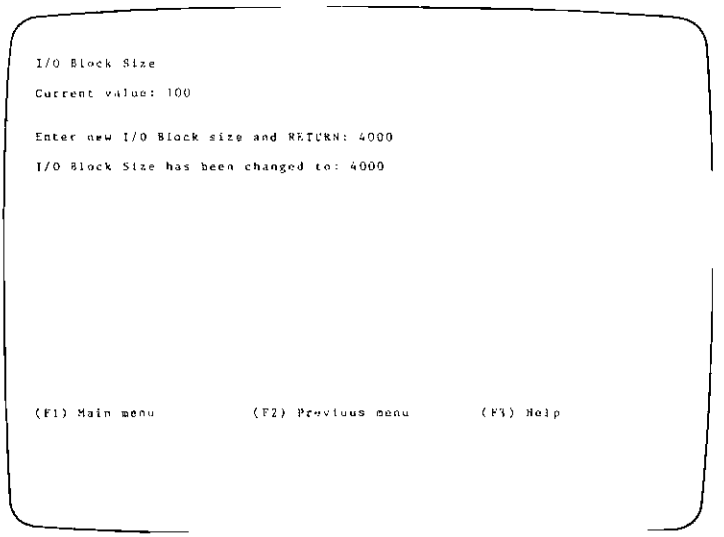


Figure 3-35. I/O Block Size Screen

If you specify a block size other than the default 0, exactly that number of bytes will be transferred. For example, with the same 2764 device, but with an *I/O* block size of 1000hex, 1000hex data bytes (4K) will be transferred from the programmer RAM to the computer data file.

Note: This operation cannot be performed from PROMlink for the Model 120 and Model 60 programmers and the LogicPak.

I/O Offset 3.10.8

Function: Set the address offset for transfers between the programmer and the computer for either *Load RAM from File*, or *Create File from RAM*

Required Input: An address offset or the RETURN key

Options: Enter a new address offset, set the offset to its default value, or return to the *Set Operation Boundaries* menu

Completion Message: I/O Offset has been changed to:

Notes: The default I/O Offset address is FFFFFF.

The *I/O Offset* screen (figure 3-36) lets you set an address offset for transfers between the computer and the programmer. Set a new *I/O offset* by entering the offset value in hexadecimal. Set the *I/O offset* to the default value (FFFFFF) by pressing the RETURN key. Press the *F2* key to return to the *Set Operation Boundaries* menu.

Note: The System 19 does not have a default value for I/O OFFSET, PROMlink sets it to zero when return is pressed.

When data is saved from programmer RAM to a computer data file, an address is associated with each data byte as shown in figure 3-37. The addresses are used to retain the proper order of the data bytes in programmer RAM; other than this, they have no effect on programmer or PROMlink operations.

Note: This operation cannot be performed from PROMlink for the Model 60 programmer and the LogicPak because block related operations are not used in programmable logic programming.

The address offset is applied to addresses during data transfers between the computer data file and the

programmer RAM, affecting the data that is transferred or the address given to that data. Four cases exist in which the I/O offset has effects; these cases are discussed below.

```
I/O Offset

Current value: FFFFFF

Enter new I/O offset and RETURN: C000

I/O Offset has been changed to: C000

(F1) Main menu          (F2) Previous menu          (F3) Help
```

Figure 3-36. I/O Offset Screen

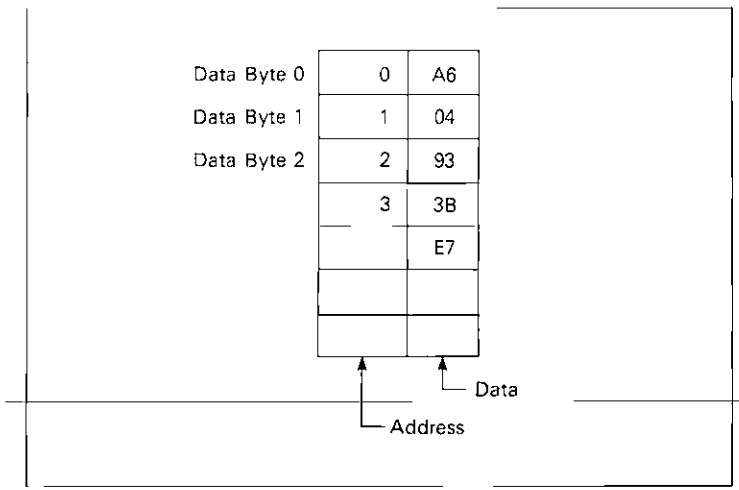


Figure 3-37. PC Data File, Basic Format

Case 1: RAM to computer Transfer, I/O Offset = A

Data is to be transferred from programmer RAM to a computer data file. In all data transfers from programmer RAM, the first data byte transferred is the one at the address specified by *Begin RAM Address* (BRA). This first data byte is stored as the first byte of the computer data file. The second data byte, read from location BRA + 1 in programmer RAM is written to the second location in the computer data file.

Addresses associated with each data byte in the computer data file are determined according to the following equation:

Address = Data Byte Number + I/O offset

Thus, if the I/O offset is Ahex, the address associated with the first data byte in the computer file is A, the address associated with the second data byte is A+1, or Bhex and so on, as shown in figure 3-38.

Case 2: Computer to RAM Transfer, I/O Offset = A

Data is to be transferred from a computer data file to programmer RAM. In this case the I/O offset determines the first data byte in the computer data file that is transferred to programmer RAM. The first data byte will always be written to location BRA in programmer RAM. Thereafter, consecutive bytes are read from the computer data file and written to consecutive locations in the programmer RAM.

The address at which data is stored in the programmer RAM is determined by the following equation:

RAM address = (Computer file address) - (I/O offset)
+ (Begin RAM Address)

Figure 3-39 shows the address and data mapping for a computer to RAM transfer with an offset of Ahex (10 decimal). Note that data bytes 1 and 2 in the computer data file are not transferred; the data transfer starts at the data byte with address Ahex in the data file.

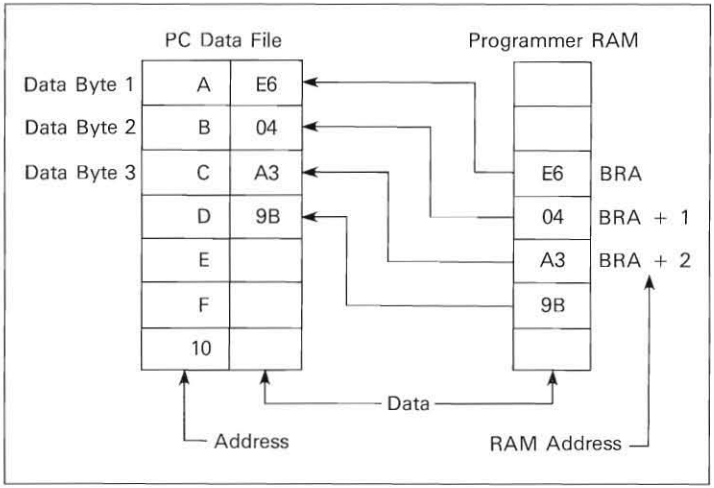


Figure 3-38. Address Correspondence Between a PC Data File and Programmer RAM. I/O Offset = A. RAM to PC transfer.

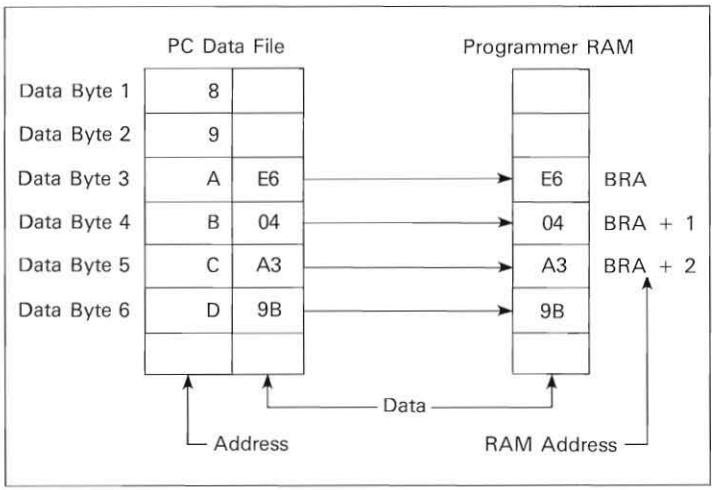


Figure 3-39. Address Correspondence Between a PC Data File and Programmer RAM. I/O Offset = A. PC to RAM transfer.

Case 3: RAM to Computer Transfer, I/O Offset = $FFFFFF_{hex}$(default)

When the I/O offset is set to its default value, the data in location BRA of programmer RAM is transferred to the first data byte in the computer data file, data in location BRA + 1 is transferred to the second location in the computer data file, and so on. Addresses associated with the data bytes in the computer file are assigned sequentially, starting at 0 for data byte 1. Figure 3-40 shows the mapping of computer and programmer RAM addresses and data for a RAM to computer transfer with the default I/O offset in effect.

Case 4: Computer to RAM Transfer, I/O Offset = $FFFFFF_{hex}$(default)

When the I/O offset is set to its default value, the address associated with the first data byte in the computer data file becomes the I/O offset and data is transferred as in case 2: The first data byte is written to location BRA in the programmer RAM, and consecutive bytes in the computer file are written to locations in programmer RAM according to the following equation:

RAM address = (Computer file address)-(I/O offset)
+ (Begin RAM Address)

Figure 3-41 shows the mapping of computer and programmer RAM addresses and data for a RAM to computer transfer with the default I/O offset in effect.

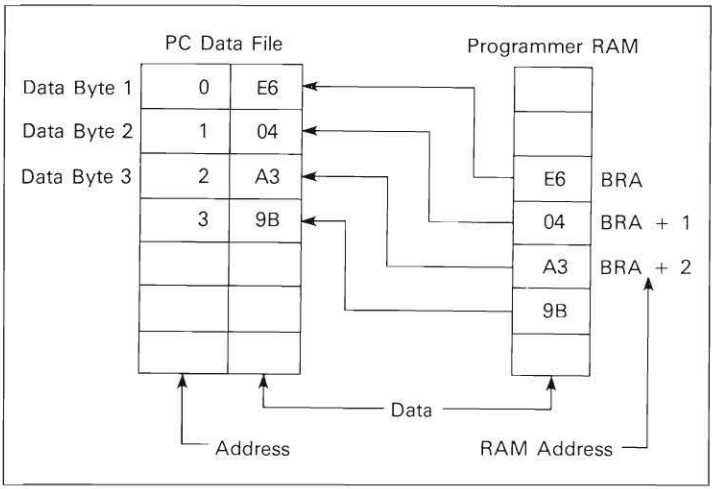


Figure 3-40. Address Correspondence Between a PC Data File and Programmer RAM With Default I/O Offset, RAM to PC Transfer

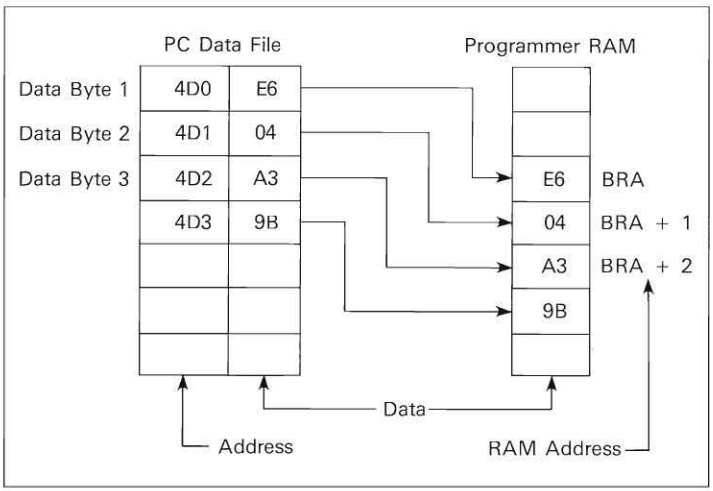


Figure 3-41. Address Correspondence Between a PC Data File and Programmer RAM With Default I/O Offset, PC to RAM Transfer

Device Block Size 3.10.9

Function:	Set the number of bytes in a device that will be affected by programmer operations
Required Input:	A value for block size or the RETURN key
Options:	Set a new device block size, set the block size to its default value, or return to the *Operations Boundaries* menu
Completion Message:	Device Block Size has been changed to:)
Notes:	The default device block size is 0, which causes all bytes in the device to be affected by programmer operations. The device block size is used in conjunction with Begin Device Address.

The *Device Block Size* screen (figure 3-42) lets you define how many data bytes in a device will be affected by PROMlink and programmer operations. Used with *Begin Device Address,* the *Device Block Size* lets you define a small portion of the device on which subsequent operations will have effect.

Define the device block size by entering in hexadecimal the number of bytes to be used for device-related operations. The device block size can be set to its default value (0) by pressing the RETURN key.

Note: This operation cannot be performed from PROMlink for the Model 120 and Model 60 programmers and the LogicPak.

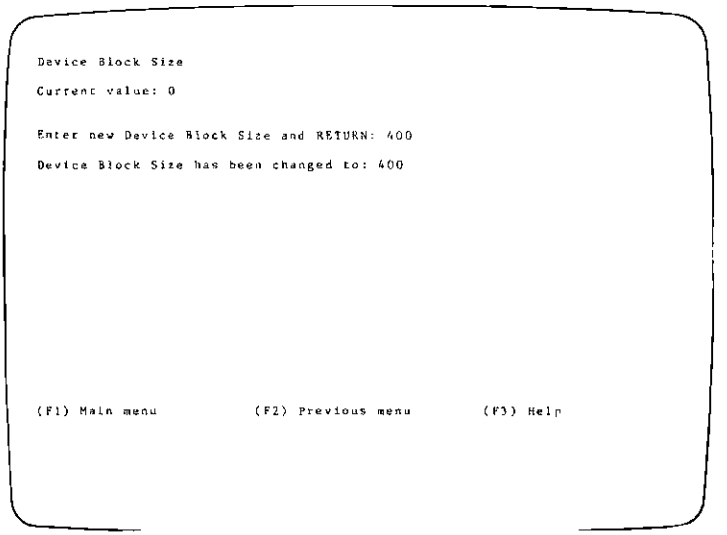


Figure 3-42. Device Block Size Screen

Begin Device Address 3.10.10

Function:	Set the beginning address in the device for programmer operations. Addresses preceding the beginning address are not affected by programmer operations.
Required Input:	A new beginning address or the RETURN key
Options:	Set a new beginning address, set the beginning address to its default value, or return to the *Set Operation Boundaries* menu
Completion Message:	Begin Device Address has been changed to:
Notes:	The default beginning device address is 0. If this value is non-zero, Device Block Size must be changed correspondingly

Use the *Begin Device Address* screen (figure 3-43) to specify the first data byte in a device to be used in programmer operations and data transfers. Any bytes in address locations before the *Begin Device Address* are not affected by any operation. Enter the desired beginning address in hexadecimal, or press the RETURN key to set the beginning address to the default value (0). Pressing the *F2* key returns you to the *Set Operation Boundaries* menu.

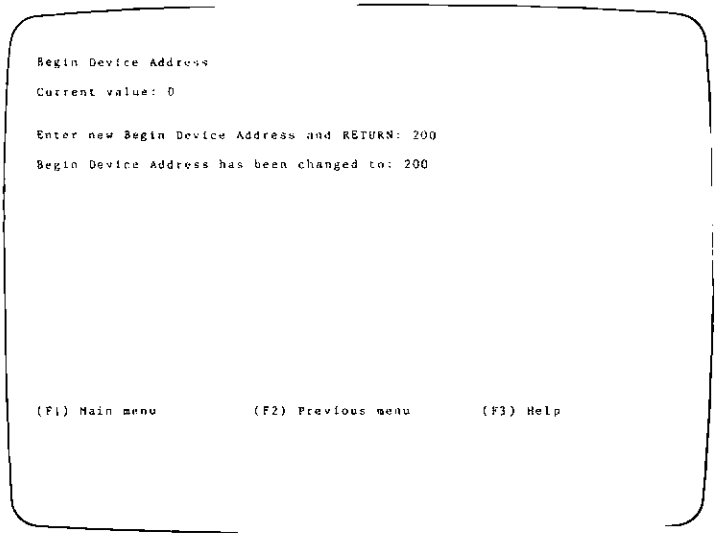


Figure 3-43. Begin Device Address Change

When *Begin Device Address* is set to anything other than the default value, the *Device Block Size* must be set to a value that does not cause addressing beyond the limits of the device. For example, if for a 4K device such as the 2732, you set a beginning device address of C00hex (3K), only one fourth of the device (another 1K) is available for further operations. The device block size must be changed to 400hex (1K) or less to accommodate the change in *Begin Device Address*.

Note: This operation cannot be performed from PROMlink for the Model 120 and Model 60 programmers, Models 19 or 29 with LogicPak.

Set Size 3.10.11

Function: Allows programming of multiple devices

Required Input: Numerical value from 1 to 20

Options: Select a new value, keep the default value, or return to the *Set Operation Boundaries* menu.

Completion Message: Set size has been changed to: new value

Notes: The default *Set Size* is 1, which is standard programming

Set Size is used when you want to program more than one device at a time with different patterns. By entering a value from 1 to 20 at the screen prompt (figure 3-44), you choose the number of devices to be programmed with different patterns. The *Set Size* may be changed back to its default value of 1 by pressing the RETURN key. Refer to your programmer manual for details.

Note: The Set Size option is only available with the following programmers and Pak types:

Model 121
Model 29 with the GangPak
System 19 with the GangPak

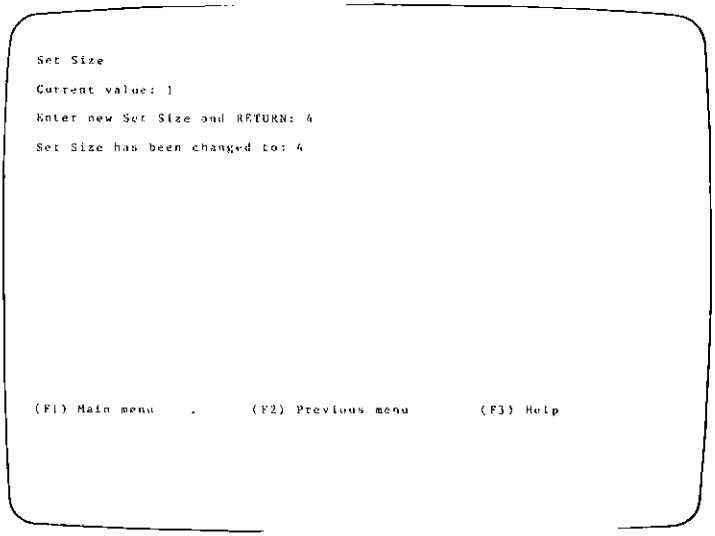


Figure 3-44. Set Size Screen

Bit Mode 3.10.12

Function:	Special case of set programming that allows data organized as 16 or more bit words to be programmed into 8-bit data devices
Required Input:	Numerical Bit Mode value
Options:	Set a new value, remain at the default value of 8, or return to the *Set Operation Boundaries* menu
Completion Message:	Bit Mode has been changed to:
Notes:	(none)

Bit Mode is used when you have data organized in groups of 16 or more bit words that you want to put in more than one 8-bit device. By entering a *Bit Mode* value (multiple of 8) at the screen prompt (figure 3-45), you are choosing the number of devices that the data will be divided into. The Bit Mode may be changed back to its default value of 8 by pressing the RETURN key. Refer to your programmer manual for details.

Note: The Bit Mode option is only available with the following programmers and Pak types:

Model 121 (8 and 16 Bit Mode values only)
Model 29 with the GangPak (multiples of 8 up to 64 Bit Mode values)
System 19 with the GangPak (multiples of 8 up to 64 Bit Mode values)

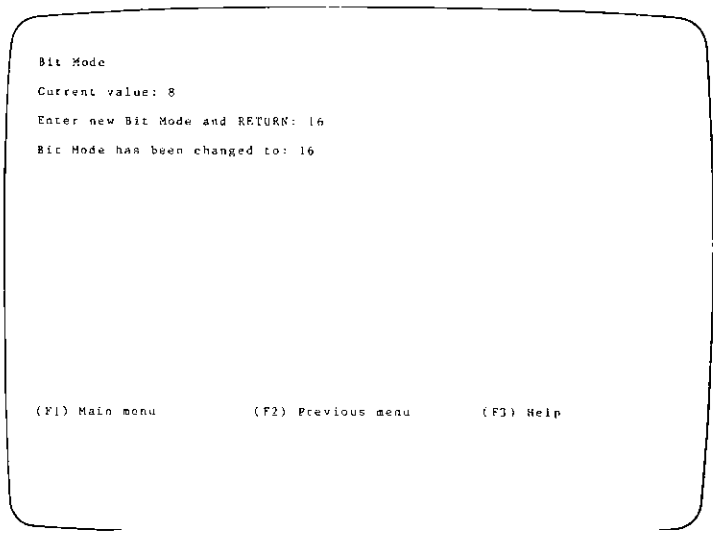


Figure 3-45. Bit Mode Screen

Set All Boundaries to Defaults 3.10.13

Function: Sets all boundary values for the *Set Operation Boundaries* menu to their defaults

Required Input: (none)

Options: Set all values to defaults

Completion Message: Operation successfully completed

Notes: (none)

Figure 3-46 shows the PROMIink *Set Operation Boundaries* default parameters. These values will remain unless you change them with the *Set Operation Boundaries* menu or load a new configuration file.

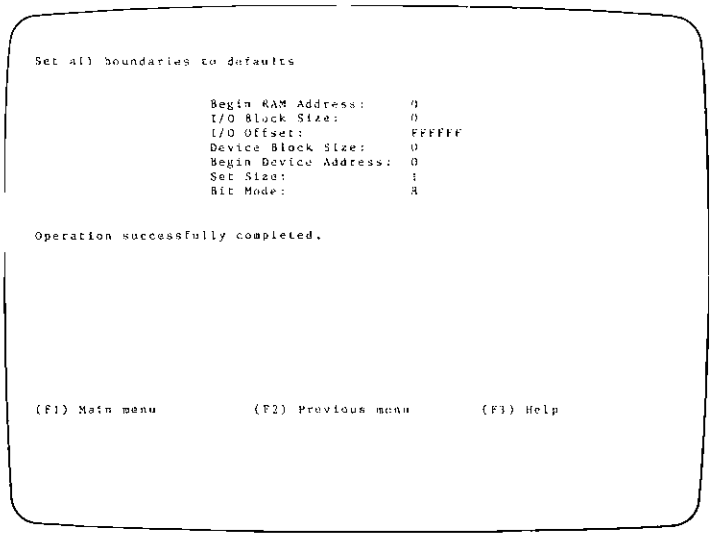


Figure 3-46. Set All Boundaries to Default Screen

Configure Port 3.10.14

Function: Defines port, baud rate, and parity

Required Input: Function number

Options: Choose a function number, return to the *Configuration Functions* menu, or return to the *Main* menu

Completion Message: (none)

Notes: (none)

The *Configure Port* menu (figure 3-47) lets you define the programmer to computer connections. See section 2.3 for complete set up procedures for the Model 29 programmer. If you have another model, refer to its operator's manual for complete details.

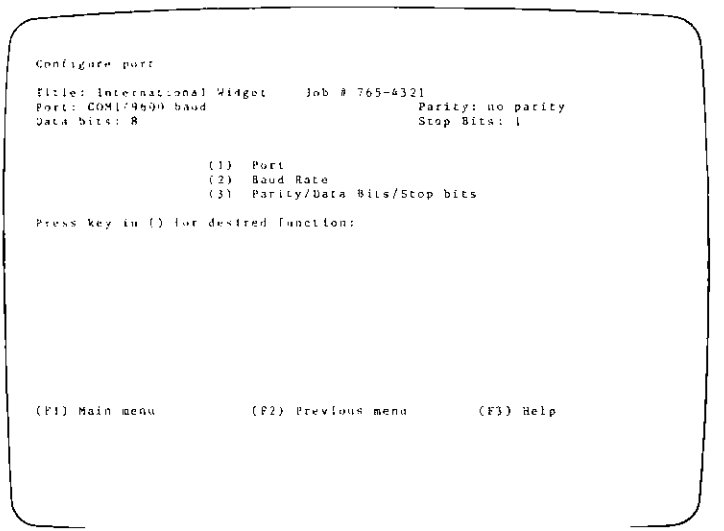


Figure 3-47. Configure Port Menu

Port 3.10.15

Function:	Set serial port connection
Required Input:	Port number that your programmer is connected to
Options:	Change the port or keep the default at Port 1
Completion Message:	Port has been changed to:
Notes:	(none)

The PROMlink default port is COM1 (see figure 3-48). You shouldn't need to change the port unless you are using more than one programmer.

Note: COM1 and COM2 refer to the serial ports for the IBM PC. The TI has up to four COM ports. Consult your computer operator's manual.

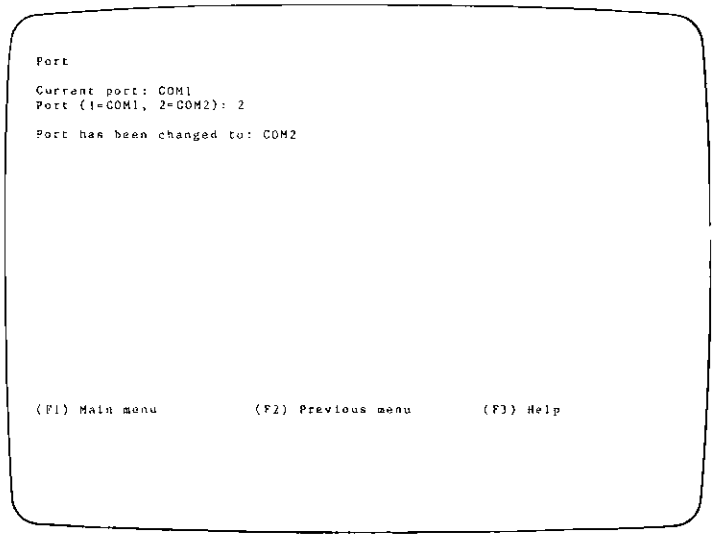


Figure 3-48. Port Screen

Baud Rate 3.10.16

Function: Set baud rate

Required Input: Menu number corresponding to the new baud rate

Options: Change the baud rate or keep the default set at 9600 baud

Completion Message: Baud rate has been changed to: new baud rate

Notes: (none)

PROMlink offers eight baud rate settings as shown in figure 3-49. However, the default baud rate of 9600 baud (9600 bits/sec) is the maximum efficiency level for data transmission. Refer to your programmer manual for further information.

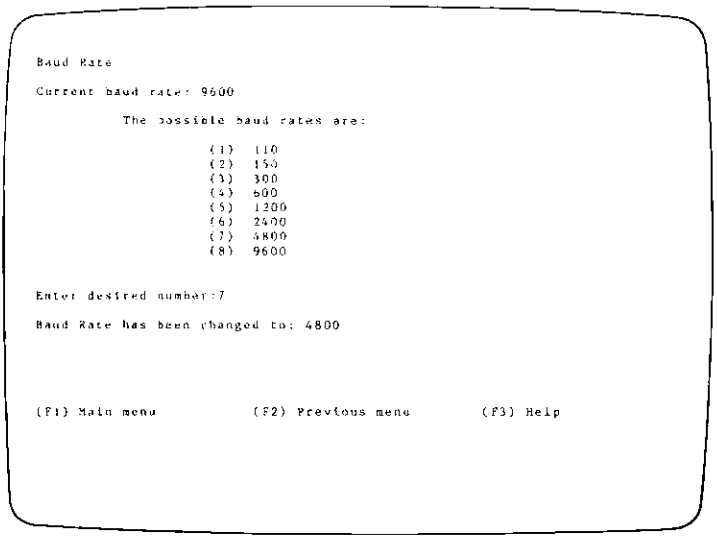


Figure 3-49. Baud Rate Screen

Parity/Data Bits/Stop Bits 3.10.17

Function: Set parity/data bits/stop bits

Required Input: Value or condition of functions

Options: Change the functions or keep the default values of no parity, 8 data bits, and 1 stop bit.

Completion Message: Parity has been changed to:
Data Bits has been changed to:
Stop Bits has been changed to:

Notes: (none)

This function, referred to as "protocol" defines the method data is serially transmitted. Figure 3-50 shows the values and conditions that can be changed from this function. For details on *Parity Data Bits* and *Stop Bits*, refer to your programmer manual.

Figure 3-50. Parity/Data Bits/Stop Bits Screen

Load User Function 3.10.18

Function: Sets up a previously stored user-defined menu

Required Input: The file name of the user function file and press RETURN

Options: Load a function or return to the *Main* menu

Completion Message: Operation successfully completed

Notes: (none)

The *load user function* screen (see figure 3-51) allows you to select the file that will be used to define the *user functions* menu. After you have selected the user file you want to load and press the RETURN key, PROMlink will load that file and your user menu will be available from the *User Functions* option from the *Main* menu. Refer to *User Functions* for more information.

```
Load user function

Current user function file: logic.ufn

Directory of c:\
TNIT.DIO        J0B4321         U6.P87          J0B9862         PN4321.DAT
PN4782.DAT      PN4711.DAT      U09A.JED        U7.P87          LOGIC.UFN
GANGPAK.UFN
        11 File(s)     1237426 bytes free




Enter user function file and RETURN:

Press SPACE to view directory again

(F1) Main menu          (F2) Previous menu      (F3) Help
```

Figure 3-51. Load User Function Menu

Select Programmer Type 3.10.19

Function:	Specify the type of programmer being used
Required Input:	Selection from menu of programmers
Options:	Select a programmer or return to the *Main* menu
Completion Message:	Operation successfully completed (unless you choose System 19 or Model 29 then the *Select Pak Type* menu will become available)
Notes:	This resets the Programmer field in the system status area

The *Select Programmer Type* screen (figure 3-52) displays a list of the Data I/O programmers supported by PROMlink and lets you choose the appropriate programmer. Select the programmer to be used by entering the number that is displayed next to the programmer name. Selecting a new programmer type alters the Programmer and Programmer memory fields in the system status area. Each time you start a session, change programmers, or load a configuration file, make sure the programmer type in the system status area is indicated correctly. Note: The Model 60 and Model 120 do not allow PROMlink to display RAM size.

Note: PROMlink may operate Data I/O programmers even if the programmer type displayed in the Programmer *field does not match the one being used. However, error messages displayed may be incorrect and misleading.*

Note: If you select the Model 29 or System 19 programmers, a second menu will allow you to select the Pak Type.

Note: The JEDEC format is selected automatically if the Model 60 is selected from this menu.

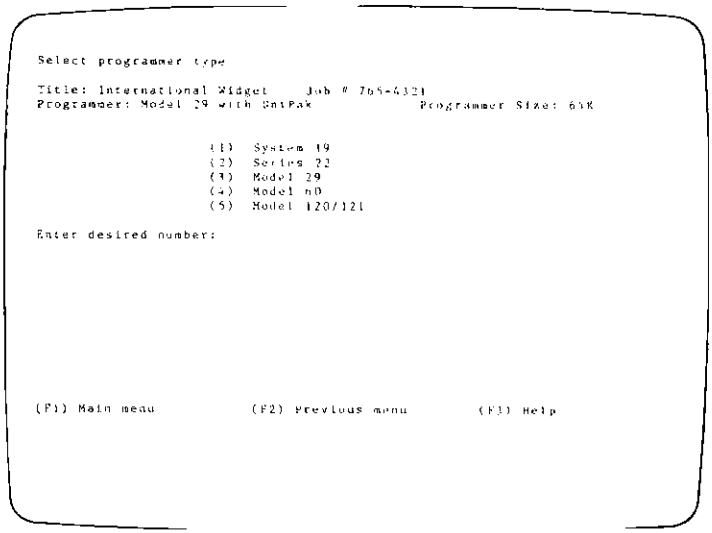


Figure 3-52. Select Programmer Type Menu

Select Pak Type 3.10.20

Function: Specify the pak type

Required Input: Selection from menu of pak types

Options: Select a pak type or return to the *Main* menu

Completion Message: Operation successfully completed

Notes: This resets the Programmer and Pak Type indication in the system status area

If you selected the Model 29 or System 19 programmers from the *Select Programmer* menu, a second menu (figure 3-53) will automatically appear to allow you to select the pak type that you are using. Select the pak type by entering the number that is displayed next to the pak type name. The status area will reflect the new programmer and pak type.

Note: PROMlink will operate if the wrong pak type is chosen, however, error messages displayed may be incorrect or misleading. Make sure that the pak type is the one desired at the start of each session, when equipment is changed, or when a new configuration file is loaded.

Note: The JEDEC format is automatically selected if LogicPak is selected from this menu.

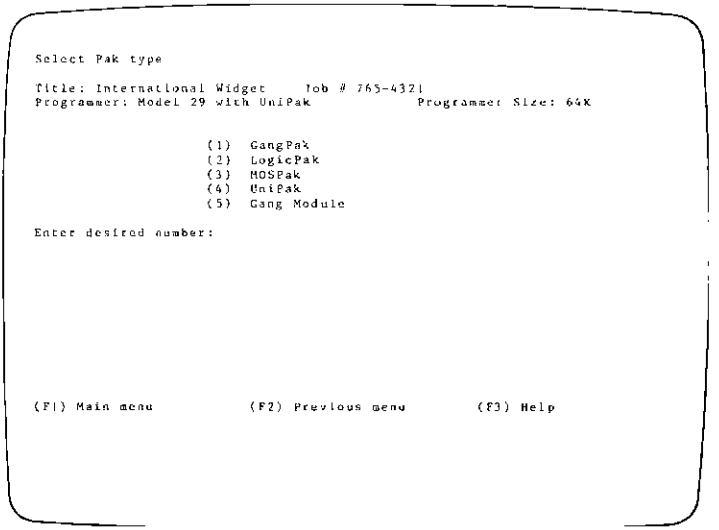


Figure 3-53. Select Pak Type Menu

Select I/O Format 3.10.21

Function: Specify an input/output format for data transfers to and from your Data I/O programmer

Required Input: A format code selected from menu

Options: Select a format or return to the *Main* menu

Completion Message: I/O Format has been changed to:

Notes: The format chosen must be supported by the programmer. Consult the programmer's manual.

All data transfers between the programmer and the computer are performed according to an input/output (I/O) format or protocol for data being transmitted and received. The format to be used is selected from the *Select I/O Format screen which is accessed from the Configuration Functions* (9) on the *Main* menu (Figure 3-54). The menu lists the available formats with a number preceding the name of each format. Select a format by entering its number and pressing the RETURN key.

PROMlink checks to determine whether the format you select is supported by the current programmer. (The current programmer type is displayed in the Programmer field in the system status area.) If the I/O format is accepted by the programmer, the message, I/O Format has been changed to: is displayed. If the I/O format is invalid for the current programmer, the message "Unknown I/O format" is displayed.

Note: PROMlink does not check data being transferred to or from the programmer for the correct I/O format. You must make sure that any data transferred is in the correct format. The selected format is used only to instruct the programmer of the format to use when receiving or transmitting data. For more information concerning I/O formats, see your programmer manual.

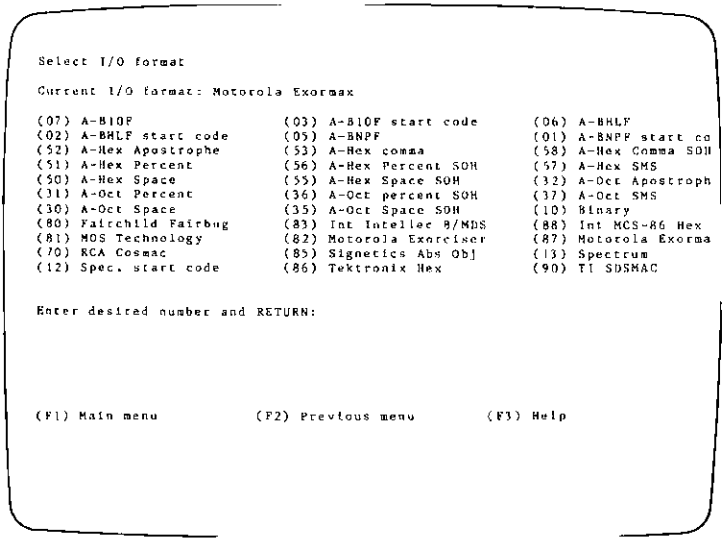


Figure 3-54. Select I/O Format Menu

Note: The Select I/O Format Function is not available for the System 19 or Model 29 programmers with LogicPak or the Model 60. For those programmers and pak types the JEDEC format is automatically selected. Refer to your Model 60 or Logic Pak manual for the JEDEC format information.

Note: The Select Programmer I/O Format function is also available from the following menus:

Load RAM from File
Create File from RAM

JEDEC FORMAT

The JEDEC format is an ASCII logic format. This format only applies if you are using the Model 60 Logic Programmer or LogicPak. It is automatically selected by PROMlink if you have this model. See your Model 60 programmer or PLDS manual for detailed information.

Note: The JEDEC format is not an option available from the Select I/O Format menu because it is only used for the logic programmers.

Logic Terminal Mode 3.10.22

Function: Simulate a terminal

Required Input: 8 to choose *Logic Terminal Mode* from the *Configuration Functions* menu

Options: Select Logic Terminal Mode or remain in the *Configuration Functions* menu

Completion Message: (none)

Notes: (none)

The *Logic Terminal Mode* function is useful for logic programming and is only available for the Model 60 Logic Programmer and LogicPak. Figure 3-55 shows the *Logic Terminal Mode* menu. Refer to your programmer manual for complete details. This function puts the programmer into *Logic Terminal Mode* (E1) which then allows PROMlink to simulate a terminal while connected to the programmer. To exit *Logic Terminal Mode*, press any of the following keys:

ESC F1 F2

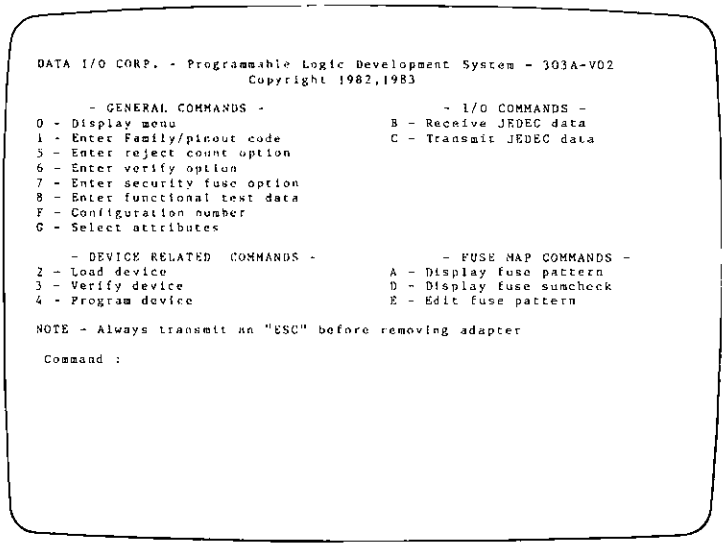


Figure 3-55. Logic Terminal Mode Menu

Load Configuration 3.10.23

Function:	Loads a previously saved configuration
Required Input:	File name and RETURN
Options:	Enter a new file name to be loaded or return to the *Configuration Functions* menu
Completion Message:	Operation successfully completed
Notes:	(none)

The *Load Configuration* function is a convenient method to quickly recall a particular programming session's configuration. Figure 3-56 shows the *Load Configuration* functions screen. By typing the file name of a previously defined configuration (saved using 0 from the *Configuration Functions* menu) you load a new configuration. The status area of the screen will indicate the current configuration.

Note: If you have configuration files that you previously saved, you can load them directly at system start up by typing:

>pl file name

from the DOS prompt.

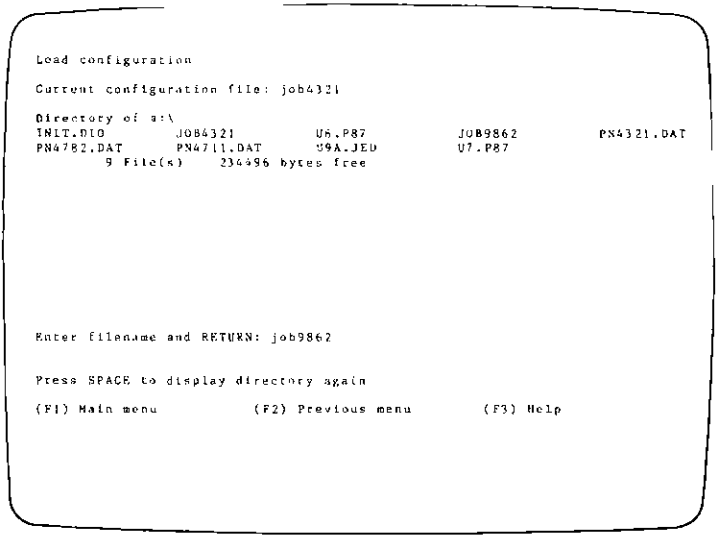


Figure 3-56. Load Configuration Screen

Save Configuration 3.10.24

Function: Stores a defined configuration

Required Input: File name and RETURN

Options: Enter a new file name or return to the *Configuration Functions* menu

Completion Message: Operation successfully completed

Notes: (none)

The *Save Configuration* function is an easy way to store a particular programming session's configuration that you want to use later. By entering the file name when prompted from the *Configuration Functions* menu and pressing the RETURN key as shown in figure 3-57, you save the configuration you defined during the programming session and can then *Load* (9) it at a later time.

```
Save configuration

Current configuration file: job4321

Directory of a:\
INIT.DIO        JOB4321         U6.P87          JOB9862         PN4321.DAT
PN4782.DAT      PN4711.DAT      U9A.JED         U7.P87
        9 File(s)     234496 bytes free



Enter filename and RETURN: job6623

Press SPACE to display directory again

(F1) Main menu          (F2) Previous menu          (F5) Help
```

Figure 3-57. Save Configuration Screen

USER FUNCTIONS 3.11

Function: User can define unique menu

Required Input: Function number

Options: Select previously defined menu function or return to the *Main* menu

Completion Message: (none)

Notes: If no user function file is loaded, there will be no menu and the message *"No user function file loaded"* will appear.

The *User Function* menu is a menu that is defined by the user. You can add functions or combinations of functions not currently available from the normal PROMlink menus.

To define unique menus, you must first decide which functions you want to use and how to implement them using the programmer's Computer Remote Control commands. A text file must then be created (whose format is described below) which defines this menu and what it does. This file is called the User Function File. Once this file is loaded by PROMlink (by selecting Load User Function (5) from the *Configuration Functions* menu), this new menu is accessed from the *Main* menu by selecting *User Functions* (0).

The User Function file is a user generated text file that defines a menu for PROMlink. The menu is a list of one or more menu items. A menu item consists of a menu item name and a command sequence. A command sequence consists of one or more commands. A command consists of a valid CRC command followed by one of the defined PL commands. No more than 10 menu items will be accepted and no more than 24 characters will be accepted for a menu item name. CRC commands must always be followed by a PL command. CRC commands and PL commands are always placed one per line.

Graphically, these definitions look like this:

MENU:	Made up of 1 to 10 MENU ITEMS
MENU ITEM:	Made up of 1 MENU ITEM NAME followed by a COMMAND SEQUENCE
COMMAND SEQUENCE:	Made up of 1 or more COMMANDS
COMMAND:	Made up of 1 valid CRC COMMAND followed by 1 PL COMMAND
CRC COMMAND:	Standard Computer Remote Control command from the programmer manual. Only one CRC COMMAND per line.
PL COMMAND:	Made up of a 3 character response code. These are defined below. Only one PL COMMAND per line.
MENU ITEM NAME:	Made up of the two characters \" followed by RETURN. Only one MENU ITEM NAME per line.

Notice that the 1 to 24 characters in the MENU ITEM NAME become what is actually printed for the function in the User Function menu. The PL COMMAND is a three letter code that tells PROMlink what to expect from the programmer after the preceding CRC COMMAND is sent.

There are only seven PL COMMANDS. They are listed below with an explanation of what they will cause PROMlink to do.

\%> Will cause PROMlink to wait no more than three seconds for a prompt. If the prompt takes longer, error 100 will be issued. If there was an error, the message will be printed, if not, "Operation Complete" will be displayed.

\%* Will cause PROMlink to wait an indefinite amount of time for a prompt. The standard action symbol will be printed while waiting and the operation may be aborted by pressing CTRL Z. If there was an error, the message will be printed, if not, "Operation Complete" will be displayed.

\%P Will cause PROMlink to accept characters from the programmer and discard them until no characters have been sent for one second.

\%R Will cause PROMlink to accept characters from the programmer and display them. Characters will be displayed until the prompt is received. If an error is received, it will be printed.

\%D Will cause PROMlink to accept characters from the programmer and display them. Characters will be displayed until no characters have been sent for one second.

\%E Will send an ESCape character to the programmer, then wait no more than 3 seconds for a prompt.

\%M Will print the characters following the command until a closing double quote (") is encountered.

If any error is received from the programmer, PROMlink will abort the operation even if there are more COMMANDS in the COMMAND SEQUENCE to be executed. An example User Function File is shown below:

```
\"Erase EEPROMs"
 E0]
\%*
\"Display all checksum's"
 E3]
\%P
 1
\%D
\%M
 ''
 2
\%D
\%M
 ''
 3
\%D
\%M
 ''
 4
\%D
\%M
 ''
 5
\%D
\%M
 ''
 6
\%D
\%M
 ''
 7
\%D
\%M
 ''
 8
\%D
\%E
\"Blank device test"
 B
\%*
```

This file will produce a *User Function* menu that will have three menu items, which are shown in figure 3-58.

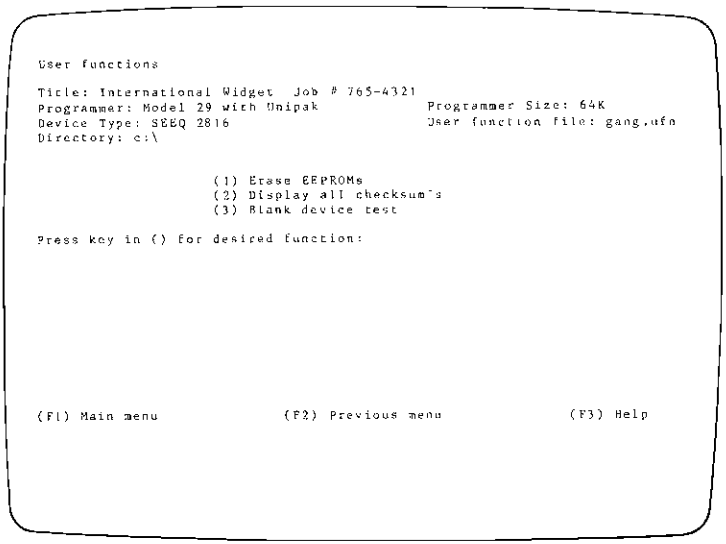


Figure 3-58. User Function Screen

USER SUPPORT UTILITIES

DATA I/O

USER SUPPORT UTILITIES 4

This section describes three handy utilities, which are included on the PROMlink disk for your convenience. These utilities are often useful in an engineering environment, but typically must be purchased as separate packages.

Now, you don't have to justify the purchase of several individual programs that will make your work easier. The following utilities are available when PROMlink is installed in your system simply by calling them from the system prompt.

- Terminal Emulator Utility
- Label Printer Utility
- File Protection Utility

The utilities are described individually, with instructions for their use. Each of the utilities has special features or functions you will want to be familiar with before using.

TERMINAL EMULATOR UTILITY 4.1

Function: Dumb terminal emulator for personal computer disk file transfer from/to mainframe computer or Data I/O programmers or another personal computer, via RS-232-C COM1: port, in full or half duplex

Required Input: From DOS, using "MODE", set baud rate (up to 9600); with PROMlink disk or executable files in logged-in drive, enter "TERM" and RETURN; enter F1 key to quit utility

Options: Any of TERM's commands

Completion Message: (none)

Notes: TERM, a simple terminal emulator, is noteworthy because of its small executable file size; it runs on the IBM-compatible personal computers that run PROMlink; it permits file transfer in binary or text mode

Prior to using TERM, connect your other computer, Data I/O programmer to the COM1: port on the host computer. Set the correct parity and baud rate with the *MODE* function in DOS for the equipment you are using. See the example for the IBM PC, which follows:

In this example, you use the DOS *MODE* command to set the serial port configuration:

```
A>mode com1:9600,n,8,1
```

After "MODE" is typed, the first argument specifies the serial port (*COM1:*), then the baud rate is specified (9600), no (n) parity is required, there will be eight (8) data bits and one (1) stop bit for this configuration.

The COM1: serial port must be configured each time DOS is started. This procedure can be automated by adding *MODE COM1:9600,n,8,1* in the operating system's *AUTOEXEC.BAT* file. This way, every time DOS is started, the COM1: port will automatically be configured to your specification.

To use the terminal emulator utility, install the PROMlink program disk or executable files into the logged-in disk drive and at the system prompt type:

A>term RETURN

This will run the TERM (Terminal Emulator) program and display the *TERM* program menu shown in figure 4-1. The status field, located at the bottom of the screen, reports your option selection and user-input file names. Commands sent to TERM are entered by using the computer's special function keys. Refer to the list of commands in table 4-1 for a description of their function.

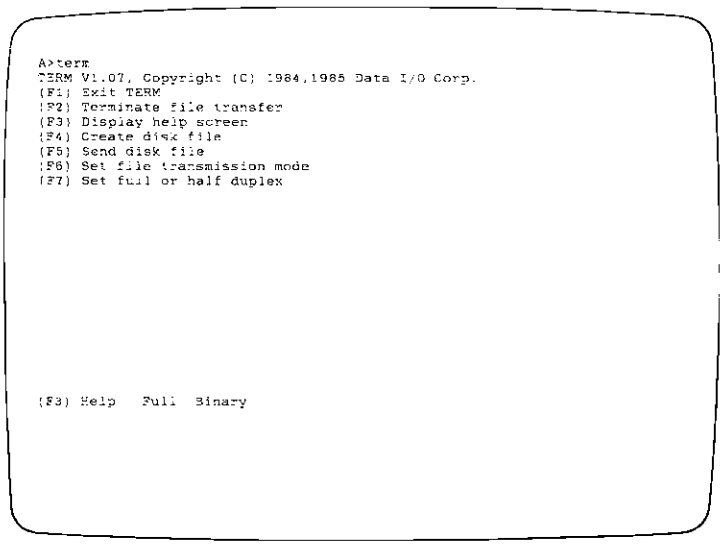


Figure 4-1. TERM (Terminal Emulator) Menu

Table 4-1. TERM Commands and Function

COMMAND	FUNCTION
F1	Closes any open files and then exits to DOS
F2	Stops file I/O transfer and closes any open files
F3	Displays the help screen, which consists of the list of commands and a brief description
F4	Receive file: Permits user to create a file name for a file to be received and saved to disk — files are written to disk exactly as received. Specify a path for the file (if required); type filename (up to eight characters plus dot and three character extension) in status block as requested and press the RETURN key
F5	Transmit file: Permits user to specify a file name for a file to be transmitted from the computer to equipment connected to COM1: port. Specify a path for the file (if required); type filename (up to eight characters plus dot and three-character extention) in status block as requested and press RETURN key
F6	Binary or Text mode of file transmission set by toggling between them; default is Binary mode; Text mode suppresses (strips out) control Z, control C, linefeeds, and nulls from files being sent from computer to COM1: port via transmit file (F5) function–Do NOT use text mode when transmitting JEDEC files to PLDS; See *TERM* menu status block for current mode
F7	Full or Half duplex transfer mode set for file transmit/receive (F5 and F4) functions; default is Full duplex; See *TERM* menu status block for current mode

To assist you in using the Terminal Emulator Utility, two examples are provided. Each example shows how to transfer a JEDEC formatted file from your computer to a Data I/O Model 29 programmer (with a LogicPak and P/T adapter, called PLDS Programmable Logic Development System) or vice-versa. Refer to the LogicPak, Model 60 or System/Model 19 programmer manuals for related key entry sequences (select codes) for *Terminal Remote Control* (*TRC*) mode file transfers.

The following examples assume that the equipment is connected correctly and that the COM1: port is appropriately configured. The PROMlink disk or executable files, with the TERM utility, must be installed in the computer.

Example 1: JEDEC File Transfer From PLDS To Computer Via TERM

In this example, a JEDEC format device file must be loaded into programmer RAM and be ready for download to the computer.

1. Set Model 29 to *full duplex* (*echo*) operation by entering the following key sequence from the programmer front panel:

   [SELECT] [C] [E] [START] [0] [START]

2. Enter the PLDS terminal mode (*TRC*) from the Model 29 programmer front panel by entering:

   [SELECT] [E] [1] [START]

3. Run the *TERM* program by typing the following characters from the computer keyboard:

   A>term [RETURN]

   Your computer is now a terminal and the *TERM* program menu is displayed on screen.

4. Prepare TERM to receive a file by selecting the *full duplex* mode option from the menu (only if necessary; TERM defaults to *Full* duplex at start-up):

   [F7] (toggles between *Full* and *Half*)

5. Select the *Create disk file* function:

   F4 filename RETURN

   to receive the transmitted file. (You can specify a disk drive and path prior to filename if required.)

6. Instruct the PLDS to transmit the JEDEC file by typing (from the computer keyboard):

   C

   You should see the device file scroll down the screen as it is being written into the disk file.

7. Using TERM's *Terminate file transfer* function, close the file when transmission is complete by entering:

   F2

This example is concluded and the JEDEC file transfer from the PLDS to your computer is complete. There are other step sequences for downloading a file from the programmer to the computer, using TERM. The preceding method is perhaps the most direct, requiring the least number of steps.

Example 2: JEDEC Transfer From Computer to PLDS Via TERM

In this example, a JEDEC format device file must be created and saved to disk. If you are performing these examples in sequence, you can transfer the same device file from example 1 back to the PLDS. Make sure that the COM1: serial port is correctly configured.

1. Run the TERM program by typing the following characters from the computer keyboard:

   A>term RETURN

2. Establish that the Model 29 is in *full duplex* mode. If it isn't, enter the following key sequences from the programmer front panel:

   SELECT C E START 0 START

3. Enter the PLDS terminal mode from the Model 29 programmer front panel, by entering:

   SELECT | E | 1 | START

   The *PLDS* menu will be displayed, including the PLDS *Command* prompt. Most of this menu will over-write the *TERM* program menu on the screen except for the status block. The TERM status block and PLDS *Command* prompt inform you that you can communicate with both the TERM program and the PLDS equipment through the terminal emulator.

4. At the PLDS *Command* prompt (from the computer) type:

   Command:1 xxxx | RETURN |

   where *1* is the *PLDS* menu selection which permits specification of device-to-be-programmed family and pinout code. The *xxxx* represents, and is replaced by, the four-digit device family and pinout code number that you supply.

5. Prepare the PLDS to receive a JEDEC file. At the PLDS *Command* prompt (from the computer) type:

   Command:B

6. To recall the complete *TERM* menu, enter:

   | F3 |

   The *TERM* menu will be displayed. (It is not necessary to recall this menu if you can remember the function keys.)

7. Prepare TERM to transmit a file by specifying the appropriate transmission mode (use *binary* mode to transmit JEDEC files) from the *TERM* menu:

   | F6 | (toggles between *Binary* and *Text mode*)

   (See the status field at the bottom of the screen–TERM defaults to *Binary* mode at start-up.)

8. Set TERM for *full duplex* (only if necessary; TERM defaults to *Full* duplex at start-up):

   F7 (toggles between *Full* and *Half*)

9. Select the *Send disk file* function from the *TERM* menu:

   F5 filename RETURN

   to transmit the file. The file being transfered must be for the same device family and pinout code as that entered previously from the *PLDS* menu. (You can specify a disk drive and path prior to filename if required.)

   When file transfer is complete, the PLDS *Command* prompt will be displayed.

10. Using TERM's *Terminate file transfer* function, close the file by entering:

    F2

This concludes this example and the JEDEC file transfer from the your computer to the PLDS.

The examples provided in this section describe only two of the possibilities for using TERM. Notice that both examples make use of features or capabilities that originate from *PLDS* menu option selections and programmer/pak select code functions.

When your programmer is set in *Terminal Remote Control* and TERM has converted your computer into a terminal, all of these programmer/pak features or capabilities are accessible. Consult the programmer and/or LogicPak manuals for more information pertaining to the use of these features and capabilities.

LABEL PRINTER UTILITY 4.2

Function: Prints continuous form device and disk labels in various sizes on any standard printer

Required Input: A label text file; with PROMlink disk or executable files in logged-in drive, at system prompt enter "LABL" file name and RETURN; enter number of label rows to be printed and RETURN; enter "Q" to quit utility

Options: Directives (dot commands embedded in the text file) create a label template, which enables various utility and printer options

Completion Message: (none)

Notes: LABL, the label printer utility, is noteworthy because it permits the user to create ASCII text files for labels using standard text editors in their non-document mode; permits the user to specify the text appearance (label template) in either Epson(R) FX-80 control codes and/or hexadecimal codes; permits the user to substitute a character-string (e.g. revision number, etc.) for an input variable, specified in the label template, just prior to printing; permits specification of the number of label rows to be printed.

Prior to using LABL, create the label template (which includes the text to be printed). A label template is created by embedding the utility program and printer directives (dot commands and control codes) in the ASCII text file.

These directives must be appropriate for the label type, the printer being used, and the hard-copy appearance of the text. A LABL text file contains one or more lines of text (in ASCII mode only) that are to be repeatably printed on the number of label rows you specify when prompted by the program.

NOTE: The dot commands or directives must begin in column one of the text file; that is, the " . " (dot) must be in column one. Only the first letter of the dot command is required. You must use text editors in their non-document (standard ASCII or text) mode to suppress any extraneous characters. These characters are added (e.g. word wrap) by most text editors in their document-format mode and will cause problems for the LABL program.

To use the label printer utility, install the PROMlink disk or executable files (with the LABL program) into the logged-in disk drive or execution command directory and at the system prompt type:

A>labl RETURN

This will run the LABL (Label Printer) program and display the *LABL help* screen, which is shown in figure 4-2. The *LABL* program *help* screen shows the control directives that can be used to create a label template. Table 4-2 lists and describes each of these directives.

NOTE: Directives are always entered on the line which precedes the line where the action or function is to take effect.

```
A>labl
PROMlink Label Printer   Version 1.00   Copyright 1985 Data I/O Corp.
usage   LABL <filename>

LABL is a printing utility designed for use with continuous form labels.
It uses text from <filename> to print alignment and/or production label sets.

Control directives begin with a dot ('.'), all other lines are text lines.
(Exception   blank lines are ignored.  See the '.BLANK' directive below.)
The following control directives (or any abbreviations) may be used:

  .*                          a comment line -- ignored by LABL
  .BLANK                      print a blank line
  .CPI      <n>               print n cols/inch (Epson FX-80 control codes)
  .DISPLAY  <text>            display <text> as label file is loaded
  .HEX      <val> <val> ...   send up to 16 hexadecimal byte codes to printer
  .LPI      <n>               print n lines/inch (Epson FX-80 control codes)
  .VARIABLE <tag> <text>      use <text> to prompt for string to replace <tag>

With FX-80-compatible printers, '.CPI' arguments may be 5, 10, 12, or 17, and
'.LPI' arguments may be 6, 8, 10, 12, or 18.
```

Figure 4-2. LABL (Label Printer) Opening Screen

Table 4-2. LABL Directives and Functions

DIRECTIVE	FUNCTION
.*	Indicates a comment line, used to describe a label template's or a directive's purpose; these comments appear in the text file, but are ignored (not printed) by LABL
.B	B(lank) instructs LABL to print a blank line; also creates the vertical spacing between labels (carriage returns/line feeds from the text editor will NOT do this)
.C<n>	C(PI - Columns Per Inch) specifies the character width to the printer; <n> can only be 5, 10, 12, or 17 CPI for Epson FX-80; typically followed by the LPI (Lines Per Inch) specification
.D	D(isplay) instructs LABL to print the text (after .d) to the screen as the file is loaded at run time; display has no effect on the printer
.H<val> ... <val>	H(exadecimal) alerts LABL that the next set of two-digit hex numbers, <val>ues-up to 16 hex bytes, are sent as printer control codes; instructs the printer to perform some special action/function associated with the text; hex printer control codes are printer specific, consult your particular printer's manual
.L<n>	L(PI - Lines Per Inch) specifies the number of lines that are printed per inch of vertical space; <n> can only be 6, 8, 10, 12, or 18 LPI for Epson FX-80; 6, 8, 10 LPI specify standard height characters; little characters are specified by 12 and 18 LPI

Table 4-2. LABL Directives and Functions (continued)

DIRECTIVE	FUNCTION
.V<tag> <text>	V(ariable) permits the specification of a variable <tag> to be substituted for a user-input character-string, which is prompted for (by <text>) just prior to the label file being printed; can be used to input version numbers, which may vary with the printing session

Label Printer Utility Example Files 4.2.1

The label printer utility comes with two example files, which reside in PROMIink's executable files directory. These two files are *DISKS.LAB* and *PROMS.LAB*. You can run LABL and print these files as is or substitute their text and directives for your own by editing them.

NOTE: Should you elect to substitute label text/directives, make a working copy of the master file. Edit the working file copy only.

Success with LABL depends to some extent on your willingness to experiment and a knowledge of how your printer operates. The more experience you have creating and printing labels, the easier the label printer utility will be to use.

Figure 4-3 shows what the *DISKS.LAB* ASCII text file, with embedded directives (template), looks like.

```
.* Widginit evaluation copy labels
.* Set up for Avery 4014 labels -- 4 in. x 1-7/16 in.

.* Ask for version number
.d      Widginit evaluation copy labels
.var    %%%%    Enter version number (V.VV):

.cpi 5
.lpi 6
WIDGINIT  Ver %%%%
.b
.cpi 17
.lpi 12
Copyright 1985 International Widget Corp.
.b
This software remains the property of the publisher
and is authorized for use only under written license
agreement.  This sofware contains trade secret and
copyright information of International Widget Corp.
.cpi 10
.lpi 6
.b
.* Set FX-80 underlined italic mode
.hex    1b 34 1b 2d 31

For Evaluation Only

.* Turn off underline, italics
.hex    1b 34 1b 2d 30

.b
.b
.cpi 10
.lpi 6
```

Table 4-3. Disk Label Template with Text (Sample)

Examining figure 4-3, notice the spacing of lines in the file. This is only for readability. The carriage returns that created this spacing are not recognized by LABL, so this spacing has nothing to do with the actual printed label.

Next, notice the *.b*(lank) directives in the first column of the file. These are the instructions for vertical spacing that determine the location of lines of text and blank lines between text. Blank lines between text, created by *.b*(lank), also specify the amount of space between rows of labels or where the next row of labels begins.

The *.d*(isplay) directive instructs LABL to display all the text which follows it on the screen during run time. Dot commands, including *.**, are not displayed. Notice the *.var*(iable) directive. This directive instructs LABL to look for the variable tag %%%% and prompts the user with text: *Enter Version number (V.VV)*. For the example, four percent signs (%%%%) were used for the tag, however, any characters may be used, as only the number of characters is significant. LABL uses the number of characters specified by the tag as the number of characters to be input and printed when LABL is run.

When the prompt appears, during run time, you input a character-string to replace the variable tag. The character-string is actually substituted, at the second occurence of the tag, in the line of text.

The line length or number of character-columns determines the horizontal dimensions of the text. The amount of information that will fit on a label line depends on the size of the label and the size of the characters. Experimentation with these parameters will provide the desired text appearance.

The *.cpi*, *.lpi* and the example's *.hex* directives are for the Epson FX-80 printer. They specify the size and special formatting of the text characters. At the end of the file, they turn off the special formatting and initialize the printer's standard character size.

NOTE: If you are going to use a printer other than the FX-80, consult that printer's manual for the correct column-per-inch and line-per-inch control codes to use with the .hex directive.

To print the example label template, make sure there is paper in the printer and it's turned on. If you decide to use the Avery™ 4014 labels, some experimentation for the correct label-form position in the printer carriage may be required. Then type:

A>labl disks.lab RETURN

You will see the following information displayed:

PROMlink Label Printer
Version 1.00
Copyright 1985 Data I/O Corp.

Enter version number (V.VV): 2.00
WIDGINIT Ver 2.00
Copyright 1985 International Widget Corp.

This software remains the property of the publisher and is authorized for use only under written license agreement. This software contains trade secret and copyright information of International Widget Corp.
For Evaluation Only

Please enter number of rows to print (or 'Q' to quit):

Notice the user-input prompt to substitute a character-string for the specified variable tag and the prompt for the number of label rows to be printed. Enter the correct information requested by these prompts and RETURN.

After the last prompt and RETURN, the label printer utility will print out the formatted label text shown in figure 4-4.

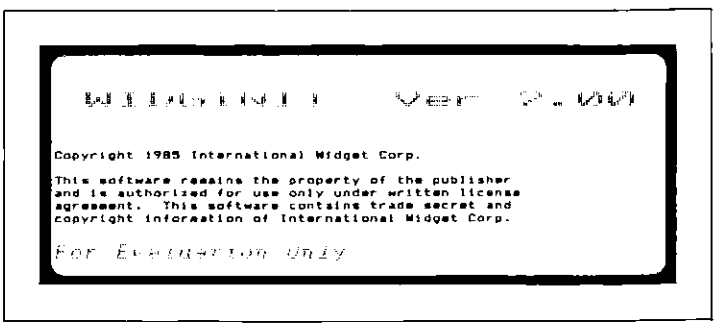


Figure 4-4. Printed Disk Label (Example)

The Label Printer Utility also includes a text file example of a set of six-across device labels. Figure 4-5 shows what the *PROMS.LAB* ASCII text file, with embedded directives (template), looks like.

NOTE: The PROMS.LAB *file shown in figure 4-5 is not exactly as you will see it displayed on screen. There are actually six blocks of label text on the line shown in the figure instead of just three. Unfortunately, the manual page size allows only three blocks of text to be illustrated. If you call up the file and examine it, you will see all six blocks (127 columns) of text on a single line (U1, U2 and U3 repeat). The rest of the file is exactly as shown in the figure.*

```
.* Prom labels for 83-999-001
.* Set up for Brady(tm) 75-:96547 labels -- 1-1/8 in. x 1/4 in.

.* Display label id on PC screen

.d Prom labels for 83-999-001 (3 per set)

.* Set up printer for compressed print, 12 lines per inch

.cpi 17
.lpi 12

.* One row of label text

 U1      83-999-001      U2      83-999-001      U3      83-999-001
(C) 1985 Int Widget    (C) 1985 Int Widget    (C) 1985 Int Widget

.* Space to next row of labels

.b
.b

.* Reset printer in case this is the last row

.cpi 10
.lpi 6
```

Figure 4-5. Device Label Template With Text (Sample)

The use of directives in figure 4-5 is very similar to that of figure 4-3. No character-string input is required of the user so no variable (.v directive) is declared. There is one row of label text. This row of text blocks is repeated continuously, according to the number of rows you select at run time in response to the prompt:

Please enter number of rows to print (or 'Q' to quit):

Figure 4-6 shows what the six-across labels look like when printed with the information in the *PROMS.LAB* text file.

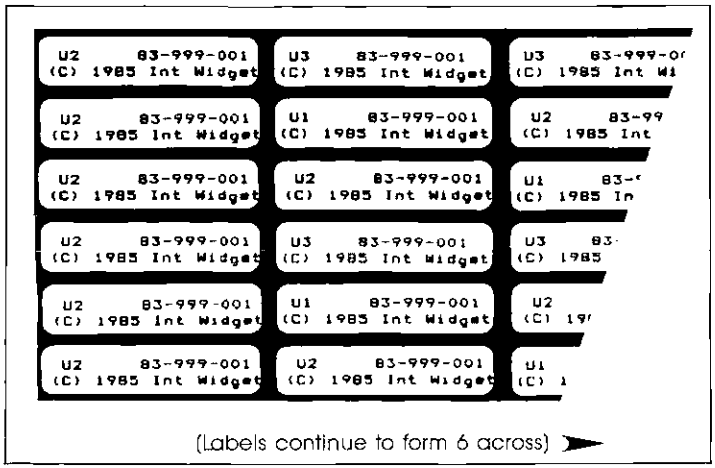


Figure 4-6. Printed Device Labels (Example)

Label Printer Utility Error Recovery 4.2.2

If an error in creating the label template is encountered at run time, an error message will be displayed. Program execution will continue until the prompt:

Please enter number or rows to print (or 'Q' to quit):

is displayed. To recover, record the error description displayed on screen, then quit LABL. Call up the text file from your editor (in the non-document mode), edit the required information described in the error message and save the edited file. Then run LABL again and try printing your edited label text file.

If this is the first time you have used a label printer utility, you may encounter some difficulties associated with the peculiarities of label size and positioning in the printer carriage. Experimentation will take care of the difficulties and give you the desired label text appearance.

FILE PROTECTION UTILITY 4.3

Function: Permits the user to specify files as "read only" to prevent accidental erasure or modification, also to remove the "read only" restriction and return the file to "read/write" status

Required Input: PROMlink disk or executable files installed in the logged-in drive; at system prompt, type the command "RONLY" and the file name of the file to be protected (read only); type the command "RW" and the file name of the file to be returned to "read/write" or normal status

Options: Protect the file and unprotect the file

Completion Message: (none)

Notes: If an over-write or delete operation is attempted on a protected file, the error message is usually "file cannot be found"; the protection, which hides the file, can be removed by typing (from the system prompt) "RW" filename of the protected file

The File Protection Utility, included on the PROMlink disk with the executable files, is actually two separate programs that operate together. The *ronly.exe* program provides the file protection part of the utility, and *rw.exe* provides the file protection removal. Together, they are the File Protection Utility.

You can call the file protection program from the system prompt, when the PROMlink disk or its executable files is in the logged- in drive, by typing:

A>ronly [drive:] [path] filename [.ext] RETURN

This will place the "read only" restriction on the file named and prevent it from accidental erasure or modification. This "read only" restriction can be removed with the PROMlink utility "RW.EXE" and must be removed prior to writing new information or deleting that file.

To remove the "read only" restriction on protected files, place the PROMlink program disk in the logged-in drive and at the system prompt type:

A>rw [drive:] [path] filename [.ext] RETURN

This action will restore the protected file to "read/write" or normal status.

APPENDICES/INDEX

DATA I/O

INDEX

ASCII AND HEXADECIMAL CODING CHARTS A

This appendix contains coding charts to help you use PROMlink™. Table A-1 lists commonly used hexadecimal numbers along with their decimal equivalents. Table A-2 lists ASCII characters and their hexadecimal and decimal equivalent codings.

Table A-1. Commonly Used Hexadecimal Numbers

HEX	DECIMAL	HEX	DECIMAL	K
0	0	40	64	
1	1	80	128	
2	2	100	256	
3	3	200	512	
4	4	400	1024	1K
5	5	800	2048	2K
6	6	1000	4096	4K
7	7	2000	8192	8K
8	8	4000	16384	16K
9	9	8000	32768	32K
A	10	10000	65536	64K
B	11	20000	131072	128K
C	12			
D	13			
E	14			
F	15			
10	16			
11	17			
12	18			
13	19			
14	20			
15	21			
16	22			
17	23			
18	24			
19	25			
1A	26			
1B	27			
1C	28			
1D	29			
1E	30			
1F	31			
20	32			

Table A-2. ASCII Coding Chart

Decimal	Hex	Char	Decimal	Hex	Char	Decimal	Hex	Char
0	00	NUL	43	2B	+	86	56	V
1	01	SOH	44	2C	,	87	57	W
2	02	STX	45	2D	-	88	58	X
3	03	ETX	46	2E	.	89	59	Y
4	04	EOT	47	2F	/	90	5A	Z
5	05	ENQ	48	30	0	91	5B	[
6	06	ACK	49	31	1	92	5C	/
7	07	BEL	50	32	2	93	5D	]
8	08	BS	51	33	3	94	5E	^
9	09	HT	52	34	4	95	5F	_
10	0A	LF	53	35	5	96	60	'
11	0B	VT	54	36	6	97	61	a
12	0C	FF	55	37	7	98	62	b
13	0D	CR	56	38	8	99	63	c
14	0E	SO	57	39	9	100	64	d
15	0F	SI	58	3A	:	101	65	e
16	10	DLE	59	3B	;	102	66	f
17	11	DC1	60	3C	<	103	67	g
18	12	DC2	61	3D	=	104	68	h
19	13	DC3	62	3E	>	105	69	i
20	14	DC4	63	3F	?	106	6A	j
21	15	NAK	64	40	@	107	6B	k
22	16	SYN	65	41	A	108	6C	l
23	17	ETB	66	42	B	109	6D	m
24	18	CAN	67	43	C	110	6E	n
25	19	EM	68	44	D	111	6F	o
26	1A	SUB	69	45	E	112	70	p
27	1B	ESC	70	46	F	113	71	q
28	1C	FS	71	47	G	114	72	r
29	1D	GS	72	48	H	115	73	s
30	1E	RS	73	49	I	116	74	t
31	1F	US	74	4A	J	117	75	u
32	20	SP	75	4B	K	118	76	v
33	21	!	76	4C	L	119	77	w
34	22	"	77	4D	M	120	78	x
35	23	#	78	4E	N	121	79	y
36	24	$	79	4F	O	122	7A	z
37	25	%	80	50	P	123	7B	{
38	26	&	81	51	Q	124	7C	|
39	27	'	82	52	R	125	7D	}
40	28	(	83	53	S	126	7E	~
41	29	)	84	54	T	127	7F	DEL
42	2A	*	85	55	U			

CONFIGURATION FUNCTIONS

DATA I/O

CONFIGURATION FILE FORMAT B.1

The PROMlink configuration file is read by PROMlink when it's starting up. This file contains instructions or information that initializes PROMlink's configuration to operate your particular computer and programming equipment. A configuration file can be one of the four default files included with PROMlink, or one of any number of configuration files created by the user.

The four default configuration files included with PROMlink are listed below:

INIT.CFN	PROMlink default configuration file
INITPC.CFN	PROMlink IBM PC, XT, AT, AT&T 6300 and Compaq default configuration file
INITTI.CFN	PROMlink TI Professional default configuration file
INITBIO.CFN	PROMlink BIOS-compatible default configuration file

These default configuration files initialize PROMlink to run on the specific computer you are using. When first starting PROMlink, if you enter:

A>pl RETURN

the *INIT.CFN* default configuration will be loaded. The *INIT.CFN* file (as supplied by Data I/O) configures the PROMlink program and utilities to run on an IBM PC, XT, AT, AT&T 6300 or Compaq personal computer.

Default Configuration Files For Computers Other Than IBM B.1.1

PROMlink also runs on IBM-compatible computers; however, a different configuration file must be used. If you are going to use a computer other than an IBM when you start-up PROMlink, you must enter:

A>pl filename RETURN

where "filename" represents either *INITTI.CFN* (for the Texas Instruments Professional computer) or *INITBIO.CFN* (for IBM BIOS-compatible computers). The AT&T 6300 and Compaq personal computers will run either *INIT.CFN* or *INITPC.CFN*. More detailed information on PROMlink and computer compatibility is available in Appendix B.4.

If you would like to have PROMlink automatically default to the correct configuration for your computer, you will need to copy the *INITTI.CFN* file or the *INITBIO.CFN* file into *INIT.CFN*. This is done from the operating system, using the *COPY* function. Then you will not need to specify a file name to insure correct PROMlink configuration for your computer.

NOTE: If you altered the INIT.CFN *file to run a computer other than an IBM, and then want to change back to the IBM format, just copy the* INITPC.CFN *file into* INIT.CFN.

There are other methods of accomplishing the goal of bringing PROMlink up in the correct configuration for your computer. One method is to edit the appropriate three-letter computer configuration code in the default configuration file. There are three of these three-letter codes. They are:

IBM	IBM hardware compatible
TIP	Texas Instruments Professional
BIO	IBM BIOS compatible

Each code tells PROMlink what type of computer it's running on. These codes can be edited in the *INIT.CFN* file by using the operating system editor EDLIN or some other text editor. See the sample configuration file, described later in this appendix, for the location in the file of the three-letter code.

User Created Configuration Files B.1.2

PROMlink can also be indirectly configured for your computer through the *Save configuration* function in the *Configuration functions* menu. After PROMlink is up and running on your computer, the three-letter configuration code that is in use at the time is automatically written into every file you create and save using the *Save configuration* function.

This method also permits the alteration of other configuration parameters, which are described in the paragraphs following the sample configuration file. You can change the default configuration from the *Configuration functions* menu to accomodate a different computer port, programmer, pak or device type.

Whenever you select the *Save configuration* function from the *Configuration functions* menu or exit PROMlink with the *update* option (*INIT.CFN* only), a configuration file is created and listed by name in the file directory. If you want to use this configuration file when starting PROMlink, enter the following:

A>pl filename RETURN

where "filename" is the name of the configuration file you created and saved. This file contains all the information necessary to configure PROMlink for the computer and programming equipment.

If you want to use a different configuration file when you are in PROMlink, simply go to the *Configuration functions* menu and select the *Load configuration* (9) function and select the file name you saved. PROMlink will load the new file and you will be able to move quickly to another task with new operating parameters and equipment.

Sample Configuration File B.1.3

To help you learn and understand the configuration file format, a sample configuration file is shown below:

```
n
PLV2.0
IBM
International Widget    Job #765-4321
u6.p87
logic.ufn
c: \ pl \ job4321
COM1,9600,n,8,1
11,Intel,2764
87,8,1,2,0,1
0,0,FFFFFF,0,0
1,2,2,2,2,2
```

n

The first line of the file is the update flag, either an *n* or a *u*. The letter *u (update* file option) only has significance in the *INIT.CFN* file. When you exit PROMlink, the INIT.CFN file is checked to see if the first character is a *u*. If so, the file is updated with the current PROMlink configuration. If the first letter is an *n*, the file is not updated.

The *Save configuration* function always creates files with an n as the first character. The start-up default *INIT.CFN* file also has an *n* as the first character.

PLV2.0

The second line of the configuration file is a version number which PROMlink uses to assure that the file is of the right format.

IBM

The third line of the configuration file is a three-letter code that describes which personal computer PROMlink is running on. There are three of these three-letter codes. These codes have been described in a previous paragraph and are related in detail in appendix B.4

International Widget Job #756-4321

The fourth line of the configuration file is the title that will appear above the status or configuration block at the top of most PROMlink menus. It can be anything as long as it fits on one line.

u6.p87

The fifth line of the configuration file is the name of the default *Data File* contained in the menu status blocks. This line can include a path specification if the default data file is not contained in the default directory. The path specification tells PROMlink on what drive and in what directory to find the default data file. If a default data file is not specified, an * asterisk will be present on line five.

logic.ufn

The sixth line of the configuration file states the name of the *User function file. The User function* file permits you to design your own unique menu of PROMlink functions. If *you select the User Functions* (0) from the *Main* menu, this text file will be loaded and the menu it contains will be displayed. If a *User function* file is not specified, an * asterisk will be present on line six.

c: \PL \ job4321

The seventh line of the configuration file is the name of the default directory. This is the directory that is displayed when either the *Complete* or *Compact directories* are selected from the *File functions* menu.

COM1,9600,n,8,1

The eighth line of the configuration file indicates the serial port parameters. This line consists of five parameters separated by commas.

The first parameter is the name of the port that the programmer is connected to. It may be COM1 or COM2 for the IBM computers and COM1, COM2, COM3, or COM4 for the Texas Instruments computer.

The second parameter is the baud rate. This can be 110, 150, 300, 600, 1200, 2400, 4800, or 9600 baud. PROMlink

defaults to 9600 baud which is the recommended data transmission rate.

The third parameter is the parity. This can be n, e, or o for no parity, even parity or odd parity, respectively.

The fourth parameter is the number of data bits which can be either 7 or 8.

The last parameter is the number of stop bits which can be either 1 or 2.

11,Intel,2764

The ninth line contains three parameters, which consist of programmer equipment indicator, device manufacturer name, and device type number, all separated by commas.

The first parameter is a number indicator representing the Data I/O programmer and pak types. It can be any one of the values listed as follows:

0 Series/Model 22
1 Model 60A or 60H
2 Model 120/121
3 System/Model 19 with GangPak
4 System/Model 19 with LogicPak
5 System/Model 19 with MOSPak
6 System/Model 19 with UniPak or UniPak 2
7 System/Model 19 with Gang Module
8 Model 29 with GangPak
9 Model 29 with LogicPak
10 Model 29 with MOSPak
11 Model 29 with UniPak or UniPak 2
12 Model 29 with Gang Module

The second parameter is the default device manufacturer's name: Intel

The third and last parameter is the number of the default device type: 2764

(The device manufacturer's name and device number must appear exactly as they do in the PROMlink menus.)

87,8,1,2,0,1

The tenth line of the configuration file consists of six numbers separated by commas.

The first of these six numbers is the I/O format number.

The second is the data-bit mode (8, 16 or any multiple of 8 up to 64 data bits).

The third number determines what sort of test (if any) is done prior to programming devices. A "0" represents no test, a "1" represents the illegal bit test, and a "2" represents the blank device check.

The fourth and fifth numbers represent the computer screen color. Note that these numbers will be ignored for the IBM monochrome displays. The fourth number is the color of the characters (foreground) while the fifth number is the color of the background. For the IBM computers, the colors are listed as follows:

0 black
1 blue
2 green
3 cyan
4 red
5 magenta
6 yellow
7 white

The default colors for PROMlink are foreground 2 (green) and background 0 (black). The only way to set these colors is by editing the configuration file.

The sixth number on this line of the configuration file is the *Set size*. This number can range from 1 to 20 and tells PROMlink the number of devices to be programmed. This option is only available for Gang programmers (like the Models 120/121 and the GangPak).

0,0,FFFFFF,0,0

The eleventh line of the configuration file contains the five programmer *Operation boundary* values separated by commas. In order, these operation boundaries are:

Begin RAM Address
I/O Block Size
I/O Offset
Device Block Size
Begin Device Address

1,2,2,2,2,2

The twelfth and last line of the configuration file holds the binning category numbers for the six error conditions. These numbers are separated by commas and are in this order:

Parts correctly programmed
Bad device / continuity
Illegal bit / non blank
Programming errors
Data verify errors
Functional verify

Any line and any part of all the lines in the configuration file can be edited to change some part of PROMlink's operation. If any of PROMlink's configuration file parameters are missing or contain an illegal value, an error message will be displayed when the configuration file is loaded.

If PROMlink is not operating and the equipment is connected properly, check the current configuration file format and parameters. These must be correct for the equipment being used and device being programmed.

Editing a configuration file is only advantageous for changing the update option, the computer type, and the display colors. The rest of the configuration file parameters are more easily modified from inside PROMlink through the *Configuration functions* menu selections.

ERROR LOGGING FILE FORMAT B.2

The error logging file *STATS.DOC* is used by PROMlink to save the various error counters that PROMlink updates every time it programs a device. Whenever *Save and clear totals* is selected from the *Error logging* menu, the current states of PROMlink's error counters (as well as other information) are appended to the end of the *STATS.DOC* file. If *STATS.DOC* does not exist, selecting the *Save and clear totals* function will create it automatically.

The *STATS.DOC* file can be cleared of out-of-date information by calling the file up and editing it, or by deleting the entire file. Remember, *STATS.DOC* is automatically created (if it doesn't exist) by selecting the *Save and clear totals* function, which would give you a clean file to begin a new programming session.

The *STATS.DOC* file can be sent to the screen or printer for you to review its contents. The information *STATS.DOC* provides will help you track the results of your device programming session(s) and a hardcopy of the file itself can be used as a programming session(s) error logging report.

Sample Error Logging STATS.DOC File B.2.1

An example of the information content in *STATS.DOC* is shown below. Each line of information in the sample file is explained in the paragraphs which follow the example.

```
-
International Widget Corp.     Job #765-4321
26/07/85 10:18
U09A.JED
MMI/16L8
502,0,1,0,3,2
```

The first line of information written to *STATS.DOC* is always a dash character (-). This is to aid you in visually separating different programming session error logging entries. *STATS.DOC* can contain multiple error logging entries. Each new entry is appended to the file at the end of the error logging entry for the last recorded programming session.

International Widget Corp. Job #765-4321

The second line contains the title obtained from the *Main* menu status block. The title can be specified by selecting the *Enter title* function from the *Configuration functions* menu.

26/07/85 10:18

Line three records the date and time that the error logging entry was appended to the file. This information line begins with the date; a two-digit day, a two-digit month, and a two-digit year separated by slashes (/). A space follows the date and then the time is displayed; a two- digit hour and a two-digit minutes, separated by a colon (:).

U09A.JED

The fourth line is the name of the default data file in use at the time the error logging entry was appended to the file.

MMI/16L8

Line five is where the device manufacturer's name and device type number are recorded. This information will be the same as appears in the *Select manufacturer* and *Select device type* menus.

502,0,1,0,3,2

The sixth line displays the six PROMlink device counters separated by commas. The counters, from left to right, are listed below with a description of their contents.

Counter one:	502	= Parts correctly programmed
Counter two:	0	= Bad device / continuity
Counter three:	1	= Illegal bit / non blank
Counter four:	0	= Programming errors
Counter five:	3	= Data verify errors
Counter six:	2	= Functional verify

These counters are updated in PROMlink whenever a device is programmed.

Error Logging Programmer/Pak Error Codes B.2.2

The error codes generated by the programmer/pak during the programming session relate to the type of error encountered. In some cases the error codes are different for each programmer/pak.

PROMlink sorts and counts these error codes into the correct bin (device counter) regardless of the programmer/pak-dependent error code. *STATS.DOC* records the result of this error logging binning and counting for each programming session. The following list describes the programmer/pak-dependent error codes (numbers) that are sorted into each error counter bin.

Parts correctly programmed (bin)
no error code = correctly programmed device

Bad device / continuity (bin)
26 Series/Model 19 and Model 29
31 all programmers/paks
32 Model 120/121
33 Model 120/121
34 Model 120/121
35 Model 120/121
36 Model 120/121
38 Model 120/121
3B Model 60A/60H

Illegal bit / non blank (bin)
20 all programmers/paks
21 all programmers/paks
39 Model 60A/60H
B1 UniPak/UniPak 2 and MOSPak

Programming errors (bin)
22 all programmers/paks
77 Model 60A/60H and LogicPak

Data verify errors (bin)
23 all programmers/paks
24 all programmers/paks
29 Model 120/121

Functional verify (bin)
74 Model 60A/60H and Logic Pak
75 Model 60A/60H and Logic Pak

These counters will not be updated for the Gang Programming Module nor GangPak programmer. PROMlink has no way of knowing how many devices they actually programmed correctly. The *Functional verify* counter only works for the Model 60 and LogicPak. More information on these error codes can be obtained by consulting the appropriate programmer/pak manual.

PROGRAMMER SELECT CODES B.3

Extended functions (select codes) are special commands which are programmer/pak specific. Each extended function has a two-digit hexadecimal code associated with it. These functions are accessed by sending the extended function code followed by a right bracket "]" (ASCII character 93-decimal) and a carriage return (CR) to the programmer.

As is the case with regular commands, some extended functions require additional information to be sent to the programmer after the carriage return. Some extended functions respond with information preceding the response character ">".

Because extended functions are programmer specific, you will need to consult your Data I/O programmer or pak manual for the details of each extended function contained in the following list:

MOSPAK:
CE] CR - Set reject count to default
CF] CR - Set single pulse reject count
EF] CR - Display MosPak configuration number

UNIPAK:
C3] CR - Access specific Family/Pinout options
CC] CR - Examine Family/Pinout code
CE] CR - Set reject count to default
CF] CR - Set single pulse reject count
EF] CR - Display UniPak configuration number

UNIPAK 2:
BC] CR - Disable Electronic Identifier test
BD] CR - Enable Electronic Identifier test
C3] CR - Access specific Family/Pinout options
CC] CR - Examine Family/Pinout code
CD] CR - Display devices Electronic Identifier array
CE] CR - Set reject count to default
CF] CR - Set single pulse reject count
EF] CR - Display UniPak 2 configuration number

GANGPAK:

CC] CR - Examine Family/Pinout code
CD] CR - Display devices Electronic Identifier array
E0] CR - EEPROM erase routine
E1] CR - Select set size (1 - 8)
E2] CR - Select word size (multiple of 8)
E3] CR - Display checksum of desired device
EF] CR - Display GangPak configuration number

LOGICPAK:

CE] CR - Set option attributes
E1] CR - Enable terminal mode
E2] CR - Receive PALASM source
E3] CR - Transmit PALASM source
E4] CR - Assemble PALASM source
E5] CR - Enter reject count option
E6] CR - Enter verify option
E7] CR - Enter security fuse option
E8] CR - Set number of logic fingerprint cycles
E9] CR - Enter starting vector and test sum
EA] CR - Display fuse pattern
EB] CR - Receive JEDEC data
EC] CR - Transmit JEDEC data
ED] CR - Display sumcheck of fuse data
EE] CR - Edit fuse by number
EF] CR - Display LogicPak configuration number

120A/121A:

18] CR - Set VCC levels during verify
20] CR - Performs EEPROM test
22] CR - Convert to 16 bit programmer
23] CR - Set number of verify passes
25] CR - Select Electronic Identifier options
CC] CR - Electronic Identifier Family/Pinout codes
CD] CR - Electronic Identifier code inquiry
DF] CR - Inquire device status for all 20 sockets

SERIES 22:

A4] CR - Clear all RAM
B2] CR - System configuration number
B7] CR - View select functions
B8] CR - Display device options
B9] CR - Display test
BC] CR - Disable Electronic Identifier
BD] CR - Enable Electronic Identifier
C1] CR - Calibration
C3] CR - Programming algorithm option selection
CC] CR - Display Family/Pinout code
CD] CR - View Electronic Identifier
CE] CR - Select normal reject count
CF] CR - Set one pulse reject count
F4] CR - Set nibble mode
F5] CR - Set binary base
F6] CR - Set octal base
F7] CR - Set hexadecimal base
F8] CR - Disable nibble mode
FE] CR - Power down save

MODELS 60A and 60H:

A2] CR - Fill fuse map
C2] CR - Select JEDEC mode
C3] CR - Define handler error count
C4] CR - Select display format
C5] CR - Define handler device counter
C8] CR - Enable/disable underblow/overblow output format
CA] CR - Select number of test passes
CE] CR - List vectors on/off
EA] CR - Output fuse map
E5] CR - Reject option
E6] CR - Testing mode
E7] CR - Security fuse enable/disable
E8] CR - Define Logic Fingerprint cycles
E9] CR - Start/end vector for Logic Fingerprint
EB] CR - Input data in JEDEC format
EC] CR - Output data in JEDEC format
FE] CR - Save parameters in non-volatile RAM

COMPUTER COMPATIBILITY B.4

PROMlink was written to be compatible with personal computers which use MS-DOS. However, in the interests of efficient use of the CRT display and especially the computer's serial port, PROMlink will not run on all MS-DOS compatible systems without some modifications.

The reason for this is that although the operating system for all MS-DOS computers is essentially identical, the hardware may be implemented in different ways or located at different addresses. PROMlink expects particular hardware to be located at specific addresses in the computer. If this is not the case, PROMlink will run improperly on some computers even though they are MS-DOS compatible.

MS-DOS and PROMlink were designed initially to run on an IBM PC without modification. It is possible, however, to run PROMlink on a computer that is not 100% hardware compatible with the IBM PC. The third line of the PROMlink default configuration file contains a three letter code which tells PROMlink what type of computer it is running on. This three letter code can be any one of the following:

IBM	IBM hardware compatible
TIP	Texas Instruments Professional
BIO	IBM BIOS compatible

If *BIO* is specified, PROMlink will not access any of the computer's hardware directly, but will expect certain IBM PC BIOS calls to work. This is useful if your computer hardware is not compatible with the IBM PC, but permits the use of compatible BIOS or MS-DOS interrupt calls. MS-DOS interrupt calls are used by PROMlink regardless of the three-letter code option.

If the *BIO* option is selected, the following BIOS interrupt calls will be made:

10-hex	Video I/O
14-hex	RS-232-C I/O

If the *IBM* option is selected, the following hardware addresses are accessed:

I/O:3F8 to 3FE	COM1:
I/O:2F8 to 2FE	COM2:
I/O:3B4 to 3BB	Monochrome display ctrl regs
I/O:3D0 to 3DA	Color/graphics display ctrl regs
B0000 to B0FA0	Monochrome display memory
B8000 to B8FA0	Color/graphics display memory

In addition, interrupt 11 (equipment determination) and interrupt 14 (RS-232-C I/O) will be used.

If the *TIP* option is selected, the following hardware addresses are accessed:

I/O:0E4 to 0E7	COM1:
I/O:0EC to 0EF	COM2:
I/O:0F4 to 0F7	COM3:
I/O:0FC to 0FF	COM4:
DF800	Display attribute latch
DF810 to DF813	Display control regs
DE000 to DE7D0	Display character memory

SETTING PROGRAMMER'S SERIAL PORT PARAMETERS B.5

The information contained in this part of appendix B describes briefly the hardware switches or select codes required to set the Data I/O programmers' serial port data transmission parameters. This information is intended for quick reference. So only the switch settings, switch locations, and select codes are provided. If you require further instructions to learn exactly how to perform the procedure required to implement the switch settings or select codes, please refer to the appropriate programmer manual.

The serial port parameters that PROMlink cares about are:

baud rate
stop bits
parity

Each of these parameters will be described for the specific programmer in the following paragraphs and illustrations.

Model/Series 22 and Model 60 Programmers B.5.1

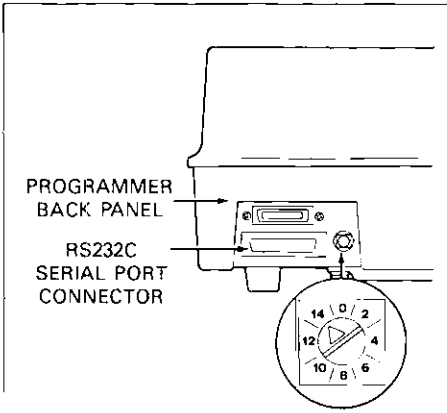
The Model/Series 22 and Model 60 serial port parameters are set from the front panel keyboard, using the following select function codes:

SELECT CODE	SERIAL PORT PARAMETER
DA	Set Baud Rate
DB	Select Parity
DC	Select Stop Bits

The procedure for setting each of these serial port parameters varies somewhat according to the programmer. Consult your programmer manual for further details.

System/Model 19 and Model 29 Programmers B.5.2

The serial port parameters are set for the System 19 and Model 29 programmers from the position of hardware switches located on the back panel (baud rate) or inside of the programmer. Refer to the two illustrations (figure B-1 and B-2) which follow for the location and correct setting of the switch associated with the specific serial port parameter.



BAUD RATE	SWITCH POSITION
50	0
75	1
110	2
134.5	3
150	4
300	5
600	6
1200	7
1800	8
2000	9
2400	10 or A
3600	11 or B
4800	12 or C
7200	13 or D
9600	14 or E
19,200	15 or F

Figure B-1. System 19/Model 29 Baud Rate Switch and Settings

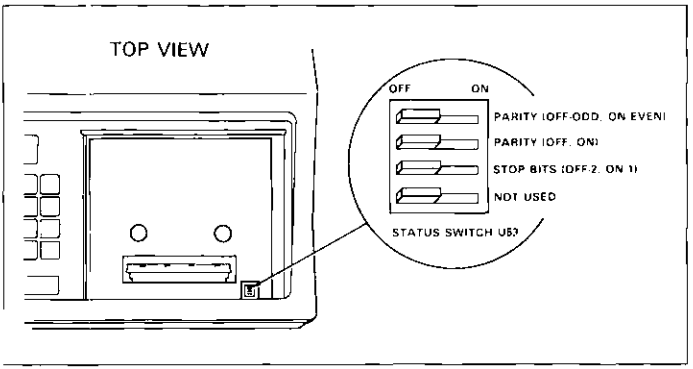


Figure B-2. System 19/Model 29 Parity/Stop Bit Switches and Settings

Model 120/121 Programmers B.5.3

The serial port parameters are set for the Model 120/121 programmers from the position of hardware switches located on the Serial I/O card inside the programmer. There are two types of Serial I/O cards that may be used in the Model 120/121. The card that controls serial port #1, which is the port PROMlink will communicate through, is the Keyboard Display and Serial I/O card (701-1829).

Refer to the illustration (figure B-3) that shows the internal view of the programmer for the location of the 701-1829 Serial I/O card. Pull out this Serial I/O card and set the switches for the desired serial port parameter. Refer to figure B-4 for the location of the switches and the settings for the appropriate serial port parameters.

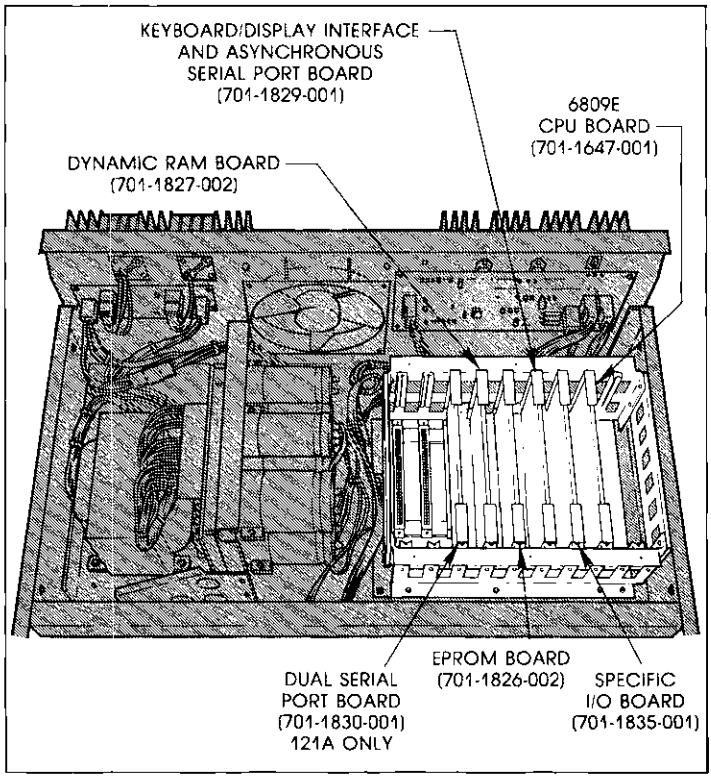


Figure B-3. Model 120/121 Serial I/O Card (701-1829) Location

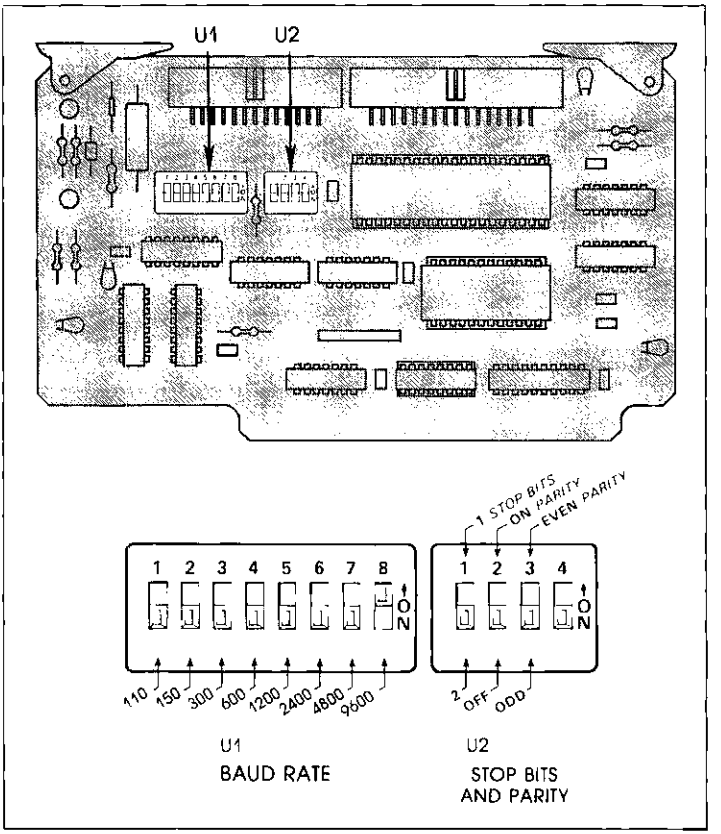


Figure B-4. Model 120/121 Serial I/O Card Switch Settings

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Primary references to an item are shown in boldface.

U.S. Sales Offices and Representatives
Direct Sales and Serivce Offices

Data I/O
10525 Willows Road N.E.
P.O. Box 97046
Redmond, WA 98073-9746
(206) 881-6444
Telex Dom. 15-2167,
Int'l 4740166 DIO UI
Fax (206) 882-1043

NORTHERN CALIFORNIA

Data I/O
1700 Wyatt Drive
Suite 1
Santa Clara, CA 95054
(408) 727-0641 *(Sales)*
(408) 727-0659 *(Service)*
Telex 556440

SOUTHERN CALIFORNIA

Data I/O
3505 Cadillac Avenue
Suite L-1
Costa Mesa, CA 92626
(714) 662-1182 *(Sales)*
(714) 662-2498 *(Service)*
Telex 755870

EASTERN REGION

Data I/O
Birch Pond Business Center
22 Cotton Road
Nashua, NH 03063
(603) 889-8511 *(Sales)*
(603) 889-8513 *(Service)*
Telex 943431

CENTRAL REGION

Data I/O
1810 N. Glenville Drive
Suite 108
Richardson, TX 75081
(214) 235-0044
Telex 792474
TWX 910-997-1767

Representatives

ALABAMA

Pen Tech Associates
Huntsville, AL
(205) 881-9298

ALASKA

Northwest T & M
Redmond, WA
(206) 881-8857

ARIZONA

Zeus Electronics, Inc.
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Telex 910-951-1362

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Data I/O
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Telex 755870

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1-800-521-4512

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Telex 943431

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Huntsville, AL
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Pen Tech Associates
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Northwest Test
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(206) 881-8857

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(801) 534-0500
1-801-534-0503

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(314) 839-0800

INDIANA

Torkelson Associates
Indianapolis, IN
(317) 244-7867
Telex 810-341-3141

IOWA

Torkelson Associates
Deerfield, IL
(312) 945-8700
Twx 910-992-1438

KANSAS

Palatine Eng. & Sales
Mission, KS
(913) 831-0555

KENTUCKY, WESTERN

Torkelson Associates
Indianapolis, IN
(317) 244-7867
Telex 810-341-3141

KENTUCKY, EASTERN

Electro Sales Associates
Allison Park, PA
(412) 487-3801

LOUISIANA

Testech, Inc.
Houston, TX
(713) 956-0837

MAINE

Data I/O
Nashua, NH
(603) 889-8511
Telex 943431

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Sci-Rep, Inc.
Baltimore Office
(301) 321-1411

MASSACHUSETTS

Data I/O
Nashua, NH
(603) 889-8511
Telex 943431

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MINNESOTA

Torkelson Associates
Minneapolis, MN
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Telex 910-576-2740

MISSISSIPPI

Pen Tech Associates
Huntsville, AL
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Palatine Eng. & Sales
Hazelwood, MO
(314) 839-0800

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Zeus Electronics, Inc.
Salt Lake City, UT
(801) 534-0500
1-800-534-0503

NEBRASKA

Palatine Eng. & Sales
Hazelwood, MO
(314) 839-0800

NEVADA

Zeus Electronics, Inc.
Phoenix, AZ
(602) 263-6022
1-800-528-4512
Telex 910-951-1362

NEW HAMPSHIRE

Data I/O
Nashua, NH
(603) 889-8511
Telex 943431

NEW JERSEY, NORTHERN

Data I/O
1-800-858-5803

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Sci-Rep, Inc.
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Telex 710-892-1297 SCI-REP PESN

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Torkelson Associates
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(612) 835-2414
Telex 910-576-2740

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(513) 426-5551

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1-800-247-5700
Telex 910-467-8775

PENNSYLVANIA, WESTERN

Electro Sales Associates
Allison Park, PA
(412) 487-3801

PENNSYLVANIA, EASTERN

Sci-Rep, Inc.
Pennsauken, NJ
(609) 662-5222
Telex 710-892-1297 SCI-REP PESN

PUERTO RICO

Data I/O
Nashua, NH
(603) 889-8511
Telex 943431

RHODE ISLAND

Data I/O
Nashua, NH
(603) 889-8511
Telex 943431

SOUTH CAROLINA

Pen Tech Associates
Greensboro, NC
(919) 852-6000

SOUTH DAKOTA

Torkelson Associates
Minneapolis, MN
(612) 835-2414
Telex 910-576-2740

TENNESSEE

Pen Tech Associates
Marietta, GA
(404) 424-1931

Huntsville, AL
(205) 881-9298

TEXAS

Testech, Inc.
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Houston, TX
(713) 956-0837

Austin, TX
(512) 327-7033

TEXAS, EL PASO CO.

Zeus Electronics, Inc.
Albuquerque, NM
(505) 842-6633
1-800-528-4512

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Zeus Electronics, Inc.
Salt Lake City, UT
(801) 534-0500
1-800-534-0503

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Data I/O
Nashua, NH
(603) 889-8511
Telex 943431

VIRGINIA

Sci-Rep, Inc.
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(703) 385-0600
Telex 710-833-0361

WASHINGTON

Northwest T & M
Redmond, WA
(206) 881-8857

WASHINGTON,
TRI-CITIES, VANCOUVER,
SPOKANE

Northwest T & M
Beaverton, OR
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1-800-247-5700
Telex 910-467-8775

WASHINGTON D.C.

Sci-Rep, Inc.
Fairfax, VA
(703) 385-0600
Telex 710-833-0361

WEST VIRGINIA

Electro Sales Associates
Allison Park, PA
(412) 487-3801

WISCONSIN

Torkelson Associates
Waukesha, WI
(414) 784-7736

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Zeus Electronics, Inc.
Denver, CO
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1-800-521-4512

U.S. SERVICE CENTERS

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Santa Clara, CA	(408) 727-0659
Costa Mesa, CA	(714) 662-2498
Nashua, NH	(603) 889-8513
Richardson, TX	(214) 235-0044

International Sales Offices and Representatives

EUROPE

Data I/O Europe
World Trade Center
Strawinskylaan 633
1077 XX Amsterdam
The Netherlands
(20) 622866
Telex 16616 DATIO NL

FEDERAL REPUBLIC OF GERMANY

Data I/O Germany GmbH
Bahnhofstrasse 3
D-6453 Seligenstadt
Federal Republic of Germany
(6182) 3088/89
Telex 4184962 DATA D

JAPAN

Data I/O Japan Company, Ltd.
Ginza Orient Bldg. 6F
8-9-13, Ginza, Chuo-ku
Tokyo 104 Japan
(03) 574-0211
Telex 2522685 DATAIO J

AUSTRALIA

Warburton Franki
Adelaide
3567333
Telex Warfran AA82579

Warburton Franki
Brisbane
(07) 277-0222
Telex Warfran 41052

Warburton Franki
Melbourne
(03) 795 9011
Telex Warfran AA31370

Warburton Franki
Newcastle
049 528722

Warburton Franki
Sydney
(02) 648-1711
Telex AA 22265

Warburton Franki
Perth
(09) 277-7000
Telex Warfran 92908

Warburton Franki
Corporate Office
Lidcombe, N.S.W. 2141
(02) 647-2266
Telex AA21299

AUSTRIA

Ing. Ernst Steiner
A-1130 Wien
(222) 827474
Telex 135026 ES A

BELGIUM

Simac Electronics
B-1000 Brussels
(2) 2192451
Telex 23662 SIMEIP B

BRAZIL

Cosele

Instrumentos Eletronicos Ltda.
01301-Sao Paulo-SP
(11) 255-1733 or 256-7421 or 231-5548
Telex (011) 30869 CSEL-BR

Cosele

Rua Sacadura Cabral, 120
Rio De Janeiro - RJ
(21) 283-2036
Telex (021) 33019

CANADA

Allan Crawford Associates
Mississauga, Ontario
(416) 890-2010
Telex 06 968769

Allan Crawford Associates
Ottawa, Ontario K1Z5L3
(613) 722-7682
Telex 053 3600

Allan Crawford Associates
St. Laurent, PQ. H4T 1E7 (Montreal)
(514) 731-8564
Telex 05-824944

Allan Crawford Associates
Calgary, Alberta T2E 6Z5
(403) 230-1341
Telex 03 821186

Allan Crawford Associates
Burnaby, BC. V5C6A7
(604) 294-1326
Telex 04 54247

CHINA

Dorado Company
Seattle, WA 98104
(206) 583-0000
Telex 329473 (Burgess Sea)
880212 (DORADO CO UD)

Dorado Company
Tsuen Wan, N.T. Hong Kong
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Telex 51086 (FEDER HX)

Dorado Company
Beijing,
89-0621, ext. 1324

Dorado Company
c/o China Great Wall Industry Corp.
15 Zhong Shan Road (E1)
Shanghai,
219103 or 210464
Telex 33175 (CGWSH CN)

DENMARK

ITT Multikomponent A/S
DK-2600 Glostrup
(2) 451822
Telex 33355 ITT DK

FINLAND

Instrumentarium Elektroniikka
SF-02631 Espoo 63
(0) 5281
Telex 124426 HAVUL SF

FRANCE

M.B. Electronique
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(3) 9568131
Telex MB 695414 F

GERMANY, FEDERAL REPUBLIC OF

Instrumatic Electronic GmbH
D-8032 Graefelfing
(89) 852063
Telex 524298 INSTR D

GREECE

Eltronics Ltd.
GR-106 75 Athens 139
(1) 7249511 thru 15 or 7210669
Telex 216589 DARX GR

HONG KONG

Eurotherm (Far East) Ltd.
Aberdeen
5-546391
Telex 72449 EFELD HX

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Transmarketing Private Ltd.
Bombay 40018
022 4921874, 4920320 or 4926044
Telex 011 73724 TMPL IN

Bangalore
560-046

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Tel-Aviv 69010
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(3) 494881 and 2
Telex 32392 TSEE IL

ITALY

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I-00143 Roma
(6) 5915551
Telex 680356 SISTREL I

Sistrel SPA
I-20092 Cinisello Balsamo (Mi)
(2) 6120129/6181893
Telex 334643 SISTREL I

KOREA

Elcom Systems Inc.
Seoul ZIP135
(2) 555-5222 or 557-3836
Telex K25227

MALAYSIA

GEA Technology PTE., Ltd.
Singapore 0511
65 2729412
Telex RS 37162

MEXICO

Christensen, S.A.
06470-Mexico, D.F.
546-25-95, 546-29-55
Telex 017-75612 Mycome

NETHERLANDS

Simac Electronics
5503HR Veldhoven
(40) 533725
Telex 51037 SIMAC NL

NEW ZEALAND

Warburton Franki, Ltd.
Auckland
(9) 504-458
Telex Warfran NZ 3824

NORWAY

Teleinstrument A/S
N-1371 Asker
(2) 789460
Telex 72919 TEL IN N

PORTUGAL

Decada Espectral
P-1495 Lisboa
(1) 2103420
Telex 15515 ESPEC P

SINGAPORE

GEA Technology PTE., Ltd.
(65) 2729412
Telex RS 37162

SOUTH AFRICA

Electronic Building Elements (PTY), Ltd. (EBE)
Pretoria 0001
(12) 46-9221/7
Telex 3 22786B

SPAIN

Instrumatic Espanola S.A.
Madrid-16
(1) 4558112
Telex 46277 ITIC E

Instrumatic Espanola
Malaga 5
52 213898
Telex 77131 HAFN E

SWEDEN

Macrotek AB
S-162 11 Valingby
(8) 870190
Telex 12543 MATEK S

SWITZERLAND

Instrumatic SA
CH-1207 Geneve
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Telex 28667 INSR CH

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CH-8800 Thalwil/ZH
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Telex 826801 INBC CH

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Problem Description: Please describe how to reproduce the problem and include the source file and output files (on disk or tape if possible).

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