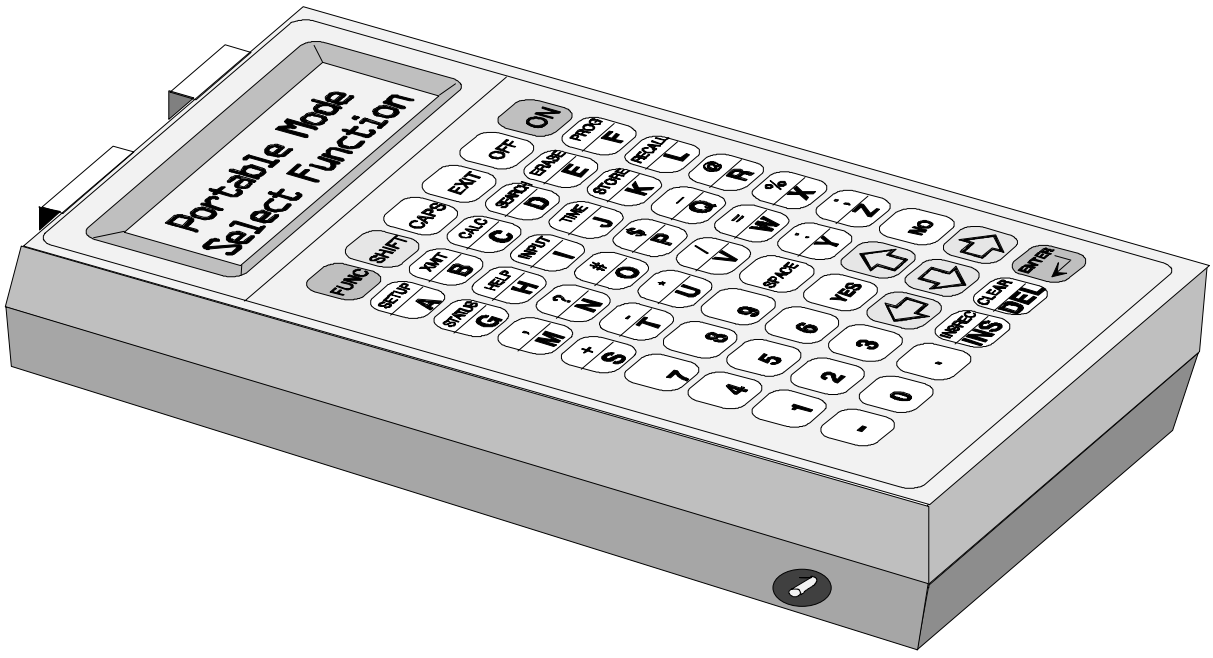
American Microsystems, Ltd.

M3000 Portable Bar Code Reader

User's Guide



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FCC NOTICE

Warning: This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

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Contents

Overview

Introduction

The Model 3000 Portable Bar Code Reader combines numerous features in a single, versatile unit. The added productivity you get by using bar code technology can now be multiplied across a wide array of applications. You can check current inventory in the stockroom, and track product sales at the register. The unit can operate on a real-time network or multi-user system, and also transmit transaction files by modem to your host computer. You do all this by configuring the M3000 in one of the following modes:

- Portable Mode
- Non Portable Modes: Keyboard wedge, Serial wedge, and RS-232 Serial

In addition to these operating modes the M3000 features six built-in, ready-to-use programs, a calculator function, and a real-time clock that displays date and time information. The M3000 features 64K of memory that is enhanced by data compression so that the apparent memory available to the unit is 128K. The M3000 is fully programmable. The unit comes with a built-in program generator that allows you to easily create custom programs. Simply enter the prompts and data requirements and the M3000 creates the program for you. The programs you create can be easily transferred to and from a personal computer.

Enhanced features include:

- Lookup tables
- Importing ASCII Lookup Files and Data files
- RS-232 Serial Input
- Transmit Pause
- Header and File Name Output Options
- Start & End of Transmit Text
- Auto File Save Option
- Programmable Bar Code Viewing Delay
- Input Overwrite Option

You can scan virtually all industry standard bar code symbologies using wands, CCD scanners, 5-volt laser scanners, and slot readers. You can also enter data directly from the keyboard and the RS-232 Serial Port.

Portable Mode

The M3000 can go wherever you need to scan bar codes. Typically, this includes shop or warehouse inventory and other asset management applications. In the portable mode the M3000 operates on a standard 8-volt Alkaline battery and can operate over 70 hours on a single battery. A user selectable time-out feature saves battery life by shutting off the M3000 when the unit is not in use. Just press ON to resume operation from where you were before the unit shut down. The M3000 always saves the current operating status and contents of random access memory(RAM) when power is turned off.

Non Portable Modes

The unit operates in three non portable modes; Keyboard Wedge, RS-232 Serial Wedge, and RS232 Serial. In the wedge modes the M3000 sends bar code data directly to your PC or host computer just as if you typed the information on the keyboard. When you combine the RS232 serial mode with *SOFTCOM* communications software (included with the M3000), the M3000 emulates a PC keyboard.

Communications

The M3000 can perform file transfers through a variety of interfaces:

- Keyboard Wedge
- RS-232 Serial Wedge for Serial ASCII Terminals
- RS-232 Serial
- Hayes Compatible Modem

The M3000 supports standard communication protocols such as XON/XOFF and XMODEM (CRC16, Checksum), and can transmit serial data at speeds up to 38400 bps. The M3000 includes four PC-based communications utilities:

- *PCOM* - RS-232/ Modem file transfer program
- *SOFTCOM* - RS-232 keyboard emulation program
- *MONITOR* - RS-232/keyboard communication diagnostic utility
- *M3000 PROGRAMMER* - RS-232/Modem file transfer & programming program

These programs provide the ability to use all the M3000 communication interfaces and to debug your data output as well.

Style Conventions Used in This Manual

Every effort has been made to make the use of this manual as simple, and as intuitive as possible. The following is a summary of style conventions that are used throughout the manual.

Text:

Normal Text	Standard **body text** used throughout the manual. For example: The Model M3000 Portable Bar Code Reader combines numerous features in a single, versatile unit.
Bold Normal Text	Used to indicate **Actual Keys** that the user presses on the M3000 to complete a task, and to emphasize important information. For example: Press the **ENTER** key to advance to the next record.

`Monospace Text`	Used to simulate **actual M3000 LCD messages**, prompts, etc.
	
	For example:
	
	`Select Program`
	`>Pgm P2`

Bold Italic Text	**References** to chapters, appendixes or other text citations. For example: Refer to ***Appendix A*** for information on Function Keys.

Symbols:

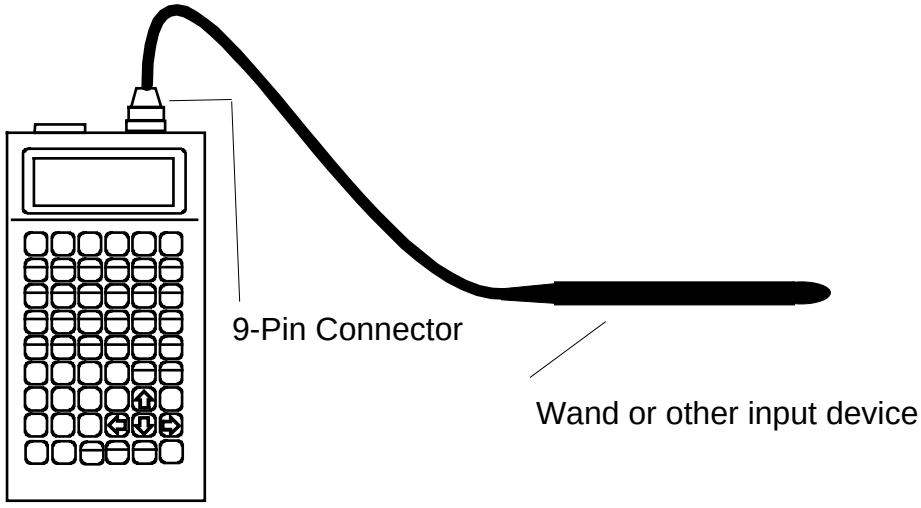
>	The **Greater Than Cursor** is used to indicate that the **ENTER** key or **Up/Down Arrows** should be used to move to the next menu level.
➡	The **Arrow Cursor** is used to indicate that the **Left/Right Arrow**s are used to select or move between options.

1Installation

Portable Mode

Your M3000 is shipped with a standard 9-volt Alkaline battery installed. The unit is fully tested and ready for operation. To prepare the unit for portable bar code scanning:

1. Turn OFF power to the M3000.
2. Plug the 9-pin connector from a wand or other input device into the 9-pin receptacle on the M3000.



Portable Mode Installation

Keyboard Wedge Installation

Caution:	**TURN OFF POWER** to the **COMPUTER** and **M3000**. Failure to remove power while plugging and unplugging cables or the shunt, can permanently damage the system.

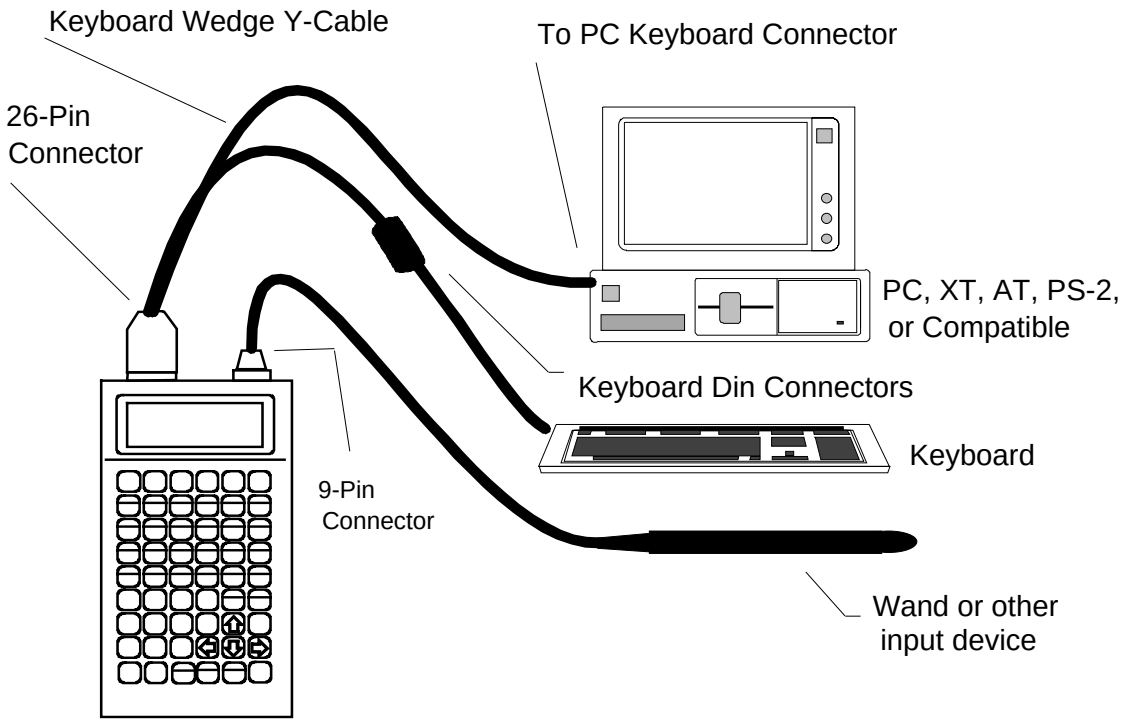
To prepare the M3000 for Keyboard Wedge operation:

1. **TURN OFF POWER to the COMPUTER and to the M3000**.
2. Plug the 26-pin connector from the keyboard wedge Y-cable into the M3000.
3. Unplug the keyboard connector from the back of the computer.
4. Plug the keyboard connector into the keyboard receptacle of the Y-cable.
5. Plug the remaining Y-cable connector into the keyboard port of the computer.
6. Plug the 9-pin connector from a wand or other input device into the 9-pin receptacle on the M3000.

To Temporarily use the M3000 in the Portable Mode:

1. **TURN OFF POWER to the COMPUTER and to the M3000**.
2. Unplug the 26-pin connector of the keyboard wedge Y-cable from the M3000.
3. Connect the Shunt to the end of the connector you just unplugged from the M3000.

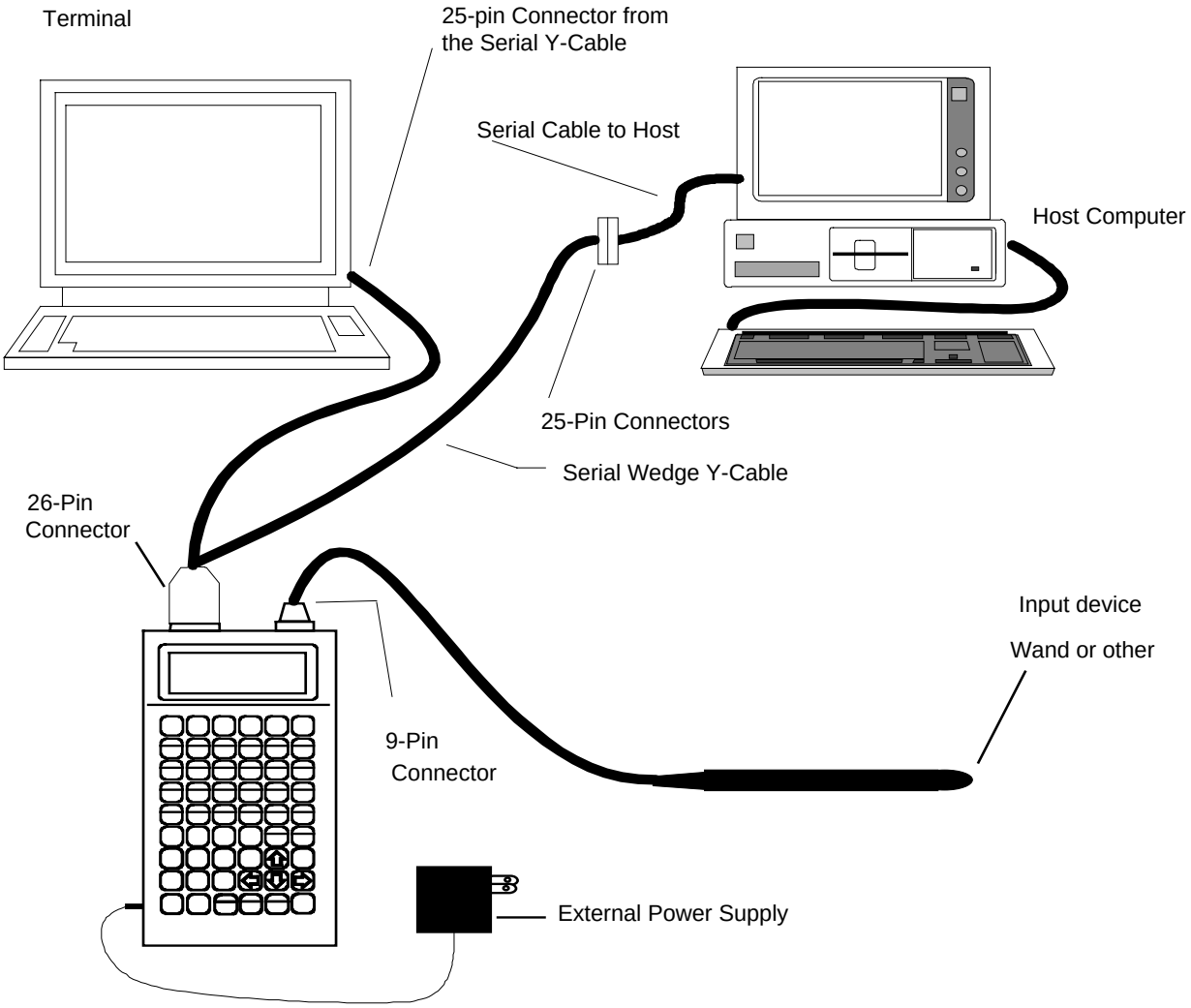
NOTE: The Shunt is the 26-pin male connector without an attached cable.



Keyboard Wedge Installation

Serial Wedge Installation

The serial wedge connects between an RS-232 serial terminal and a host computer. Before installing the serial wedge, make sure you have established communications between the terminal and the host. Next, write down the existing communication parameters in use by the system. To prepare the M3000 for serial wedge operation:



Serial Wedge Installation

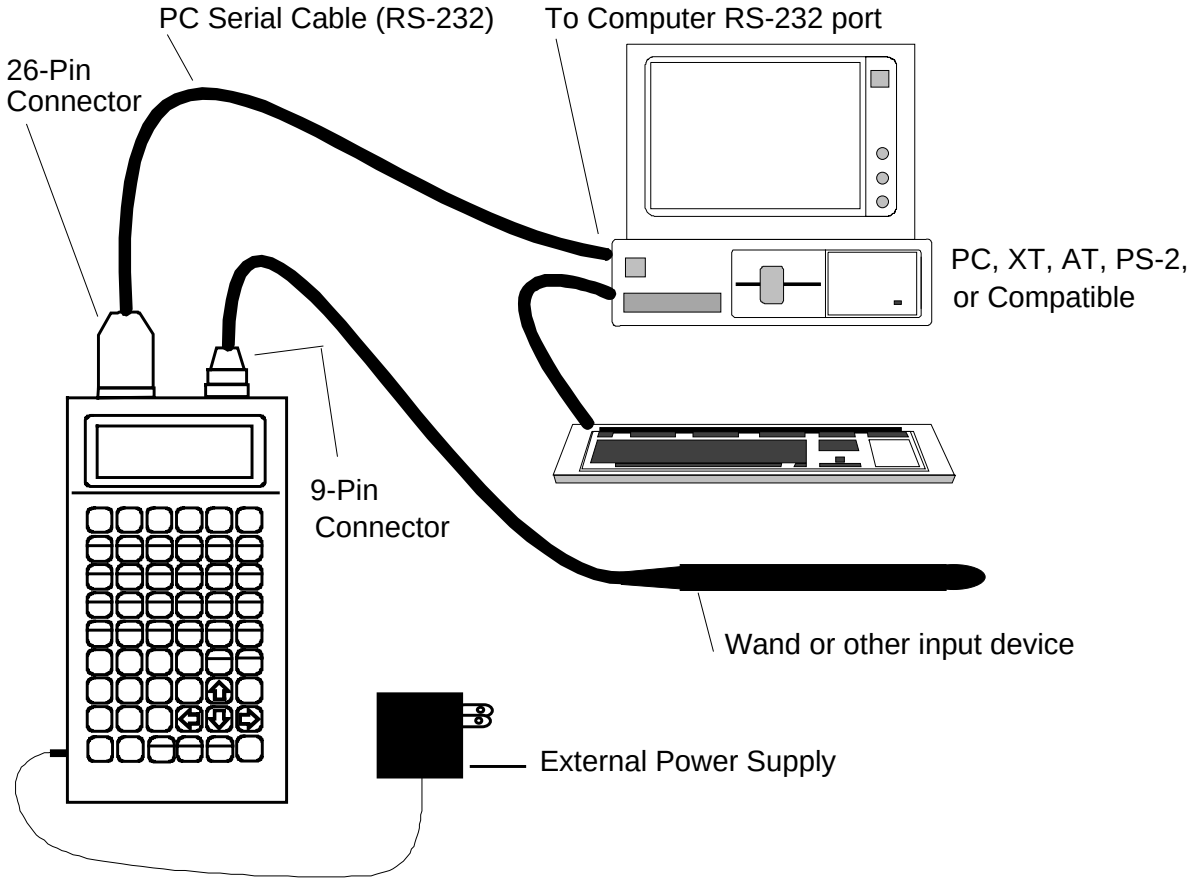
1. Turn OFF power to the terminal and to the M3000.
2. Unplug the serial cable from the terminal.
3. Plug the 26-pin connector from the serial wedge Y-cable into the M3000.
4. Plug the male 25-pin connector of the serial Y-cable into the connector labeled "Modem" or "Main" on the back of the terminal.
5. Plug the female 25-pin connector from the serial Y-cable into the cable going to the host computer (the cable you unplugged from the terminal.)
6. Plug the 9-pin connector from a wand or other input device into the 9-pin receptacle on the M3000.
7. Plug the external power supply cable into the connector located on the lower left corner of the M3000.

RS-232 Serial Installation

Prior to installing the M3000, make sure you have a serial port on your computer. Serial ports usually have 25-pin or 9-pin male connectors and are often labeled Com 1 or Com 2.

To prepare the M3000 for RS-232 Serial operation:

1. Turn OFF power to the computer and to the M3000.
2. Plug the 26-pin connector from the RS-232 serial cable into the M3000.
3. Plug the 25-pin connector of the RS-232 serial cable into an available Com port on the computer.
4. Plug the 9-pin connector from a wand or other input device into the 9-pin receptacle on the M3000.
5. Plug the external power supply cable into the connector located on the lower left corner of the M3000.
6. Install the memory resident keyboard emulation program, *SOFTCOM*.



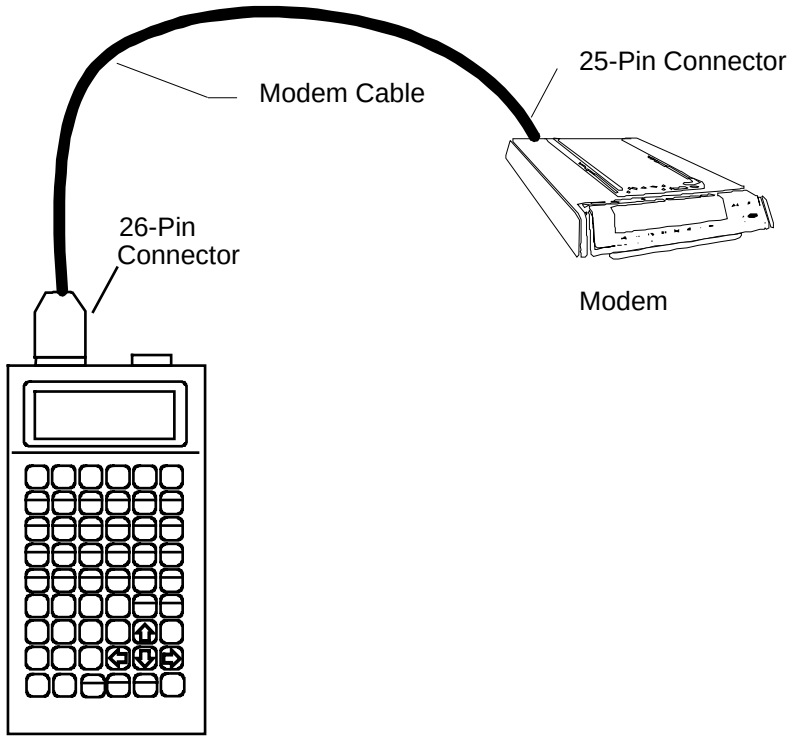
RS-232 Serial Installation

NOTE: If your computer uses a 9-pin connector for the Com port, you need a 25-pin to 9-pin adapter or adapter cable.

Modem Installation

The M3000 works with any Hayes compatible modem. To prepare the M3000 for modem operation:

1. Turn OFF power to the modem and to the M3000.
2. Plug the 26-pin connector from the Modem Cable into the M3000.
3. Plug the 25-pin connector from the Modem Cable into the modem connector.
4. Plug the 9-pin connector from a wand or other input device into the 9-pin receptacle on the M3000.



Modem Installation

Installing Input Devices

The M3000 accepts the following input devices:

- Bar Code Input Devices
  - Wands
  - 5 Volt Laser Scanners
  - Slot Reader (Badge Readers)
- Serial Input Devices (Portable Mode Only)

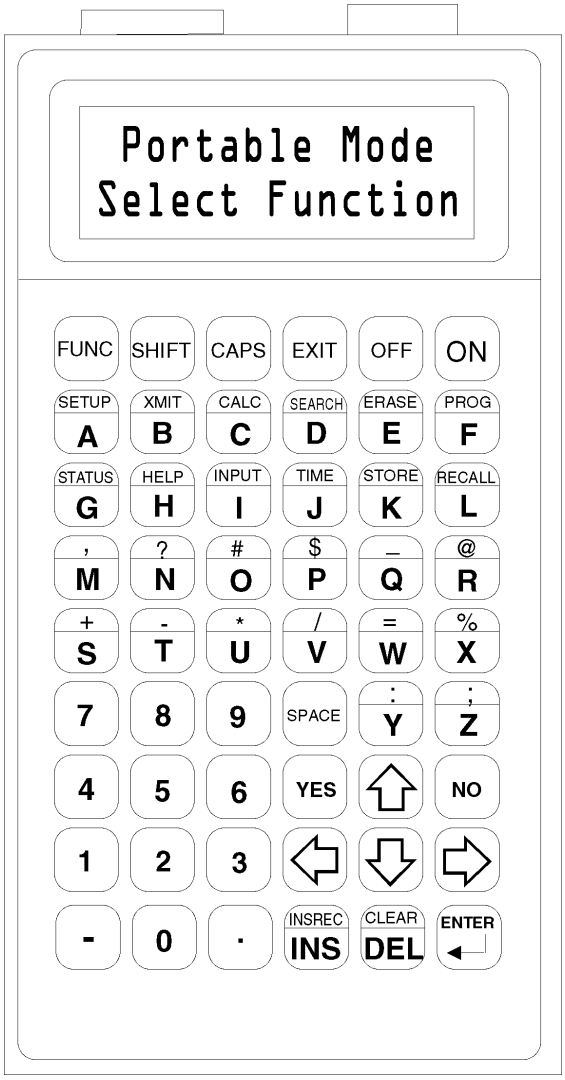
To install a bar code input device, plug the male 9-pin connector of the scanner into the 9-pin female connector of the M3000.

To install the Serial Input Device, use the RS-232 serial cable provided.

2Keyboard

Introduction

The M3000 keyboard has been designed with separate alpha and numeric keys and a color code of red, white, and blue for multiple keystroke combinations. The **SHIFT** key can be pressed with any of the keys with blue headers to change the key operation to the character in blue. The **FUNC** key can be pressed with any of the keys with red headers to perform all the M3000 functions. All alpha keys can be changed to upper case by pressing the **CAPS** key. The following is a description of all the keys on the M3000 keyboard.



Keyboard Layout

æ moves the cursor up through any M3000 menu or input field. The **æ** key is used to view menu selections when the **>** prompt is displayed.

moves the cursor down through any M3000 menu or input field. The key is used to view menu selections when the **>** prompt is displayed.

moves the cursor left through any M3000 menu or input field. The key is used to view menu selections when the prompt is displayed.

moves the cursor right through any M3000 menu or input field. The key is used to view menu selections when the prompt is displayed.

CALC function allows you to make calculations while collecting data or programming the M3000. See the ***Function Reference Chapter*** for detailed instructions on the operation of the **CALC** keys.

CAPS toggles between upper and lower case input of alphabetical characters.

CLEAR function clears an entire input field.

DEL deletes any character at the cursor position. If the cursor follows a string of characters, the **DEL** key will delete the character to the left of the cursor position.

ENTER accepts information in an input field and advances the cursor to the next input field. **ENTER** also selects menu items in any of the M3000 menus.

ERASE function erases a record or an entire file while in **INPUT** or **PROGRAM** mode. **ERASE** also can be used from the main M3000 menu to erase data and lookup files .

EXIT exits any operation being performed.

FUNC is used with any of the M3000 keys with **Red** headers. This key allows you to select any of the M3000 portable functions by pressing **FUNC** and the function to be selected. The options are:

CALC	**RECALL**
CLEAR	**SEARCH**
ERASE	**SETUP**
HELP	**STATUS**
INPUT	**STORE**
INSREC	**TIME**
PROG	**XMIT**

HELP function displays the field settings such as length, types of bar codes allowed or type of characters allowed for the current input field.

INPUT function is for data collection. The M3000 will prompt the operator for program selection and then allow data entry into a new or existing data file. See the ***Quick Start - Basic Operations Chapter*** for more information on collecting data.

INS allows you to **INSERT** data at the cursor position, moving all existing data to the right. The **INSERT** mode is indicated by a fast flashing cursor.

INSREC function inserts an empty record before the current record while in either the **INPUT** or **PROGRAM** mode.

NO enters an **N** for **NO** at any **YES/NO** prompt. The **NO** key will also enter an **N** in any input field allowing alphanumeric data.

OFF turns the M3000 unit **OFF**. When the unit is used as a keyboard wedge, the unit turns itself **ON** and **OFF** with the computer.

PROG **PROGRAM** function allows the operator to custom write a new program or change any existing program. See the ***Programming Chapte***r for further details on how to program the M3000.

RECALL function will insert any input field (string of characters) that has been stored with the **STORE** function after clearing the present input field. See the ***Function Reference Chapter*** for more information about the **RECALL** function.

SEARCH function is used to search and find an input field that matches search text (string of characters) while in the data collection **INPUT** mode. **SEARCH** can be called only from a data collection input field. See the ***Function Reference Chapter*** for more information about the **SEARCH** function.

SETUP function is a series of menus to custom set the M3000 for portable options, in-line reader options, and transmit options.

SHIFT toggles the keys with **Blue** headers to the character on the blue background except during non portable mode operation and at the **`Portable Mode Select Function`** display. The **SHIFT** key toggles between the current non portable mode and the **`Portable Mode Select Function`** display when viewing the main menu. When using the option, **Setup, Other Setup, Wedge Kypad** (Wedge Keypad), press the **Exit** key on the M3000 to return to the **`Portable Mode Select Function`** display.

SPACE is used to enter the space character.

STATUS function displays information specific to data or program files being viewed and also information about the M3000 such as memory available and CAPS status. See the ***Function Reference Chapter*** for a complete list of status information.

STORE function stores the current input field data (string of characters) to be used with the **RECALL** function. See the ***Function Reference Chapter*** for more information about the **STORE** function.

TIME function displays the M3000 setting for the **Day Of Week**, **Month**, **Day**, **Year**, **Hour**, **Minute**, **Second**, and **AM** or **PM**.

XMIT function is used to transmit files to and from the M3000. See the ***Communications Chapter*** for more information on transmitting data.

YES enters a **Y** for **YES** at any **YES/NO** prompt. The **YES** key will also enter a **Y** in any input field allowing alphanumeric data.

Other Key Combinations

FUNC + moves the cursor to the **first input** of the **last record** of a data or program file.

FUNC + æ moves the cursor to the **first input** of a **data** or **program** file.

FUNC + moves the cursor to the **first input** in the **next record** of a **data** or **program** file.

FUNC + moves the cursor to the **first input** in the **previous record** of a **data** or **program** file

3Function Reference

Introduction

The M3000 has several functions that simplify programming and data collection. These functions and their operations are described in this chapter. To select a function, press and release the **FUNC** key, and then press the desired function.

Arrow Keys

With the Function Key

The arrow keys can be used with the **FUNC** key to move the cursor to different location in a data or program file. Below are the actions of each arrow key when used with the **FUNC** key:

Down Arrow moves the cursor to the **first input** of the **last record** of a data or program file.

Up Arrow moves the cursor to the **first input** of a **data** or **program** file.

Right Arrow moves the cursor to the **first input** in the **next record** of a **data** or **program** file.

Left Arrow moves the cursor to the **first input** in the **previous record** of a **data** or **program** file

Calculator

The **CALC** function accesses a **4-Function Calculator** and can be used while collecting data or programming the M3000. The keys used for calculations are:

+	**Addition**
-	**Subtraction**
*	**Multiplication**
/	**Division**
=	**Total**

To use the calculator, press **FUNC**, then **CALC**. The M3000 prompts:

```
Calculator
0
```

Enter the numbers you want to calculate using the math symbols. Once the = key is pressed and a total is displayed, you only need to enter a another number to start a new calculation or enter +, -, *, or / to continue the calculation.

EXAMPLE: To **add** 377 plus 795 **minus** 234, enter "377+795-234=".

To **multiply** 17 times 24, enter "17*24=".

To **divide** 547 by 12, enter "547/12=".

To **add** 24 plus 95, **then multiply** by 17, enter "24+95*17=".

NOTE: You do not have to press the **SHIFT** key to use the calculator keys; the **+ - * /** and **+** will automatically be available. You may input up to 8 characters to the left of the decimal and 6 characters to right of the decimal. To clear the calculator data input press **FUNC, then CLEAR** or press the **DEL** key to erase one character at a time. The **ENTER** key and **Down Arrow key** will also total a calculation.

To exit the calculator function, simply press the **EXIT** key.

CLEAR

The **CLEAR** function can be used while in data collection or programming mode to clear an entire input field. Press **FUNC, then CLEAR** when you are in the input field you want to clear. If an input field has been specified as **INPUT REQUIRED**, you must re-enter information in this field.

ERASE

The **ERASE** function can be used from the main M3000 menu to erase **Data Files** or **Lookup Files** stored in the M3000. **ERASE** can also be used during data collection to erase a data record or file and can be used while programming the M3000 to erase a program record or program file.

NOTES:

1. You can only **Erase** a program by using **FUNC PROG**, selecting the program to edit, then using **FUNC ERASE** to erase the program.
2. To abort the **ERASE** function while in any M3000 mode, press **EXIT**.

The M3000 only allows you to **ERASE** a program that has **NO** data files stored using that program. If the program has data, the M3000 will prompt:

```
Program Has Data
No Edit Allowed
```

MAIN MENU - DATA FILES

To erase **all data files stored in your M3000**, press **FUNC**, then **ERASE** from the main M3000 menu. The M3000 will show:

```
Erase Selection
>Data Files
```

Press the **ENTER** key. The M3000 displays:

```
Erase Selection
>All Data Files
```

Press the **ENTER** key to erase **All Data Files**. The M3000 will prompt:

```
Erase All Data
Are You Sure?
```

Press **N** or **NO** to abort and return to the previous menu. Press **Y** or **Yes** to confirm that you intend to erase **All Data Files**. The M3000 displays:

```
All Data Files
Have Been Erased
```

Erasing Data Files For a Specific Program

If you choose to erase **data files for a specific program**, you may erase **All Data Files** for that program or use the **UP** and **Down Arrow** keys to select individual data files for that program. Press the **Down Arrow** from the

```
Erase Selection
>All Data Files
```

display.

The M3000 will prompt:

```
Erase Selection
>Pgm prgname
```

Press the **ENTER** key to erase **Data Files** for the displayed program. The M3000 will prompt:

```
Erase prgname
>All Data Files
```

Press **N** or **NO** to abort and return to the previous menu.

Press **Y** or **Yes** to erase **All Data Files** for the selected program. The M3000 will prompt:

```
Erase All Data
Are You Sure?
```

Press the **Y** or **Yes** a second time confirm that you intend to erase **All Data Files** for the selected program.

The M3000 displays:

```
All Data Erased
For Pgm filname
```

Erasing Specific Data Files For a Program

To erase a **Specific Data File** for the selected program, press the **Down Arrow** from the

```
Erase prgname
>All Data Files
```

display.

Use the **Up** and **Down Arrow** keys to select a specific data file. Press **ENTER** when you have selected the data file to be erased. The M3000 prompts:

```
Erase prgname
>File filename
```

To erase the displayed file, press **ENTER**. The M3000 prompts:

```
Erase filename
Are You Sure?
```

Press **N** or **NO** to abort and return to the previous menu.

Press **Y** or **Yes** to confirm that you intend to erase the selected data file.

The M3000 prompts:

```
File filename
Has Been Erased
```

MAIN MENU - LOOKUP FILES

To erase **ALL lookup files stored in your M3000** or **Individual Lookup Files**, press **FUNC**, then **ERASE** from the main M3000 menu. The M3000 will show:

```
Erase Selection
>Data Files
```

Press the **Down Arrow** and the M3000 will show:

```
Erase Selection
>All LkUp Files
```

Press the **ENTER** key to erase **All Lookup Files**. The M3000 will prompt:

```
Erase All LkUp
Are You Sure?
```

Press **N** or **NO** to abort and return to the previous menu. Press **Y** or **Yes** to confirm that you intend to erase **All Lookup Files**.

Erasing Specific Lookup Files

If you choose to erase **Specific Lookup Files**, press the **Down Arrow** from the

```
Erase Selection
>All LkUp Files
```

display.

The M3000 will prompt:

```
Erase Selection
>LkUp filename
```

Press the **ENTER** key to erase the selected **Lookup File**. The M3000 will prompt:

```
Erase filename
Are You Sure?
```

Press **N** or **NO** to abort and return to the previous menu.

Press **Y** or **Yes** to confirm that you intend to erase the selected lookup file. The M3000 prompts:

```
File filename
Has Been Erased
```

HELP

This function can be used in the M3000 **PROGRAM** and **INPUT** functions to view the input field requirements. The following prompts and their requirements can be viewed for any input using the arrow up and down keys.

Minimum Size
Maximum Size
Input Required
Input Mask Type
Serial Input Status
Bar Code Type Status
Bar Codes Allowed

INSREC

This function is used to insert records in **INPUT** or **PROGRAM** mode. While collecting data, press **FUNC**, then **INSREC** to insert an empty data record before the one being viewed. While creating or editing an M3000 program, press **FUNC**, then **INSREC** to insert an empty program record before the one being viewed.

RECALL

This function will insert any input field (string of characters) that has been stored with the M3000 **STORE** function. Press **FUNC**, then **RECALL**. This string of characters will be inserted in place of any existing data in the current input field.

SEARCH

This function allows the operator to search for an input field with a string of characters that match the **SEARCH** text. The **SEARCH** function can be used only in the M3000 **INPUT** function, data collection mode. Press **FUNC**, then **SEARCH**. The M3000 will prompt:

```
Search Text
```

and request the operator to type or scan a string of characters to search. Search can be executed in the following three ways:

- **ARROW UP** will search for any input field previous to the one being viewed that matches the **SEARCH** string.
- **ARROW DOWN** will search for any input field following the one being viewed that matches the **SEARCH** string.
- **ENTER** will search the entire file for any input field that matches the **SEARCH** string.

The M3000 will confirm only **MATCH FOUND** if the search text exactly matches an entire data input field. The M3000 will prompt **NO MATCH FOUND** if no data input fields exactly match the search string of characters.

STATUS

This function is useful in both the **INPUT** and **PROGRAM** modes. It displays the following information: The following status information can be viewed using the arrow up and down keys.

- Number of bytes (memory) available for data or programs
- Percentage of memory available for data or programs
- Data or program record number being viewed and the total number of records input in the data file or program file
- Name of the current running program
- Name of the current data file being edited
- Number of program files stored in the M3000
- Number of lookup files stored in the M3000
- Number of data files stored in the M3000
- Number of lookup files stored in the M3000
- M3000 CAPS mode status
- Battery power status
- Recall buffer data
- The M3000 firmware version number
- Rom Checksum

STORE

This option stores the current input field (string of characters) to be used with the **RECALL** function. Press **FUNC**, then **STORE**. The information is stored in memory and can be recalled using function recall (**FUNC RECALL**).

TIME

This function displays the M3000 setting for the day of week, month, day, year, hour, minute, second, and **AM** or **PM**.

4Quick Start - Basic Operations

The only thing you need to scan your first bar code is the M3000, a scanning device, and a bar code. For this quick start we'll begin by describing operation using a wand. Other types of scanning devices include: laser scanners, CCD scanners, and slot readers. We'll talk about the use of other scanners later. Let's assume that you have the M3000 with an installed wand.

We'll begin by operating the unit in the portable mode, load, and run one of the built-in programs. After that we'll scan some bar codes, enter some data manually, and use the calculator function to extend some quantities. Calculations made with the calculator can be easily stored and retrieved back into your data files as you work.

Startup - Portable Mode

1. Press ON to turn on the M3000.

   If you have a new unit, the display should show the current date and time. You will do much of your data collection in the portable mode. Press **EXIT**. The display shows:

   ```
    Portable Mode
   Select Function
   ```

2. If your M3000 displays any other message, press **EXIT** until the display shows:

   ```
    Portable Mode
   Select Function
   ```

Loading a Built-in Program into RAM

Before you collect data in the input mode, you have to load a program from within the program mode. When the M3000 is shipped, all 6 built-in programs are in Read Only Memory (ROM). To use a program you must first load that program into Random Access Memory (RAM). Programs that you use are much like a fill-in-the-blank questionnaire. The program shows you a prompt on the display, and you respond by either scanning a bar code, or by entering the data manually on the keypad.

Built-in program P2 is used frequently by M3000 users for inventory data collection. It has a part number field that is displayed as P/N, and, it has a quantity field that is displayed as Qty. To load a built-in program into RAM:

1. Press **PROG**. The display prompts:

```
Enter Password
```

The programming password is M3000P.

Enter **"M3000P"**. Then press **ENTER.** The M3000 does not show you passwords as you enter them. If you make a mistake entering the password, the display prompts:

```
INVALID PASSWORD
  Press Any Key
```

After entering the correct password the display shows:

```
Edit Program
>*New Program*
```

2. Press the down arrow until the display shows:

```
Edit Program
>*Pgm P2
```

and press **ENTER**. The display shows:

```
Copying Program
  P2 To RAM
```

After a brief delay the display shows:

```
Program Name
P2
```

3. Press **EXIT** to leave the programming function. The display shows:

```
Exit Program
Entry?
```

4. Press **YES**. The display prompts:

```
Save New
Program?
```

5. Press **YES**. The display shows:

```
Edit Program
>*New Program*
```

6. Press **EXIT.** The display shows:

```
 Portable Mode
Select Function
```

Now that program P2 has been copied to RAM, it can be used to prompt you for data input.

Using the INPUT Function

Before you start inputting data you need to:

- Select the **INPUT** function
- Select a program
- Create a new data file, or load an existing data file

Your display shows:

```
 Portable Mode
Select Function
```

If that is not the message on your display, press **EXIT** until it is.

Selecting a Program

To select program P2 for inputting data:

1. Press **INPUT,** the display shows:

```
Select Program
>Pgm P2
```

If the display shows any other program listing, press an **UP** or **DOWN** arrow until the display shows:

```
Select Program
>Pgm P2
```

2. Press Enter to select program **P2.** The display shows:

```
Input File
>*New File*
```

Creating a New Data File

If you haven't already selected program P2, do so. Now you need to create a data file to hold the data you collect while running program P2. Data file names can be up to 8 characters long. Now that you have selected program P2 your display shows:

```
Input File
>*New File*
```

To create a new data file:

1. Press **Enter**. The display shows:

```
Enter File Name
_
```

At this point you can enter any data file name you like.

2. Since this is a practice session, type: **INV1**
and press **ENTER**. The display shows:

```
P/N _
QTY
```

Entering the file name has placed you within program P2, and P2 is now prompting you for input data.

Entering Data into a Data File

1. The P/N input prompts you for a Part Number.

2. Scan the following bar code.

If you scanned the label correctly, you will hear a short BEEP.

3. The Qty input prompts you for a quantity. To input the quantity 6:

Type **"6"** on the key pad and press **ENTER**. You have just recorded one record in data file **INV1**. Next, let's scan another part number, and use the calculator function to calculate a large quantity.

Using the Built-in CALC Function

Scan another value into the P/N input. With the cursor at the Qty input we can simulate a realistic data collection problem.

For this problem, let's assume that a warehouse bin containing the part number you just scanned holds 11 cartons of 12 items, plus 7 individual items.

With the M3000 you don't need a separate calculator or resort to pencil and paper to solve the problem. You can access the calculator function from within the **INPUT** function. To access the calculator function and enter calculation results into the Qty field:

1. Press **FUNC** then **CALC**. The display shows:

```
Calculator
0
```

You need to enter the elements of the problem.

2. Enter **11 * 12 + 7 =**. The display shows:

```
Calculator
 139
```

Next, you must store the result of the calculation.

3. Press **FUNC**, then **STORE**.

4. Press **EXIT** to return to the **INPUT** function. The display still shows the value of the last part number you scanned and is prompting you for an entry in the Qty input. To retrieve the results just calculated:

5. Press **FUNC**, then **RECALL**. The **RECALL** function enters the calculation result in the Qty input.

6. Press **ENTER** to advance to the next record.

After collecting data you need to exit the **INPUT** function and save the contents of the data file.

Exiting and Saving a Data File

You can exit a data file, save the file, and resume data collection later on. To exit the data file:

1. Press **EXIT**. The display shows:

```
Exit Data Entry?

```

2. Press **YES**. The display prompts:

```
Save Data File?

```

3. Press **YES**. The M3000 returns to the

```
Select Program
>Pgm P2
```

display.

The M3000 asked if you wanted to save the data file because this was the first time you had used data file INV1. After you save a data file the first time, the M3000 automatically saves the contents of the file when you press **EXIT**, and respond by pressing **YES**.

If other programs are in RAM you can use the Up and Down arrows to scroll through the available programs.

Edit/Review a Data File

The M3000 always links data files to the program that created them. To Edit/Review data files you must first select the program that the data file is linked to. To Edit/Review data file INV1:

1. Press the **Up** or **Down** arrow until the display shows:

```
Select Program
>Pgm P2
```

Press **Enter** to select Program P2. The display now shows:

```
Input File
>*New File*
```

Press the **Down** arrow until the display shows:

```
Input File
>File INV1
```

Press **Enter** to select Input file INV1.

3. The display prompts:

```
Append To
End of File?
```

Press **YES**.

CAUTION: If you do not select **Append** the M3000 starts inputting data at the top of the file and overwrites the contents of the data file that were entered earlier. Unless you intend to overwrite or review previously entered data, always select **Append**. If you intend to overwrite or review previously entered data, press **NO** at the **Append** prompt.

NOTE: If you do not select **Append,** you can still use the arrow keys to scroll through data file records and view or edit as required. To resume data collection, use the arrow keys to scroll to the end of file. Next, scan or enter data as described earlier.

4. Continue to scan bar codes and enter values for the P/N and Qty fields, as described in Inputting Data into a Data File. When you are ready to stop collecting data:

5. Press **EXIT**. The display shows:

```
Exit Data Entry?
_
```

6. Press **YES**. The M3000 returns to the

```
Select Program
>Pgm P2
```

display. The contents of the data file were automatically saved when you pressed **YES**.

7. Press **EXIT** again to return to the **Portable Mode Select Function** Input.

Automatic Input

The M3000 provides an automatic input feature. When Automatic Input is enabled all you need to do to input data from the portable mode is press **INPUT**.

NOTE: Automatic Input uses the first program found in RAM. If no data file exists for the active program, the M3000 creates a file named- FILE #1. If a data file, or multiple data files exist for the active program, the M3000 uses the first file created for that program.

The Automatic Input feature is enabled by a **SETUP** option and works when the following conditions exist:

- At least one program is loaded into RAM.
- The SETUP Function option, Automatic Input is ON

Startup - Non Portable Mode

The M3000 supports three non portable modes; Keyboard Wedge, Serial Wedge, and RS-232. Before you can use the M3000 in one of the non portable modes, first install the mode you intend to use. See the ***Installation Chapter*** for the proper installation procedure.

During all non portable operations, the automatic time-out feature is disabled. When used in the Keyboard Wedge mode, the M3000 receives power through the keyboard interface. If you intend to operate for extended periods of time in the Serial Wedge or the RS-232 modes, use an external power supply to conserve battery life.

During all wedge mode operations, the M3000 sends scanned data to the computer or host just as if the information had been typed at the keyboard.

Keyboard Wedge Mode

After installation, the M3000 is powered ON, and ready to accept scanned bar codes. To input data into the computer:

Scan a bar code label. The M3000 beeps to signal a good read. Data from the input device is sent to the computer just as if the data had been typed at the keyboard.

NOTE: During Keyboard Wedge operation, only data from a scanning device is sent to the computer. The M3000 does not send out data entered on the keypad by default, but can be enabled by using the Wedge Kypad option in setup.

Serial Wedge Mode

To operate the M3000 in the Serial Wedge Mode perform the following:

1. Press **ON**. The display shows:

```
 Portable Mode
Select Function
```

2. Press **SHIFT**. The M3000 shows the current non portable mode. If the display does not show:

```
 Serial Wedge
```

you need to change the non portable mode setup. To change the non portable mode to Serial Wedge, do the following:

a) Press **FUNC**, then **SETUP**. The display shows:

```
Setup Selection
>Date/Time
```

b) Press the **Down** arrow once. The display shows:

```
Setup Selection
>Nonport. Mode
```

c) Press **Enter** to select the non portable mode setup option.

d) Press the **LEFT** or **RIGHT** arrow key until the display shows:

```
Nonportable Mode
➡SERIAL WEDGE
```

e) Press **EXIT** twice. The display shows:

```
Serial Wedge
```

The M3000 is setup for Serial Wedge operation and ready to send bar code data to your computer.

3. Scan a bar code label. The M3000 beeps to signal a good read. Data from the input device is sent to the computer just as if the data had been typed at the terminal.

NOTE: During Serial Wedge operation, only data from a scanning device is sent to the computer. The M3000 does not send out data entered on the keypad by default, but can be enable by using the Wedge Kypad option in setup.

RS-232 Serial Mode

When the M3000 operates in the RS-232 mode, bar code data is transmitted serially to the host computer. If your computer software does not require keyboard emulation your M3000 is ready for operation. If your system requires keyboard emulation, you should install the ***SOFTCOM*** program that was shipped with the M3000.

Refer to **Communications,** for installation instructions. ***SOFTCOM*** requires an MS-DOS, PC-DOS or other DOS compatible operating system, version 2.1 or higher.

To operate the M3000 in the RS-232 Serial Mode perform the following:

1. Press **ON**. The display shows:

```
 Portable Mode
Select Function
```

2. Press **SHIFT**. The M3000 displays the current non portable mode. If the display does not show:

```
RS232 Serial
```

you have to change the non portable mode setup. To change the non portable mode to RS-232 Serial, do the following:

a) Press **FUNCTION**, then **SETUP**. The display shows:

```
Setup Selection
>Date/Time
```

b) Press the **Down** arrow once. The display shows:

```
Setup Selection
>Nonport. Mode
```

c) Press **Enter** to select the non portable mode setup option.

d) Press the **LEFT** or **RIGHT** arrow key until the display shows:

```
Nonportable Mode
➡RS232 SERIAL
```

e) Press **EXIT** twice. The display shows:

```
  RS232 Serial
```

The M3000 is setup for RS-232 Serial operation and ready to send bar code data to the host computer.

3. Scan a bar code label. The M3000 beeps to signal a good read. Data from the input device is sent to the host computer.

NOTE: During RS232 Serial operation, only data from a scanning device is sent to the computer. The M3000 does not send out data entered on the keypad by default, but can be enabled by using the Wedge Kypad option in setup.

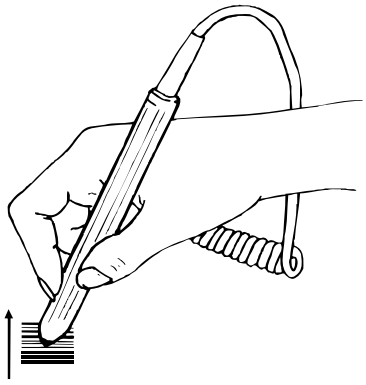
Scanning Bar Codes

Wand Scanning

1. HOLD THE WAND LIKE A PENCIL, tilted at an angle of 10^{o} to 30^{o} from vertical.
2. TOUCH the wand tip to the WHITE SPACE before the label.
3. Move the wand QUICKLY across the label as if you were drawing a straight line through the middle of it.

4. Begin and end your stroke in the WHITE SPACE. Maintain a smooth, even stroke while scanning. You can read labels bi-directionally (either left-to-right or right-to-left).

5. If you scanned the label correctly, you will hear a short BEEP.



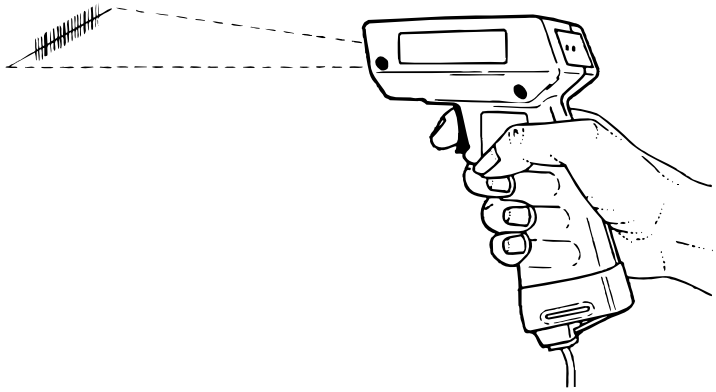
Scanning with Trigger Type Lasers

CAUTION:	ALTHOUGH THE LIGHT EMITTED FROM CLASS II AND CLASS IIA LASERS IS NOT CONSIDERED HAZARDOUS, AVOID STARING DIRECTLY INTO THE LIGHT BEAM. EXTENDED EXPOSURE MAY CAUSE DAMAGE TO YOUR EYES.

1. AIM the LASER at a bar code label. Hold the LASER approximately 3 to 6 inches from the label.

NOTE:	The maximum scanning distance depends on the label density. Typical scanning distances vary from 3 to 18 inches.

2. SQUEEZE the TRIGGER on the laser. The "SCAN" light on the back of the laser turns on.



Simultaneously the laser emits a thin red beam of light. The beam must cover the entire bar code label and part of the white area on both sides.

RIGHT

WRONG

NOTES:	1.	If the laser has not read the label within approximately one second, it turns off the beam. Try moving the laser closer to the bar code label and adjusting the pointing angle.
	2.	If the Laser/CCD setup **ALWAYS RUN** option is OFF, the trigger must be released between scans. See ***FUNC SETUP***.

3. After a successful read the following occurs:
   - The reader BEEPS.
   - The "DECODE" light on the back of the laser turns on.

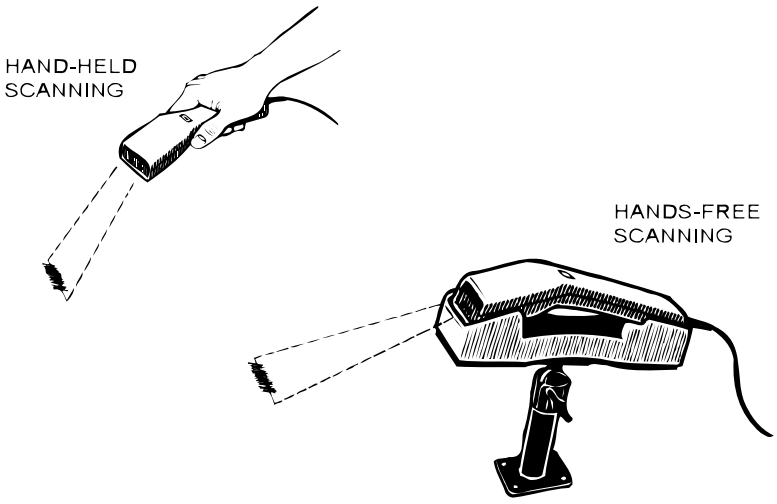
Scanning with the MS941 Triggerless Laser

The MS941 is a triggerless laser activated by a bar code or reflective object passing through its beam. It can be set in its cradle for "hands-free" operation, or held in the hand.

See the following steps for scanning instructions:

1. Point the LASER at a bar code label or, for hands-free scanning, bring the bar code to the laser beam. The distance from the MS941 laser to the bar code should be approximately 1 to 5 inches.

CAUTION: ALTHOUGH THE LIGHT EMITTED FROM CLASS II LASERS IS NOT CONSIDERED HAZARDOUS, AVOID STARING DIRECTLY INTO THE LIGHT BEAM. EXTENDED EXPOSURE MAY CAUSE DAMAGE TO YOUR EYES.



2. The laser begins scanning as soon as the bar code is brought within 5 inches of the front of the laser. The red light on the back of the LASER's handle stays on as long as it is attempting a read. The laser beam must cover the entire bar code label and part of the blank area on both sides. Examples of bar code scans are shown below:

RIGHT

WRONG

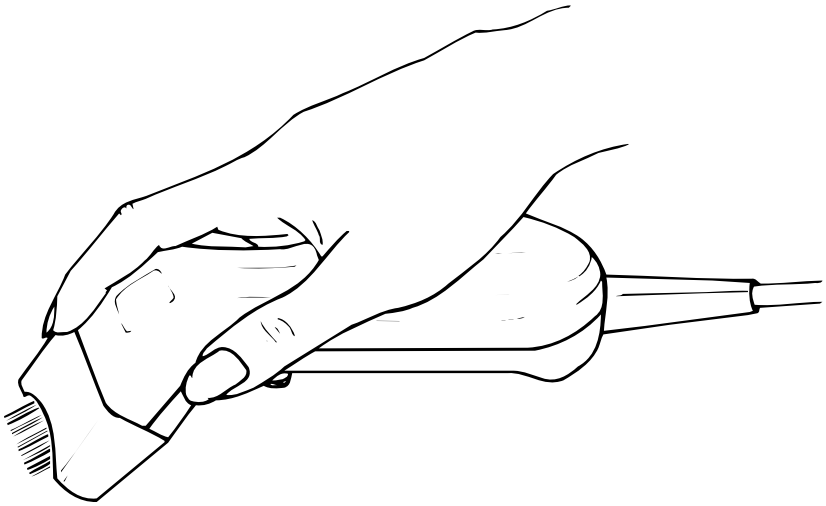
NOTES: 1. If a read does not occur immediately, try moving the laser closer to the bar code label and adjusting the pointing angle. If the reader has not read the label within the time period specified in the Laser/CCD Setup **TIMEOUT** option (the default is 1 second), it will turn off the light beam.

2. For triggerless operation, refer to "Laser/CCD Setup **ALWAYS RUN** and Laser/CCD Setup **TRIGGER OFF**" options.

3. After a successful read the following occurs:
   - The decoder BEEPS.
   - The red light on the back of the laser turns off.

CCD Scanning

1. Place the CCD scanner on the label or close to it (within one inch). Make sure the bar code label fits completely within the frame of the CCD opening.



2. PRESS the button on the CCD scanner.

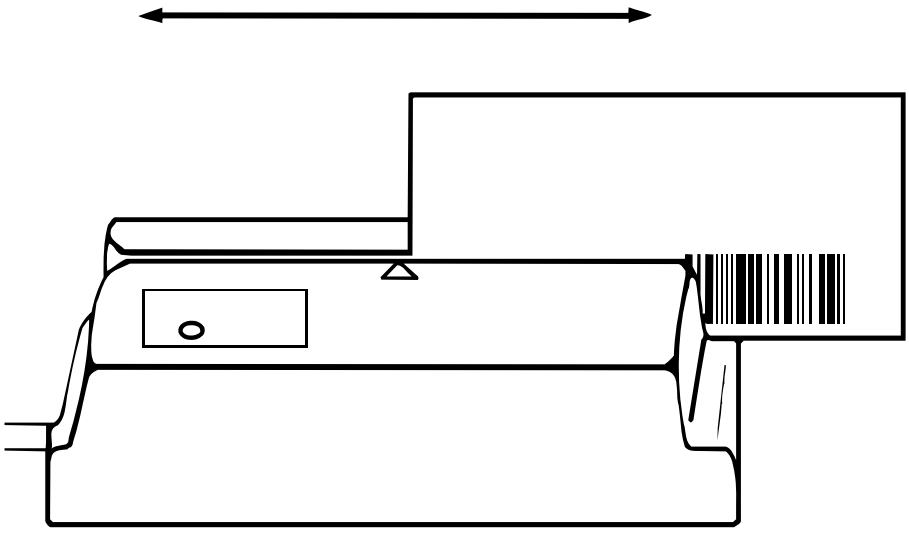
NOTES: 1. If a read does not occur immediately, try moving the CCD closer to the bar code label and adjusting the pointing angle. If the reader has not read the label within the time period specified in the Laser/CCD Setup **TIMEOUT** option (the default is 1 second), it will turn off the light beam.

2. For triggerless operation, refer to "Laser/CCD Setup **ALWAYS RUN** and Laser/CCD Setup **TRIGGER OFF**" options.

3. After a successful read the following occurs the reader BEEPS.

Slot Reader (Badge Reader)

1. Hold the CARD so that the bar code label is on the bottom and FACES the ARROW on the slot reader.



2. Insert the CARD into the opening on either side of the reader.
3. Holding the CARD flat against the bottom of the reader, SLIDE the card through the opening. You can slide the CARD bi-directionally (either left-to-right or right-to-left). The CARD must maintain contact with the base of the reader while scanning.

NOTE: The center of the bar code must be positioned 0.5" from the bottom edge of the card.

4. After a successful read the reader BEEPS.

5Programming

Introduction to Programming

The M3000 Program Generator allows you to create and edit programs that prompt the operator for input during data collection.

While you are learning the M3000 programming options, don't worry about selecting a wrong input. You can always edit or delete a program if it is not exactly what you want. The M3000 has been designed so that you cannot make a fatal programming error.

The **Programming Form** and **Sample Program** located after the ***Appendix*** will assist you in the design and planning of new programs, and in the editing of built-in programs. Proper planning is the key to trouble-free program design. Once you learn more about the programming options, you will want to edit program files to meet your specific needs.

You cannot edit certain inputs of a program if the program has existing data files. The M3000 prevents the modification of the following options if the program has one or more data files:

Program Name	**Input Maximum Size**
Header Input	**Input Minimum Size**
Input Type	**Input Required**
Stamp Commands	**Input Mask**

The following information explains how to select a program, exit a program, select inputs for the start of a program, and define inputs for each program record. A programming tutorial follows the detailed explanations of program parameters.

Selecting Existing Programs

The M3000 is shipped with 6 built-in programs in Read Only Memory (ROM). To use a program you must first load that program into Random Access Memory (RAM). Built-in program P2 is used frequently by M3000 users for inventory data collection. It has a part number input that is displayed as P/N, and, it has a quantity input that is displayed as Qty. To load a built-in program into RAM:

Press **PROG**. The display prompts:

```
Enter Password
```

The programming password is M3000P.

1. Enter **"M3000P"**. Then press **ENTER.** This is a fixed password and cannot be changed. The M3000 does not show you passwords as you enter them. If you make a mistake entering the password, the display prompts:

   ```
   INVALID PASSWORD
   Press Any Key
   ```

   After entering the correct password the display shows:

```
Edit Program
>*New Program*
```

2. Press the down arrow to view a list of available programs. As you continue to press the down arrow, program names appear on the display.

NOTE: Program names appear in the order of creation, or the order in which they were copied from ROM into RAM. The names of built-in programs in ROM are preceded by an * (asterisk). When you copy a program into RAM, the asterisk is removed from the program name. If you have already loaded P2 from the ***Quick Start Chapter***, select the RAM copy of P2 which is not preceded by an *.

To select built-in program P2, press an up or down arrow until the display shows:

```
Edit Program
>*Pgm P2
```

and press **ENTER**. The display shows:

```
Copying Program
P2 To RAM
```

After the program has been copied to RAM, the display shows:

```
Program Name
P2
```

At this point you can begin editing the program.

Erasing a Program

To erase a program press **FUNCT** + **ERASE** while the program name is shown on the display. For example, after you load program P2 the display shows:

```
Program Name
P2
```

To erase program P2 press **FUNCT** then **ERASE.** The M3000 prompts:

```
Erase File?
```

Press **YES** and the M3000 prompts:

```
Erase P2
Are You Sure?
```

Press **YES** again to confirm that you want to erase program P2. The M3000 displays:

```
File P2
Has Been Erased
```

Exiting a Program

To return to the **Portable Mode Select Function** display:

1. Press **EXIT** to leave the programming function. The display shows:

```
Exit Program
Entry?
```

2. Press **YES**. The M3000 will verify the program you have created and display an error message if any of the following have occurred:
   - no inputs have been defined for the program
   - no operator inputs have been defined for the program
   - a loop has been created with no operator input.

3. If you have just created a new program, the M3000 display prompts:

```
Save New
Program?
```

4. Press **YES**. The display shows:

```
Edit Program
>*New Program*
```

5. Press **EXIT.** The display shows:

```
 Portable Mode
Select Function
```

Programming Tutorial

The information that follows explains the step-by-step procedures used to develop a practical inventory program. This sample program uses many of the powerful, and some of the less obvious features, that are built into the M3000, and is designed to be used with DOS on a PC. When a data file created by this program is transmitted in the **Keyboard Wedge Mode**, or the **RS232 Serial Mode** using ***SOFTCOM*** keyboard emulation software, the Start of File Text outputs a DOS C: prompt and carriage return. The DOS Copy Con command creates a file named "datafile.dat". A final carriage return follows the file name.

To ensure that ***SOFTCOM*** properly translates control codes from this program, make sure the following settings have been made to the ***SOFTCOM*** using the ***SCONFIG.EXE*** Program:

Function Keys: Use Both
Special Keys: Use Both

Other ***SOFTCOM*** settings must match the settings of your M3000's Transmit Setup.

While using this tutorial, we recommend you refer to ***Sample Program Chart*** following the ***Appendix***. This chart outlines and summarizes the program you are about to create, and will help you follow your progress through the creation of the program.

The name of this program is "EXAMPLE". "EXAMPLE" consists of 5 input definition sequences. Of these five input definition sequences one is a Header, the remaining four are Record Inputs that combine to create a loop.

Header:	**User ID**	
Record Inputs:	**Item #**	
	Qty	
	LOC	
	MM/DD/YY HH:MM	Date /Time Stamp (automatic input that the operator does not see)

Creating/Naming the Program File

```
Enter Password
```

1. Press **PROG** or (**FUNC** + **PROG** when at any display other than the **Portable Mode Select Function** display**)** to enter the programming mode.

   Enter "**M3000P"** and then press the **ENTER** key. The M3000 does not display passwords as you enter them. This is a fixed password and cannot be changed.

   After entering the correct password the display shows:

   ```
   Edit Program
   >*New Program*
   ```

2. Press the **ENTER** key to create a new program file. The display shows:

   ```
   Program Name
   ```

3. Enter the name of the new program, "**EXAMPLE**", and press the **ENTER** key.

SOF (Start of File) Parameters

```
SOF Text
SOF Delay 0
```

1. At the **SOF Text** prompt, enter **"C: /0D COPY CON DATAFILE.DAT /0D"** and press the **ENTER** key.
2. At the **SOF Delay** prompt, enter **"0"** and press the **ENTER** key.

EOF (End of File) Parameters

```
EOF Text
EOF Delay 0
```

1. At the **EOF Text** prompt, enter **"/F6 /0D"**.
2. At the **EOF Delay** prompt, enter **"0"** and press the **ENTER** key.

Use Receive Data Files Only?

```
Use Receive Data
Files Only? N
```

Press the **ENTER** key to use any data file.

Input Definition # 1 (User ID)

```
1 Header Input?N
New Screen? Y
```

Next you will enter the Header Input Definition.

1. Press **Y** or **YES** to create a Header Input Definition.
2. Press **Y** or **YES** to create a new screen.

Input Type

```
Input Type
D,S,Y,E or N: D
```

Press the **ENTER** key to accept the default Input Type, **D**.

Prompt

```
Prompt
```

Enter **"USER ID"** plus 10 spaces and press the **ENTER** key.

Comment:
Spaces are padded after the prompt to force the input data onto Row 1.

Screen Positioning

```
Str Row 0 Col 0
End Row 1 Col 15
```

1. Press the **ENTER** key to accept the **"0"** default value for **Str Row**.
2. Press the **ENTER** key to accept the **"0"** default value for Start **Col**.
3. Press the **ENTER** key to accept the **"1"** default value for **End Row.**
4. Press the **ENTER** key to accept the **"15"** default value for the End **Col.**

Comment:
These specifications allocate the entire area of Rows 0 and 1 to the **User ID** Input.

Input Size

```
   Input Size
Max 250  Min 1
```

1. Enter **"9"** for the maximum input character field size.
2. Enter **"9"** for the minimum input character field size.

Comment:
This setting forces the entry of exactly 9 characters into the **User ID** Input.

Input Controls

```
Require Input? Y
Auto Advance? Y
```

1. Press the **ENTER** key to accept the default value of **Yes** and require input at the **User ID** Input.
2. Press **N** or **NO** to turn off auto advance.

Display Pattern

```
Display Pattern
```

Press the **SHIFT** key, then enter the **Display Pattern** "_ _ _ - _ _ -_ _ _ _" and press the **ENTER** key. These characters will display on Row 1 below the **User ID** prompt and are used as a template for the User ID input data.

Input Mask

```
Input Mask
A
```

Enter the **Input Mask** characters "**NNNFNNF**" and press the **ENTER** key.

Comment:
This **Input Mask** designates that the 4th and 7th characters of the **Display Pattern** are fixed on the display, are not overwritten by input data, and are not included during file transmission. All other characters of the **Display Pattern** can be overwritten and are numeric.

Upper Case?

```
Shift Input Data
To Upper Case? N
```

Press the **ENTER** key to accept the default value of **NO**, and accept the data in the case the user enters.

Input Source

```
Input Source
K,B,S or X: B
```

Press **K** to accept only keyboard input data.

Default Data

```
Default Data
_
```

Press the **ENTER** key to bypass the entry of default data.

Lookup Tbl/File

```
Lookup Tbl/File
```

Press the **ENTER** key to bypass the use of lookup tables, or files.

Enable Input Transmit

```
Enable Input
Transmit? Y
```

Press the **ENTER** key to enable the transmission of input data.

Output Formatting

```
Output Format
V,L or R: V
```

Press the **ENTER** key to accept the default value of **V** for variable length output during file transmission.

Output Prefix

```
Prefix
Prefix Delay 0
```

1. Enter "**/22**" and press the **ENTER** key.
2. Press the **ENTER** key to accept the default value of **0 Prefix Delay**.

Comment:
Hexadecimal value /22 inserts a double quotation mark before the **User ID** Input during file transmission.

Output Suffix

```
Suffix /0D
Suffix Delay 0
```

1. Enter "**/22 /0D**" for the **Suffix** value and press the **ENTER** key.
2. Press the **ENTER** key to accept the default value of **0 Suffix Delay**.

Comment:
The hexadecimal values **/22** and **/0D** append closing double quotation marks and a carriage return after the **User ID** Input during file transmission.

The display shows:

```
*End Of Program*
Add More Inputs?
```

Press the **Y** or **YES** key to add the next Input Definition.

Input Definition # 2 (Item #)

```
2 Header Input?N
New Screen? Y
```

Next you will enter the Header Input Definition.

1. Press the **ENTER** key to accept the default value of no header.
2. Press **Y** or **YES** to create a new screen.

Input Type

```
Input Type
D,S,Y,E or N: D
```

Press the **ENTER** key to accept the default Input Type, **D**.

Prompt

```
Prompt
```

Enter **"Item # "** plus 1 space and press the **ENTER** key.

Screen Positioning

```
Str Row 0 Col 0
End Row 1 Col 15
```

1. Press the **ENTER** key to accept the **"0"** default value for **Str Row**.
2. Press the **ENTER** key to accept the **"0"** default value for Start **Col**.
3. Enter **"0"** to set the value for **End Row.**
4. Press the **ENTER** key to accept the **"15"** default value for the End **Col.**

Comment:
These specifications allocate the entire area of Row 0 to the **Item #** Input.

Input Size

```
   Input Size
Max 250  Min 1
```

1. Enter **"20"** for the maximum input character field size.
2. Enter **"8"** for the minimum input character field size.

Comment:
This setting allows the entry of from 8 to 20 characters into the **Item #** Input.

Input Controls

```
Require Input? Y
Auto Advance? Y
```

1. Press the **ENTER** key to accept the default value of **Yes** and require input at the **Item #** Input.
2. Press **Y** or **YES** to accept the default and force the input to automatically advance when the input maximum size has been reached.

Display Pattern

```
Display Pattern

```

1. Press the **SHIFT** key, then enter the **Display Pattern** "_ _ _ _ _ _ _ _" and press the **ENTER** key. These characters will display on Row 0 following the **Item #** prompt and are used as a template for the **Item #** input data.

Input Mask

```
Input Mask
A
```

Enter the **Input Mask** character **A** and press the **ENTER** key.

Comment:
This **Input Mask** accepts only alphanumeric characters. The **Display Pattern** can be overwritten and is not transmitted during file transmission.

Upper Case?

```
Shift Input Data
To Upper Case? N
```

Enter **Y** or **YES** to shift all input data to Upper Case.

Input Source

```
Input Source
K B,S or X: B
```

Press the **ENTER** key to accept the default value of **B** and accept both keyboard and Bar Code inputs.

Bar Code Types

```
Bar Code Types
X
```

Enter "**ABC**" and press the **ENTER** key to accept Code 39, UPC-A, and UPC-E Bar Codes for this input.

Bar Code Append

```
Bar Code
Append? N
```

Press the **ENTER** key to accept the default value of **N** or **NO** and disable **Bar Code Append**.

Bar Code Advance

```
Bar Code Auto
Advance? Y
```

Press the **ENTER** key to accept the default value of **Y** or **YES** and allow the program to automatically advance to the next input on a good read.

Allow Duplicate Inputs?

```
Allow Duplicate
Inputs? Y
```

Press **N** or **NO** to prevent the inputting of duplicate **Item #** inputs. Press the **ENTER** key to bypass **Default Data**.

Default Data

```
Default Data
_
```

Press the **ENTER** key to bypass the entry of default data.

Output Formatting

```
Output Format
V,L or R: V
```

Press "**L**" to specify Left justified, space filled output during file transmission.

Output Prefix

```
Prefix
Prefix Delay 0
```

1. Enter **"/22"** and press the **ENTER** key.
2. Press the **ENTER** key to accept the default value of **0 Prefix Delay**.

   Comment:
   Hexadecimal value /22 inserts a double quotation mark before the **Item #** Input during file transmission.

Output Suffix

```
Suffix /0D
Suffix Delay 0
```

1. Enter **"/22 ,"** for the **Suffix** value and press the **ENTER** key.
2. Press the **ENTER** key to accept the default value of **0 Suffix Delay**.

   Comment:
   The hexadecimal value **/22** plus the **","** inserts a double quotation mark followed by a comma **","** after the **Item #** Input during file transmission.

Input Definition Numbers 3 and 4 (Qty and LOC)

```
3 Record Input
New Screen? Y
```

So far during this tutorial we have given you specific instructions as to what you must enter to create the program "EXAMPLE". We recommended you refer to ***Sample Program Chart*** following the ***Appendix*** to help you follow your progress through the creation of the program.

This is a good time for you to see how much you have learned. Input Definitions 3 and 4 are similar in structure to Input Definition 2 that you just completed.

For Input Definitions 3 and 4 you will refer to, and use the ***Sample Program Chart*** as the sole source of program input data.

Follow the M3000 prompts and enter the program input data for Input Definitions 3 and 4 from the ***Sample Program Chart*** to complete the program inputs. The ***Sample Program Chart*** provides all the data you need to complete the two input definitions, and is similar to the process you will follow later when you design your own programs using the Programming Form. If you make any mistakes you can always use the arrow keys in combination with the **DEL** and **INS** keys to correct those mistakes.

Input Definition # 5

```
5 Record Input
New Screen? Y
```

The final Input Definition is a Date/Time Stamp.

Press **Y** or **YES** to create a new screen.

Input Type

```
Input Type
D,S,Y,E or N: D
```

Press **S** to create a Date/Time Stamp.

Stamp Commands

```
Stamp Commands
```

Enter "**M//D//Y H:I**" and press the **ENTER** key to produce a date/time stamp in the following format:

MM/DD/YY HH:MM.

For example: one minute after Noon, on January 1, 1995 will output as:

01/01/95 12:01.

Comment:
This entry provides all the information the M3000 needs to properly format the Date/Time Stamp. During data input the program stamps each input record with the current month, day, year plus hour and minute. The stamp is not seen by the user.

Output Prefix

```
Prefix
Prefix Delay 0
```

1. Enter "**/22**" and press the **ENTER** key.
2. Press the **ENTER** key to accept the default value of **0 Prefix Delay**.

Comment:
The hexadecimal value **/22** inserts a double quotation mark before the **Date/Time Stamp** Input during file transmission.

Output Suffix

```
Suffix /0D
Suffix Delay 0
```

1. Enter **"/22/0D"** for the **Suffix** value and press the **ENTER** key.
2. Press the **ENTER** key to accept the default value of **0 Suffix Delay**.

Comment:
The hexadecimal values **/22/0D** insert a double quotation mark followed by a carriage return after the **Date/Time Stamp** Input during file transmission.

End of Program

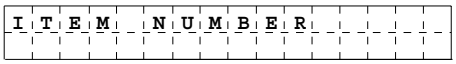
```
*End of Program*
Add More Inputs?
```

1. Press the **EXIT** key followed by **Y** or **YES** to exit program entry.
2. Press **Y** or **YES** to **Save New Program** and press the **EXIT** key again to return to the **Portable Mode Select Function** display.

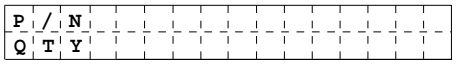
Summary of Built-in Programs

Six Programs are preprogrammed into the M3000 for data collection. If you choose to use any of these six programs, refer to ***Programming***, ***Loading an Existing Program*** earlier in this chapter for instructions on loading programs into RAM. The display and detailed input field requirements for each program are shown below.

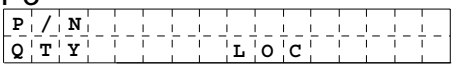
P1



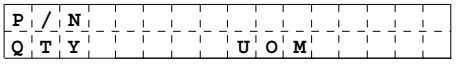
P2



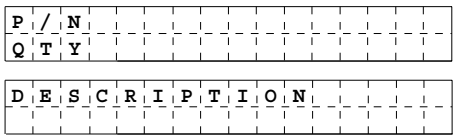
P3



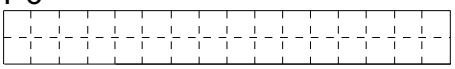
P4



P5



P6



Field Requirements for Sample Programs

ITEM NUMBER

- Alphanumeric data accepted
- 250 maximum character capacity
- 1 minimum character capacity
- Data can by entered by keyboard or bar code scan
- All bar code types are accepted
- Input is required
- The **ENTER** key must be pressed if fewer than 250 characters are entered
- Input field automatically advances after bar code scan

P/N

- Alphanumeric data accepted
- 250 maximum character capacity
- 1 minimum character capacity
- Data can by entered by keyboard or bar code scan
- All bar code types are accepted
- Input is required
- The **ENTER** key must be pressed if fewer than 250 characters are entered
- Input field automatically advances after bar code scan

QTY

- All numeric data accepted
- 250 maximum character capacity
- 1 minimum character capacity
- Data can by entered by keyboard or bar code scan
- All bar code types are accepted
- Input is required
- The **ENTER** key must be pressed if fewer than 250 characters are entered
- Input field automatically advances after bar code scan

LOC (Location)

- Alphanumeric data accepted
- 250 maximum character capacity
- 1 minimum character capacity
- Data can by entered by keyboard or bar code scan
- All bar code types are accepted
- Input is required
- The **ENTER** key must be pressed if fewer than 250 characters are entered
- Input field automatically advances after bar code scan
- Input automatically defaults to the last entry in this field from the previous record.

UOM (Unit of Measure)

- All numeric data accepted
- 250 maximum character capacity
- 1 minimum character capacity
- Data can by entered by keyboard or bar code scan
- All bar code types are accepted
- Input is required
- The **ENTER** key must be pressed if fewer than 250 characters are entered
- Input field automatically advances after bar code scan
- Input automatically defaults to the last entry in this field from the previous record.

DESCRIPTION

- Alphanumeric data accepted
- 250 maximum character capacity
- 1 minimum character capacity
- Data can by entered by keyboard or bar code scan
- All bar code types are accepted
- Input is required
- The **ENTER** key must be pressed if fewer than 250 characters are entered
- Input field automatically advances after bar code scan

*P6 (No Prompt)

- Alphanumeric data accepted
- 250 maximum character capacity
- 1 minimum character capacity
- Data can by entered by keyboard or bar code scan
- All bar code types are accepted
- Input is required
- The **ENTER** key must be pressed if fewer than 250 characters are entered
- Input field automatically advances after bar code scan

Programming Prompts - Start of Program

The M3000 prompts you through each step while creating a new program or editing an existing program. The first group of inputs are only at the beginning of a M3000 program. These inputs specify how the data files will be transmitted. The following information describes the field requirements for each input parameter available at the beginning of a M3000 program and include:

- Program Name
- SOF Text
- SOF Delay
- EOF Text
- EOF Delay
- Use Receive Data Files Only
- Allow Append to End of File

Creating a New Program

To create a new program:

1. Press **PROG**. The display prompts:

```
Enter Password
```

The programming password is M3000P. This is a fixed password and cannot be changed.

Enter **"M3000P"**. Then press the **ENTER** key. The M3000 does not show passwords as you enter them. When you make a mistake entering the password, the display prompts:

```
INVALID PASSWORD
 Press Any Key
```

After entering the correct password the display shows:

```
Edit Program
>*New Program*
```

2. Press **ENTER**. The display shows:

```
Program Name
```

3. Enter the name of the new program. The program name can be from 1 to 8 characters long.

Program Name - Program filename. Enter the name you want assigned to this program.

Field Requirements:

- Program Name required
- 1 to 8 characters allowed
- alpha and numeric data is accepted

NOTE: All alpha characters are shifted to upper case. Duplicate program names are not allowed. The M3000 allows a maximum of 250 programs.

SOF Text

The start of file text can be any text or special characters that you want transmitted before each data file is transmitted. This string of text or special characters can be used to send commands to your computer so it will be ready for the data record transmission.

Field Requirements:

- SOF Text is not required
- 0 to 250 characters allowed
- alpha, numeric, and all other ASCII characters are accepted

NOTE: Any ASCII character may be input by a 3 character sequence of "/nn" (/nn is the HEX value of the character). Since a / is the start of any HEX value, you must type "//" to output a slash. PC function keys may be defined as /F0 through /F9. Function key F10 is defined as /F0. Refer to ***Appendix K*** *and* ***L*** for Special Character values.

SOF Delay

The start of file text transmit delay defines the amount of time delay that is inserted between each character of the **SOF Text** during file transmission. This is used to slow down the data output rate so that the M3000 does not generate a data overrun on the host computer during transmission, especially when transmitting data by keyboard wedge. The time delay is in tenths of a second (0.0 - 9.9 seconds). Most systems do not need an SOF Delay.

Field Requirements:

- SOF Delay is required
- 1 to 2 characters allowed
- numeric data accepted (0-99)

EOF Text

The end of file text can be any text or special characters that you want transmitted after each data file is transmitted. This string of text or special characters can be used to send commands to your computer to exit your receiving program after data record transmission.

Field Requirements:

- EOF Text is not required
- 1 to 250 characters allowed
- alpha, numeric, and all other ASCII characters are accepted

NOTE: Any ASCII character may be input by a 3 character sequence of "/nn" (/nn is the HEX value of the character). Since a / is the start of any HEX value, you must type "//" to output a slash. PC function keys may be defined as /F0 through /F9. Function key F10 is defined as /F0. Refer to ***Appendix K*** *and* ***L*** for Special Character values.

EOF Delay

The end of file text transmit delay defines the amount of time delay that is inserted between each character of the **EOF Text** during file transmission. This is used to slow down the data output rate so the M3000 does not generate a data overrun on the host computer during transmission, especially when transmitting data by keyboard wedge. The time delay is in tenths of a second (0.0 - 9.9 seconds). Most systems do not need an EOF Delay.

Field Requirements:

- EOF Delay is required
- 1 to 2 characters allowed
- numeric data accepted (0-99)

Use Receive Data Files Only?

You can choose to use **Received Data Files Only**. For more information on this advanced feature, refer to ***Chapter 8, Advanced Operations***.

Allow Append to End of File?

You can choose to append data to the end of received data files. For more information on this advanced feature, refer to ***Chapter 8, Advanced Operations***.

Programming Prompts - Input Definition Sequence

The M3000 Input Definition Sequence can define two categories of inputs:

1. **Header Inputs** - A Header Input is one that occurs **ONLY** at the beginning of data entry and is not part of a loop. As long as you respond by entering **Y** or **YES**, the M3000 creates new Header Inputs. When you respond by entering **N** or **NO** to the Header Input prompt, the M3000 defines all subsequent Input Definitions as Record Inputs.
2. **Record Inputs** - A Record Input is all or part of a loop structure that will repeat itself and continuously prompt for data.

NOTE:	Once this input has been answered **NO**, all subsequent input definitions display: **RECORD INPUT** instead of prompting for **Header Input**.

The following procedure explains the steps used to create an Input definition Sequence.

For Example:	Suppose you want to create a program that prompts you for **User ID**, does a MM/DD/YY **Date Stamp** and then loops on **ITEM** and **QUANTITY**. Since the **User ID** and the **Date Stamp** are not part of a loop, they are **Header Inputs**. The **ITEM** and **QUANTITY** inputs are part of a **Record Loop** and are therefore called **Record Inputs**. Note that **Header Inputs** can only occur before a loop and not after.

Header Input?

A Header Input is one that occurs **ONLY** at the beginning of data entry and is not part of a loop and can be selected by entering **Y** or **YES**.

A Record Input is all or part of a loop structure that will repeat itself and continuously prompt for data, and can be selected by entering **N** or **NO.**

NOTE:	Once this input has been answered **NO**, all subsequent input definitions display: **RECORD INPUT** instead of prompting for **Header Input**.

Field Requirements: **YES** or **NO** (Y or N) input required.

New Screen?

A screen is defined as one or more inputs that are shown at the same time on the M3000's two row by sixteen column display. Since it is possible to have more than one input per screen, the program must designate whether the input is displayed on a new screen or not. To place the new input definition on a screen by itself press **Y** or **YES**. If you want the input to be on a screen with any previously defined inputs, press **N** or **NO**.

Field Requirements: **YES** or **NO** (Y or N) input required.

Input Type

This defines the type of entry the M3000 requires for input during data entry.
The allowable Input Types are:

D	**Data Input**	-	requires standard data input from the keyboard or scanning device.
S	**Stamp Input**	-	records date & time information from the M3000's internal realtime clock without the requirement for operator input.
Y	**YES/NO**	-	requires **Y** or **YES**, **N** or **NO** response from the user during input.
E	**Exhibit**	-	displays only a prompt (does not perform data input)
N	**No Edit**	-	data can be entered one time only, and once entered cannot be edited, otherwise it is the same as a **Data Input**.

Field Requirements: Input of a **D**, **S**, **Y**, **E,** or **N** is required.

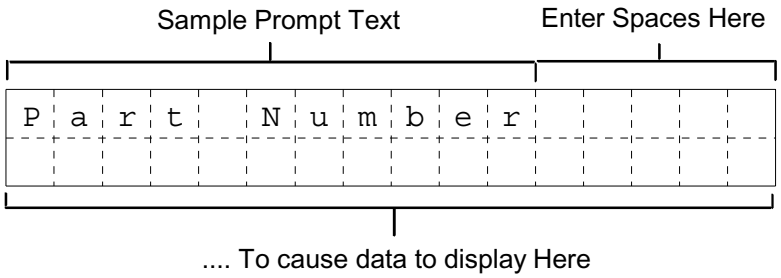
NOTE: If "Input Type" is set to 'N' and, "Use Receive Data Files Only" is set to 'Y', and "Auto Advance" is set to 'Y' then the cursor automatically advances past any imported data and stops in the next input that requires user input.

Prompt

The prompt is a sequence of characters that is displayed to identify an input, so the operator knows what data is required. The data entry window follows immediately after the Prompt. Place a space at the end of a Prompt to separate the Prompt from the data collection window.

If you want a Prompt on the top line and the data entry on the bottom line, add spaces to the end of the Prompt until there is a total of sixteen Prompt characters as shown in the following example. You will be prompted to enter a prompt only if the **Input Type** is **D**, **Y, or N**.

Enter Spaces after prompt text to force input data to the next row



Field Requirements:

- 0 to 31 characters allowed
- alpha, numeric, and all other ASCII characters are accepted

NOTE: Any ASCII character may be input by a 3 character sequence of "/nn" (/nn is the HEX value of the character). Since a / is the start of any HEX value, you must type "//" to output a slash. Refer to ***Appendix K*** for Special Character values.

Stamp Commands

Date and Time Stamp inputs embed commands in the program which read selected information from the system clock/calendar into the data file. The data file is imprinted with the information from the clock when the data is first collected. When reviewing data, the data file will not be re-stamped. The date and time stamp input cannot be edited during data collection and is entirely transparent to the operator running this program. Additional characters can be intermixed with the Stamp Commands to provide formatted

output. You will be prompted to enter stamp commands only if the **Input Type** is **S**. The Stamp Commands are:

M - Month (01-12)
D - Day of Month (01-31)
Y - Year (00-99)
H - Hour (00-23)
I - Minute (00-59)
S - Second (00-59)
W - Day of Week (0-6)

NOTE: The output during transmission will be two numeric digits for all the commands except **W,** Day of Week. The Day of Week is output as one numeric digit, 0 being Sunday and 6 being Saturday.

For Example: To create a date stamp that outputs **MM/DD/YY HH:MM**, Enter **S**, as the **Input Type** and enter the following Stamp Commands:

```
Stamp Commands
M//D//Y H:I
```

Field Requirements:

- Stamp Commands are not required
- 0 to 31 characters allowed

Exhibit Text

This is a sequence of characters that is displayed on the screen only and does no user input. Enter the text to be displayed. You will be prompted to enter **Exhibit Text**, only if the **Input Type** is **E**.

Field Requirements:

- Exhibit Text is not required
- 0 to 31 characters allowed
- alpha, numeric, and all other ASCII characters are accepted

NOTE: Any ASCII control character may be input by a 3 character sequence of "/nn" (/nn is the HEX value of the character). Since a / is the start of any HEX value, you must type "//" to output a slash. Refer to ***Appendix K*** for Special Character values.

Screen Usage Parameters

The following four parameters specify the portion of the screen used by the current input definition. These parameters must be defined when using a Data Input, Yes/No Input, or Exhibit Text.

NOTE: The M3000 prevents the operator from specifying a starting position greater than the ending position. If the prompt text is greater than or equal to the window defined, the M3000 displays only part of the prompt and allows one space for the input window.

Str Row

Start row defines whether the first displayed character of the Input Prompt and data entry window is displayed on Row 0 or Row 1. Row 0 is the top line of the two row display, and Row 1 is the bottom line of the two row display.

Field Requirements:

- Str Row is required
- numeric data accepted (0-1)

Str Col

Start column defines the column location on the Start Row, of the first displayed character of the Input Prompt and data entry window. The M3000 display uses 16 columns, numbered 0 to 15.

Field Requirements:

- Str Col is required
- numeric data accepted (0-15)

End Row

End Row defines whether the last displayed character of the Input Prompt and data entry window is displayed on Row 0 or Row 1. Row 0 is the top line of the two row display, and Row 1 is the bottom line of the two row display.

Field Requirements:

- End Row is required
- numeric data accepted (0-1)

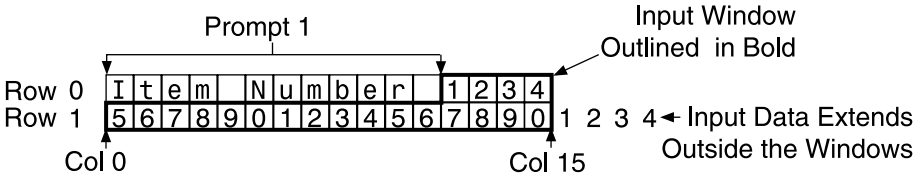
End Col

End column defines the column location on the End Row, of the last displayed character of the Input Prompt and data entry window. The M3000 display uses 16 columns, numbered 0 to 15.

Field Requirements:

- End Col is required
- numeric data accepted (0-15)

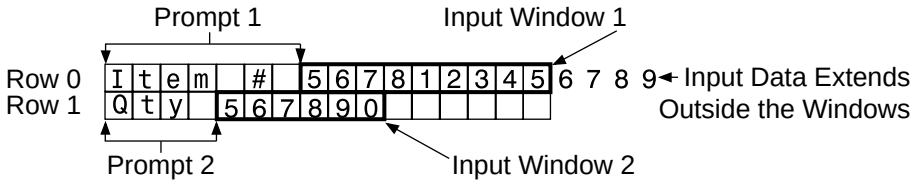
Single Input Using Entire Display



Screen Specifications:
Prompt 1 = "Item Number" + Blank Space
New Screen = Yes
Str Row = 0 Str Col = 0
End Row = 0 End Col = 15

Note: Use the Left and Right Arrow Keys to scroll Input Data across the Input Window.

Two Inputs on One Screen

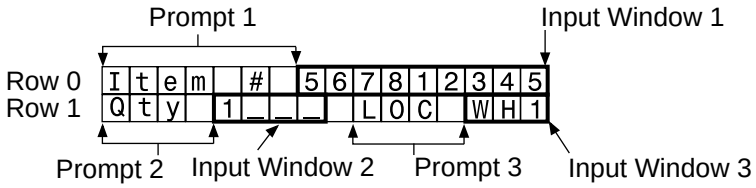


Screen Specifications:
Prompt 1 = "Item #" + Blank Space
New Screen = Yes
Str Row = 0 Str Col = 0
End Row = 0 End Col = 15

Prompt 2 = "Qty" + Blank Space
New Screen = No
Str Row = 1 Str Col = 0
End Row = 1 End Col = 9

Note: Use the Left and Right Arrow Keys to scroll Input Data across the Input Window.

Three Inputs on One Screen



Screen Specifications:
Prompt 1 = "Item #" + Blank Space
New Screen = Yes
Str Row = 0 Str Col = 0
End Row = 0 End Col = 15

Prompt 2 = "Qty" + Blank Space
New Screen = No
Str Row = 1 Str Col = 0
End Row = 1 End Col = 7

Prompt 3 = "LOC" + Blank Space
New Screen = No
Str Row = 1 Str Col = 9
End Row = 1 End Col =15

Note: Use the Left and Right Arrow Keys to scroll Input Data across the Input Window.

Data Input Parameters

The parameters that follow establish the acceptable ranges of data input for the current field. These parameters include:

Input Size Max?
Require Input?
Display Pattern
Shift Input Data to Upper Case?
Bar Code Types
Default Data
Lookup Tbl/File
Input Size Min?
Auto Advance?
Input Mask
Input Source
Bar Code Auto Advance
Bar Code Append

Input Size Max

Input Size Max specifies the maximum number of characters that can be entered into this field while collecting data. It is a 3 digit field, 0 - 250 characters in length.

Field Requirements:

- maximum input size must be specified
- 3 digit field
- valid input size, 0-250 characters in length.

NOTE: The M3000 will prevent the operator from specifying a maximum input size less than the minimum input size.

Input Size Min

Input Size Min specifies the minimum number of characters that can be entered into this field while collecting data. It is a 3 digit field, 0 - 250 characters in length.

Field Requirements:

- minimum input size must be specified
- 3 digit field
- valid input size, 0-250 characters in length.

NOTE: The M3000 will prevent the operator from specifying a minimum input size greater than the maximum input size.

Require Input?

Some inputs such as a quantity field, can require the operator to enter data before advancing to the next input. Other inputs, such as a description field, can be optional. If you want the input field to require data, enter **Y** or **YES**, otherwise enter **N** or **NO**.

Field Requirements: **YES** or **NO** (**Y** or **N**) input required

NOTE: If the **Require Input** is **Y**, the minimum size of the input must be satisfied before advancing to the next input.

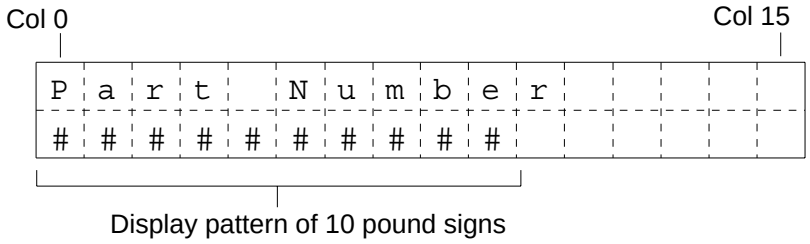
Auto Advance?

Sometimes you may want an input to advance to the next input without requiring the operator to press the **ENTER** key. If you want this input to automatically advance to the next field when the **Input Size Max** has been reached, enter **Y.**

Field Requirements: **YES** or **NO** (**Y** or **N**) input required

Display Pattern

Use this option when fill-in-the-blank inputs are required. When used with an **Input Mask** you can specify whether display characters in the data entry window are overwritten during data entry, or fixed and therefore not overwritten. For example, if you have a ten digit part number and you want the pound sign # displayed in the Part Number Window, enter 10 pound signs (**SHIFT O**) as the display pattern. Control characters entered in a display pattern, are displayed as solid boxes.



Field Requirements:

- a DISPLAY PATTERN is not required
- 0 to 32 characters allowed
- alpha, numeric, and all other ASCII characters are accepted

NOTE: Any ASCII character may be input by a 3 character sequence of "/nn" (/nn is the HEX value of the character). Since a / is the start of any HEX value, you must type "//" to output a slash. Refer to ***Appendix K*** for Special Character values.

Input Mask

Input Mask defines what type of characters are allowed during data entry, and also defines the usage of the **Display Pattern** if one is being used. Use the "FIXED" and "INCLUDE" mask characters in conjunction with the **Display Pattern** to indicate **Display Pattern** characters which will not be overwritten. The characters specified in the **Input Mask** as INCLUDE will be included with the data during transmission. The characters specified as FIXED will not be included with the data during transmission. Note that the last **Input Mask** character specified (**A**, **N**, or **D** only) validates all remaining characters during data entry .

Mask Characters:

A - Alphanumeric (HEX 20H-7EH)
N - Numeric (0-9)
D - Decimal (0-9,+,-,.)
F - Fixed (the DISPLAY PATTERN character is FIXED)
I - Include (the DISPLAY PATTERN character is FIXED and is INCLUDED during transmit.)

Field Requirements:

- Input Mask is required
- 1 to 32 characters allowed

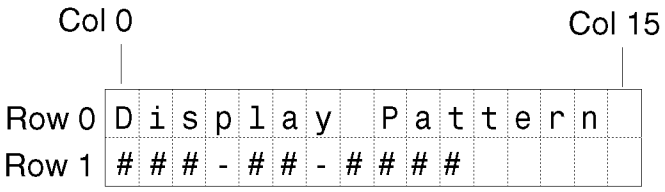
To define an entire input as alphanumeric, specify the mask character "A".

To define an alphanumeric part number in which the second character must always be numeric, specify the mask as "ANA". The second A specifies all following characters must be alphanumeric.

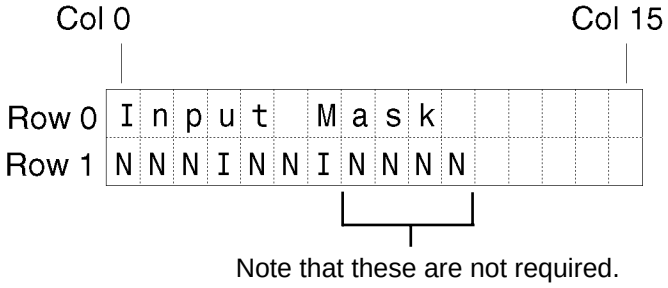
NOTE: The **Input Mask** defines the character attributes for each input character for the first 32 characters of an input. The last **Input Mask** character specified (**A**, **N**, or **D** only) validates all input characters beyond the 32nd character.

To define an all numeric part number with dashes as fixed characters, the **Input Mask** could be "NNNFNNFNNNN". The corresponding DISPLAY pattern should be used so the operator knows where to input information. This input could be ###-##-####. When the operator is collecting information, he will not be able to overwrite the dashes, the cursor actually skips over them. If you want to include the dashes during file transmission, specify an **Input Mask** of "NNNINNINNNN".

Display pattern of 10 pound signs separated by dashes



Input Mask consisting of numeric input separated by included dashes



Shift Input Data to Upper Case

This input allows the conversion of all input text to be converted to upper case. Press **"Y"** or **"YES"** to convert all input text to upper case.

Field Requirements: **YES** or **NO (Y or N)** input required.

Input Source K, B, S, or X

This input specifies the valid sources of data for the current input. Press **"K"** to accept only keyboard data, **"B"** to accept keyboard or bar code, **"S"** to accept keyboard or RS-232 serial input, or press **"X"** to accept all input types. For more information on using RS-232 serial input, refer to ***Chapter 8, Advanced Operations***.

Field Requirements: **K**, **B, S** or **X** input is required.

NOTE: Enabling RS-232 serial input reduces battery life. To achieve maximum battery performance, select RS-232 serial input only when actually needed.

Bar Code Types

This input defines an alpha character for each type of bar code allowed during data entry. To require the operator to read only Code 39 bar codes, enter **"A"** as the bar code type. To require the operator to read UPC-A, UPC-E, and Code 128, enter **"BCH"** as the bar code types.

A - Code 39	B - UPC-A
C - UPC-E	D - EAN-13
E - EAN-8	F - Interleaved 2 of 5
G - Codabar	H - Code 128
I - Code 93	J - MSI/Plessey
K - Code 11	X - ALL BAR CODE TYPES

Field Requirements:

- Bar Code Types is required
- 1 to 11 characters allowed

NOTE: This does not enable or disable any bar code decoders that have been selected in the M3000 SETUP function. This only specifies which bar codes are allowed at this input. If a bar code is scanned by the operator that is **not** an allowed Bar Code Type, the M3000 will sound **three long beeps**, display an error message, and will not accept the bar code.

Bar Code Append

Bar Code Append allows the operator to scan multiple bar codes into the current input field. The operator must press the **ENTER** key, or scan a Carriage Return (ASCII 13) bar code to advance to the next input. Scanning a Back Space (ASCII 8) bar code clears the current input field.

Field Requirements: **YES** or **NO** (**Y** or **N**) input required

Bar Code Auto Advance

This feature allows the operator to scan bar codes and advance to the next input without having to press any keys on the keyboard. When **Bar Code Auto Advance** is specified **YES** or **Y**, the M3000 appends a carriage return to the end of the bar code data. The operator must scan a valid input before the M3000 will advance to the next input.

Field Requirements: **YES** or **NO** (**Y** or **N**) input required

Allow Duplicate Inputs

This feature allows the operator to scan duplicate bar codes (ar codes having the same data) during input.

Field Requirements: **YES** or **NO** (**Y** or **N**) input required

Default Data

Default Data is a sequence of characters that appears automatically the first time an input is presented for data entry. For example, if the **Default Data** input is specified as "100", the operator sees "100" on this input for each record, and has the choice of accepting or changing the input.

By specifying the **@** as the **Input Data**, the M3000 defaults to the data or value that is in this input's previous record. Subsequent records continue to use the most recently entered data as the **Default Data** value until the operator enters a new value.

Any characters defined after the **@**, as in "**@123**", are used as the default on the first occurrence of this input. For example, if you want the operator to see "123" in this input, you would type in "**@123**". If the operator changed the characters in this input from "123" to "ABC", this input field then defaults to "ABC" for each subsequent entry. If a default from previous entry is used on the first input on a new screen, and menu option "**Auto Advance**" is set to **ON,** the M3000 will automatically advance the cursor past the default data and stop in the next input when the number of digits in the default data satisfies the input field requirements. If users need to change the default they can use the cursor keys to enter the default data field and manually input the new value.

NOTE: If you want to default using the **@** character as the first character of your default data, specify the null character "/00" as the first character of the default data field.

Field Requirements:

- Default Data is not required
- 0 to 32 maximum characters allowed
- alpha, numeric, and all other ASCII characters are accepted

NOTE: Any ASCII character may be input by a 3 character sequence of "/nn" (/nn is the HEX value of the character). Since a / is the start of any HEX value, you must type "//" to output a slash. Refer to ***Appendix K*** for Special Character values.

Auto Advance on Default Data

When you want to 'Default Data' in an input, you can force the cursor to automatically advance past the default data and stop in the next input. To force auto advance on default data: Enter a **/0D** (carriage return) after the last character of the default data.

NOTE: For this feature to be effective, the input must be defined as the first input of the display after a "New Screen" has been created.

Lookup Tbl/File

This input allows the programmer of an M3000 program to define lookup parameters for Lookup Tables, and Lookup Files. For more information on using this feature, refer to ***Chapter 8, Advanced Operations***.

Enable Input Transmit

You have the option of controlling which inputs are transmitted with a data file and which inputs are not transmitted. By default this option is set to 'Yes' and the display shows:

```
Enable Input
Transmit? Y
```

When you want the user to collect data on an input field during **FUNCTION INPUT**, but you do not want the input transmitted with the data file, change this setting to 'No'. This option can be useful on 'Description' and 'Comment' fields where the optional information is helpful to the user, but not needed by the central database. This option is also useful when using embedded header inputs.

Data Output Parameters

The following five parameters control the formatting of the output data, and specifications for control characters that are transmitted with the data file. The data output parameters include:

Enable Input Transmit	**Output Format V, L or R**
Prefix	**Prefix Delay**
Suffix	**Suffix Delay**

Output Format V,L or R

The **Output Format** defines how the data for this input will be formatted during data transmission. The output formats available are:

V Variable length format will transmit only the data entered by operator.

L Left justified will transmit the data entered by the operator followed by the number of spaces needed to create a field the size of the maximum input size that is defined for this input (i.e. left justify, space fill).

R Right justified will transmit the number of zeros needed followed by the data entered by the operator to create a field the size of the maximum input size that is defined for this input (i.e. right justify, zero fill).

Field Requirements: V, L or R is required

Prefix

Prefix is a string of characters output before the input field data during transmission. The Prefix is used to specify delimiters between inputs and also define any special keys or data that must prefix

the input's data field, and can be used to specify transmit pauses, embedded header inputs, and the data file name.

Field Requirements:

- Prefix is not required
- 0 to 32 maximum characters allowed
- alpha, numeric, and all other ASCII characters are accepted

NOTE: Any ASCII character may be input by a 3 character sequence of "/nn" (/nn is the HEX value of the character). Since a / is the start of any HEX value, you must type "//" to output a slash. Function keys may be defined as /F0 through /F9. Function key F10 is defined as /F0. Refer to ***Appendix K*** *and* ***L*** for Special Character values.

Prefix Delay

The **Prefix Delay** defines the duration of the time delay that is inserted between the transmission of each character of the **Prefix**. It is used to slow down the data output rate so the M3000 does not cause a data overrun on the host computer during transmission, especially when transmitting data by keyboard wedge. The time delay is incremented in tenths of a second. Most systems can use a **Prefix Delay** of zero (0).

Field Requirements:

- Prefix Delay is required
- 1 to 2 characters allowed
- numeric data accepted (0-9)

Suffix

The **Suffix** is a string of characters output after the input field data has been sent during data transmission. The **Suffix** is used to specify delimiters between fields and also to define any special keys or data that must follow the input data, and can be used to specify transmit pauses, embedded header inputs, and the data file name. The default suffix "/0D", outputs a Carriage Return (ASCII 13).

Field Requirements:

- Suffix is not required
- 0 to 32 characters allowed
- alpha, numeric, and all other ASCII characters are accepted

NOTE: Any ASCII character may be input by a 3 character sequence of "/nn" (/nn is the HEX value of the character). Since a / is the start of any HEX value, you must type "//" to output a slash. Function keys may be defined as /F0 through /F9. Function key F10 is defined as /F0. Refer to ***Appendix K*** *and* ***L*** for Special Character values.

Suffix Delay

The **Suffix Delay** defines the duration of the time delay that is inserted between the transmission of each character of the **Suffix**. It is used to slow down the data output rate so the M3000 does not cause a data overrun on the host computer during transmission, especially when transmitting data by keyboard wedge. The time delay is incremented in tenths of a second. Most systems can use a **Suffix Delay** of zero (0).

Field Requirements:

- Suffix Delay is required
- 1 to 2 characters allowed
- numeric data accepted (0-9)

6Setup Procedures

Introduction to Setup

The M3000 SETUP FUNCTION is used to configure all system-wide parameters such as:

- Date & Time
- Non-Portable Mode
- Keyboard Wedge
- Bar Code Reader
- Communications

The following Setup Selection charts detail the M3000 setup options. Unless otherwise indicated, defaults are marked by "*". Those defaults not marked by "*" are explained in the Description column.

Upon EXIT from FUNCTION SETUP, all parameter changes take effect and remain in effect until FUNCTION SETUP is re-entered and new changes are made. Setup parameters are not affected by shutting off the M3000. The SETUP FUNCTION parameters are crucial to M3000 operation, so SETUP can be password protected.

Changing Setup

To access Setup from the Portable mode just press **SETUP**. From Non Portable Modes, press **FUNC SETUP**. The display shows:

```
Setup Selection
>Date/Time
```

Setup options are accessed by menus. Use the following keys to move from one menu level to another, or from option to option within a menu:

Key	Function
↵	**ENTER** is used to select the current menu category.
	Up or **Down** arrows are used to move through menu categories at the current level.
	Left or **Right** arrows are used to cycle through, and select options at menu levels 3 and 4.
EXIT	Is used to return to the next higher menu level, and to leave the Setup Selection Function.

For example: To change the Serial Port Baud Rate setting from the default 9600 to 2400, press the following keys: **SETUP ↵ EXIT EXIT**

This means: Enter Setup by pressing **SETUP**, or **FUNC** then **SETUP** depending on the current menu location, followed by 3 down arrows, **ENTER**, 2 down arrows, 2 left arrows and finally 2 **EXIT** key presses.

The cursor in the lower left corner of the display also indicates which key to press. The following chart explains the meaning of the cursors that affect menus:

Cursor	Function
>	The greater than cursor is used to indicate a menu category. **ENTER**- selects the category. **Up/Down** arrows- scroll through the categories.
➡	The arrow cursor is used to indicate that the **Left/Right** arrow keys are used to scroll between options.

Anytime you enter data instead of using arrow keys to select the data, you must press **ENTER** before pressing **EXIT** or the data will not be saved.

FUNC + SETUP

Setup Selection

> Menu Level 1	➡ Menu Level 2	➡ Menu Level 3	Description (if required)
Date/Time ↵	Set Date & Time		
	01/01/92 08:00		(Use arrow keys to select digit to change and press numeric key for new value.)
Nonport. Mode ↵	Nonportable Mode	KEYBOARD WEDGE * SERIAL WEDGE RS232 SERIAL	
Keyboard Wedge ↵	Type	IBM AT * PS/2 25, 30 PS/ OTHER IBM PC/XT	
	Keybd	USA* FRENCH GERMAN ITALIAN UNIVERSAL	
	Output	SLOWEST SLOW FAST FASTEST*	
	Auto Caps	ON*/OFF	
	Caps Lock	ON*/OFF	
	Num Lock	ON/OFF*	
	Scan Set #3	ON/OFF*	
Serial Port ↵	Protocol	NONE* XON/OFF	
	Output	ASCII* PCSCAN	
	Baud Rate	300 600 1200 2400 4800 9600* 19200 38400	
	Data Bits	7 8*	
	Parity	NONE* ODD EVEN MARK	
	Stop Bits	1* 2	
	Char Delay	0ms - 99ms	Default = 1ms
	Duplex	FULL* HALF	
	Caps Lock	ON*/OFF	
	Num Lock	ON/OFF*	
	Serial Beep	ON*/OFF	

	Auto Advance	ON/OFF*	

FUNC + SETUP

Setup Selection *(Continued)*

> Menu Level 1	> Menu Level 2	➡ Menu Level 3	➡ Menu Level 4	Description (if required)
Bar Codes ↵	Code 39 ↵	Decoder	ON*/OFF	
		Full ASCII	ON/OFF*	
		Check Digit	ON/OFF*	
		Send Check	ON/OFF*	
		Concatenate	ON/OFF*	
	UPC ↵	Decoder	ON*/OFF	
		Expand UPCE	ON/OFF*	
		Expand UPCA	ON/OFF*	
		UPCA #systm	ON*/OFF	
		UPCE #systm	ON*/OFF	
		UPCA Chkdig	ON*/OFF	
		UPCE Chkdig	ON*/OFF	
	EAN ↵	Decoder	ON*/OFF	
		EAN8 Zrofil	ON/OFF*	
		EAN13 CCode	ON*/OFF	
		EAN8 CCode	ON*/OFF	
		EAN13 Chkdig	ON*/OFF	
		EAN8 Chkdig	ON*/OFF	
		ISBN # Cnvt	ON/OFF*	
	UPC/EAN Addons ↵	Decoder	ON/OFF*	
		2 Digit	ON*/OFF	
		5 Digit	ON*/OFF	
		Required	OFF*	
			UPC	
			EAN	
			BOOKLD	
			ALL	
		Send Space	ON/OFF*	
	I 2 of 5 ↵	Decoder	ON*/OFF	
		Check Digt	NONE*	
			USS	
			OPCC	
		Send Check	ON/OFF*	
		Fixed Size	ON/OFF*	
		Fixed Size 1	2-60	Fixed Size 1 default = 6
		Fixed Size 2	2-60	Fixed Size 2 default = 0
	Codabar ↵	Decoder	ON*/OFF	
		Start/Stop	ON/OFF*	
		CLSI Format	ON/OFF*	
		CLSI Chk Dig	ON/OFF*	
	Code 128 ↵	Decoder	ON*/OFF	
		UCC Verify	ON/OFF*	
		Send Mod 10	ON*/OFF	
	Code 93 ↵	Decoder	ON*/OFF	
		Concatenate	ON/OFF*	
	MSI/Plessey ↵	Decoder	ON/OFF*	
		2 Check Dig	ON/OFF*	
		Mod 11 Chk	ON/OFF*	
		Send Check 1	ON/OFF*	
		Send Check 2	ON/OFF*	
		ISBN	ON/OFF*	
	Code 11 ↵	Decoder	ON/OFF*	
		2 Check Dig	ON/OFF*	
		Send Check 1	ON/OFF*	
		Send Check 2	ON/OFF*	
	Termination Char ↵	Termination Char	NONE, TAB, CR*, LF, CR+LF,USER	
		User Term	00H - F9H	
		Override	ON/OFF*	

FUNC + SETUP

Setup Selection *(Continued)*

> Menu Level 1	> Menu Level 2	➡ Menu Level 3	➡ Menu Level 4	Description (if required)
Bar Codes *(Continued)*	Preamble ↵	Enter Preamble Send Delay	0-31 char. 0.0s - 9.9s	Default = 0
	Postamble ↵	Enter Postamble Send Delay	0-31 char. 0.0s - 9.9s	Default = 0
	Bar Code Edit ↵	Editing Lead Strip Trail Strip Space Strip Code	ON/OFF* 0 - 30, 0* 0 - 30, 0* ON/OFF* (See description) Default = ALL	Editing affects ALL Bar Code types if ON, or the Bar Code selected at the Code option, No Bar Codes are affected if Editing is OFF. Valid **Bar Codes** are: Code 39, UPC-A, UPC-E, EAN-13, EAN-8, I 2 OF 5, CODABAR, CODE 128, CODE 93, MSI, CODE 11, OR ALL.
	Bar Code Beeper ↵	Tone Length	LOW-HIGHEST & NONE SHORTEST-LONGEST	Default = MEDIUM Default = SHORT
	Laser/CCD Opts ↵	Timeout Trigger Off Always Run Read Delay	1 Sec - 9 Sec & OFF ON*/OFF ON/OFF* 1.0s - 0.9s	Default = 1 Default = 1.0
	Other Options ↵	Bar Code ID Dupli Reads F1-F10 Keys Specl Keys	ON/OFF* ON*/OFF ON/OFF* ON/OFF*	

> Menu Level 1	➡ Menu Level 2	➡ Menu Level 3	Description (if required)
Transmit Setup ↵	Data	MENU*/SEND ALL	
	Mode	MENU* KBD WEDGE SER WEDGE RS232 PORT MODEM	
	Dialing	TONE*/PULSE	
	Phone Number	(Enter Dialing Text)	Press ENTER to save dialing text.
	Protocol	NONE* XON/XOFF XMODEM	
	Output	ASCII* PCSCAN	
	Baud Rate	300 600 1200 2400 4800 9600* 19200 38400	
	Data Bits	7 or 8*	

FUNC + SETUP

Setup Selection *(Continued)*

> Menu Level 1	➡ Menu Level 2	➡ Menu Level 3	Description (if required)
Transmit Setup (*Continued*) ↵	Parity	NONE* ODD EVEN	
	Stop Bits	1* or 2	
	Char Delay	0ms - 99ms	Default = 1 ms
	Duplex	FULL */HALF	
	Modem TmOut	ON/OFF*	Default = 4 Min 15 Sec When set to "OFF" in Modem Receive mode, M3000 waits indefinitely for a call.
	Caps Lock	ON*/OFF	
	Num Lock	ON/OFF*	
	SOT Text	Not Required 0 - 250 characters	Alpha, numeric, and all other ASCII characters allowed.
	SOT Delay	0 - 9.9 seconds 1 - 2 characters allowed	Default - 0 Sec
	EOT Text	Not Required 0 - 250 characters	Alpha, numeric, and all other ASCII characters allowed.
	EOT Delay	0 - 9.9 seconds 1 - 2 characters allowed	Default - 0 Sec
Other Setup ↵	Timeout	1Min - 99 Min/OFF	Default = 5 Min
	Password	ON/OFF*	Setup Password = OK
	Auto Input	ON/OFF*	
	Auto Save	ON/OFF*	Automatically saves the data file on **EXIT**.
	View Delay	0.0 to 9.9 seconds	Default = 0.5 Sec
	Overwrite	ON*/OFF	Enables and disables bar code and serial data overwriting of data in the current input.
	Halt On Err	ON/OFF*	Enables and disables the halting of M3000 operation when an error is encountered.
	Wedge Kypad	ON/OFF*	Wedge Kypad enables and disables keypad output directly from the M3000 during any wedge mode operations.
↵	Reset All Setups To Default?	YES (to reset)	Enter YES to reset to defaults or press EXIT to leave settings in current state.
Reset Setups			

Setup Categories

The information that follows provides additional information about the M3000 menus. The menus are arranged by categories and options in the order presented in the preceding charts.

Date/Time

When you select Date/Time from the Setup Selection menu, the M3000 displays the date and time in the following 24 hour format:

month/day/year hour:minute (mm/dd/yy, hh:mm)

All hours past noon must be entered in the range 13-23. When you press **ENTER** to select a time change, the M3000 resets seconds to zero.

Non Portable Mode (Nonport. Mode)

Pressing the **SHIFT** key from the "Portable Mode Selection Function" display places the M3000 in one of three non portable modes. The availability of the these modes is dependent on the non portable mode selected with this option. The non portable modes designate how the M3000 sends data to the personal computer, or host computer. Only bar code data is sent. Data is not sent from the M3000 keypad. For information on Data File Transmissions, refer to ***Transmission Setup***.

The automatic shut-off feature is disabled during all non portable operations.

Keyboard Wedge

The default non portable mode is Keyboard Wedge. When the Keyboard Wedge Y-cable is connected, the M3000 switches to the Keyboard Wedge mode automatically, regardless of the Non Portable mode setting. During Keyboard Wedge operation the M3000 receives all its power from the keyboard port, and does not use its internal battery. Keyboard Wedge setup options must match your current computer configuration.

When connected as a Keyboard Wedge, the M3000 always turns ON and OFF with the computer.

Serial Wedge

When used as a Serial Wedge, the M3000 sends bar code data to the host computer just as if the data were typed from the terminal keyboard. Serial Wedge operation is enabled by the following conditions:

- Connection of the Serial Y-cable
- Serial Wedge selected as the Non Portable mode
- M3000 Serial Port settings match comparable settings on the host computer.
- The **SHIFT** key is pressed from the "Portable Mode Select Function" display

Pressing **SHIFT** again, returns you to the portable mode.

NOTE: During Serial Wedge and RS-232 Serial operation, the M3000 operates on either battery power or the external power supply. We recommend you use the external power supply that was shipped with your M3000, if you intend to operate in the serial modes for any extended period of time. Extended use in these non portable modes without the external power supply installed, reduces battery life.

RS232 Serial

When used in the RS232 Serial mode, the M3000 sends bar code data to any RS-232 Serial Port. When using *SOFTCOM* keyboard emulation software with any DOS based computer, the RS-232 data appears just as if it were typed from the computer keyboard. RS232 Serial operation is enabled by the following conditions:

- Connection of the Serial cable
- RS-232 Serial selected as the Non Portable mode
- M3000 Serial Port settings match comparable settings on the receiving computer
- Proper installation of ***SOFTCOM*** keyboard emulation software (if needed).
- The **SHIFT** key is pressed from the "Portable Mode Select Function" display

Pressing **SHIFT** again, returns you to the portable mode.

NOTE: During Serial Wedge and RS-232 Serial operation, the M3000 operates on either battery power or the external power supply. We recommend you use the external power supply that was shipped with your M3000, if you intend to operate in the serial modes for any extended period of time. Extended use in these non portable modes without the external power supply installed, reduces battery life.

Keyboard Wedge

This option defines the type of computer, the type of keyboard and proper keyboard/computer output settings. The selections must be made properly for the data to transmit correctly.

NOTE: The UNIVERSAL keyboard setting below, can be used for all international keyboards.

Type

Defaults are indicated by (*). Select the type of computer that matches the computer you connected to the M3000.

IBM AT (286, 386, and 486 processors)*

IBM PS/2 MODELS 25, 30, 56, 57, 90 (& some MODEL 70's)

IBM PS/2 MODELS 30-286, 50, 55, 60, 70 & 80

IBM PC/XT (8088 and 8086 processors)

Keyboard (Keybd)

Select from the following keyboard types.

USA*
FRENCH
GERMAN
ITALIAN
UNIVERSAL

NOTE: For all PC/XT computers, select UNIVERSAL as the KEYBOARD TYPE to ensure proper upper/lower case transmission.

Output

This option sets the speed at which keyboard data is transmitted to the computer. Some computer systems may require slower transmission speeds. The default setting is FASTEST.

SLOWEST
SLOW
FAST
FASTEST*

Auto Caps

With this option ON, the M3000 automatically transmits data in the correct upper and lower case, whether the keyboard's settings are turned ON or OFF.

ON * Enable Auto Caps.

OFF Disable Auto Caps

NOTE: The Auto Caps option is NOT effective on some computers, such as XT's. Indications that this option is NOT functioning include either the reversal of Upper/Lower Case text, or the absence of data transmission from the M3000.

If the Auto Caps option is not operating properly on your system, take the following steps:

1. Set Auto Caps to OFF.
2. Set Num Lock to match your computer's Num Lock status.
3. Set Caps Lock to match your computer's Caps Lock status.

or

1. Set Auto Caps to OFF.
2. Set Keyboard to UNIVERSAL

Caps Lock

Setting this function is necessary only if the Auto Caps option does not operate on your computer. See Auto Caps option to determine whether the Caps Lock option setting is required.

To use this option, select either ON or OFF to match the computer keyboard's CAPS LOCK status.

ON * Select ON when the computer keyboard's CAPS LOCK is turned ON. This setting transmits lower case Alpha characters as Shifted characters.

OFF Select OFF when the computer keyboard's CAPS LOCK is turned OFF. This setting transmits upper case Alpha characters as Shifted characters.

Num Lock

Setting this function is necessary only if the Auto Caps option does not operate on your computer. See Auto Caps option to determine whether the Num Lock option setting is required.

To use this option, select either ON or OFF to match the computer keyboard's NUM LOCK status.

ON Select ON when the computer keyboard's NUM LOCK is turned ON.

OFF * Select OFF when the computer keyboard's NUM LOCK is turned OFF.

Scan Set 3

This option is necessary ONLY for computers that use Scan Set 3(XWINDOW Terminals). You may need to disable Auto Caps.

ON Enable Scan Code Set 3.

OFF * Disable Scan Code Set 3

Serial Port

The M3000's RS-232C serial port transmits bar code data to the attached computer's serial interface. Serial Port settings must match the settings of the attached computer.

NOTE: Serial Port Setup is used for Non Portable and Serial Input modes only, and is not used to control **FUNC XMIT.** Refer to ***Transmit Setup***.

Protocol

NONE* No PROTOCOL is used. The serial buffer can contain a maximum of 128 characters.

XON/XOFF Enables XON/XOFF PROTOCOL. When receiving, the M3000 transmits an XOFF (control S) character to stop incoming serial data. This prevents the serial buffer from overflowing. Once the reader is ready to accept more data, an XON (control Q) character is transmitted to enable reception of more serial data. The XOFF will be transmitted when the buffer fills to 128 characters.

When transmitting, the M3000 sends data until an XOFF (Control S) character is received. It will not resume data transmission until an XON (Control Q) character is received.

Output

The Output setting sets the data format for one of the following modes:

ASCII* The mode used with standard ASCII terminals.

PCSCAN This mode is commonly used with "PC Terminals" that transmit PC SCAN Codes to the computer, rather than standard ASCII Codes. Two operating systems that use PC SCAN Codes are: PC-MOS, and CONCURRENT DOS.

Baud Rate

The baud rate sets the data transmission speed for the serial port on the M3000. The M3000's baud rate must match the baud rate of the attached computer's serial interface. Select one of the following:

300	600
1200	2400
4800	9600*
19200	38400

Data Bits

Sets the character length (number of data bits per character) for the serial data. The M3000's Data Bits setting must match the data bits setting of the attached computer's serial interface. Select one of the following:

7
8*

Parity

The M3000's Parity setting must match the parity setting of the attached computer's serial interface. Select one of the following:

NONE*
EVEN
ODD
MARK

Stop Bits

Sets the number of Stop Bit characters for the serial data. Select one of the following:

1*
2

Character Delay

Character Delay (Char Delay) specifies the amount of delay that is inserted between each transmitted character. This option slows the transmission rate to compensate for slow host computers that require time to process each character.

Default setting = 1 millisecond

Programmable range: 0ms - 99 ms

Duplex

The Duplex setting determines whether data is sent from the M3000 to the Host only or to both the Host and Terminal. The M3000's Duplex setting must match the duplex setting of the Terminal's serial interface.

FULL* In the Full Duplex mode data is sent only to the Host. The host computer receives the data and echoes it back to the terminal.

HALF In the Half Duplex mode data is sent to both the Host and Terminal at the same time.

Caps Lock

Use this option to match the terminal keyboard's CAPS LOCK status.

ON * Select ON when the terminal keyboard's CAPS LOCK is turned ON. This setting transmits lower case Alpha characters as Shifted characters.

OFF Select OFF when the terminal keyboard's CAPS LOCK is turned OFF. This setting transmits upper case Alpha characters as Shifted characters.

Num Lock

Use this option to match the terminal keyboard's NUM LOCK status.

ON Select ON when the terminal keyboard's NUM LOCK is turned ON.

OFF * Select OFF when the terminal keyboard's NUM LOCK is turned OFF.

Serial Beep

ON* Enables the 'Beep' tone. M3000 beeps after receipt of serial data string.

OFF Disables the 'Serial Beep' tone.

Auto Advance

ON Automatically advances to the next input after receipt of a serial data string.

OFF* Does not automatically advance after receipt of a serial data string.

Bar Codes

CODE 39

Decoder

ON* Enable reading CODE 39 labels.

OFF Disable reading CODE 39 labels.

Full ASCII

ON Enable the Full ASCII extension to CODE 39. Decoder must be set ON.

OFF* Disable the Full ASCII extension to CODE 39. This sets the reader to the standard CODE 39 mode.

Check Digit

ON Enable the Mod 43 Check Digit for CODE 39. When this option is enabled, only CODE 39 labels that contain a valid check digit will be read.

OFF* Disable the Mod 43 Check Digit. Check digit verification is not performed.

Send Check Digit

ON Transmit the Mod 43 Check Digit with the bar code data. Mod 43 Check Digit must be set ON.

OFF* Do not transmit the Mod 43 Check Digit.

Concatenate

ON Enable Concatenate mode. The concatenate mode allows the M3000 to accumulate multiple Code 39 bar codes in its buffer, then send them to the computer just like they were a single bar code. When a Code 39 label containing a leading space is read, the M3000 beeps twice and buffers the data without transmission. This process continues until a Code 39 label without a leading space is read or 128 characters are buffered. A Code 39 bar code label that only contains dashes (minus sign) will clear the buffer.

OFF* Disable Concatenate mode.

UPC

Decoder

ON* Enable reading UPC-A and UPC-E labels.

OFF Disable reading UPC-A and UPC-E labels.

Expand UPC-E (to UPC-A)

ON Convert all UPC-E labels to their UPC-A equivalents before transmission. After conversion, the M3000 follows the UPC-A programming options.

OFF* No conversions are performed.

Expand UPC-A (to EAN-13)

ON Convert all UPC-A labels to an equivalent EAN-13 format by inserting a leading zero. After conversion, the M3000 follows the EAN-13 programming options.

OFF* No conversions are performed.

UPC-A # systm (Number System)

ON* Transmit the UPC-A Number System character.

OFF Do not transmit the UPC-A Number System character.

UPC-E # systm (Number System)

ON* Transmit the UPC-E Number System character.

OFF Do not transmit the UPC-E Number System character.

UPC-A Chkdig (Check Digit)

ON* Transmit the UPC-A Check Digit character.

OFF Do not transmit the UPC-A Check Digit character.

UPC-E Chkdig (Check Digit)

ON* Transmit the UPC-E Check Digit character.

OFF Do not transmit the UPC-E Check Digit character.

EAN

Decoder

ON* Enable reading EAN-8 and EAN-13 labels.

OFF Disable reading EAN-8 and EAN-13 labels.

EAN-8 Zrofil (to EAN-13)

ON Add five leading zeroes to EAN-8 labels. After conversion, the M3000 follows the EAN-13 programming options.

OFF* No conversion is performed.

EAN-13 CCode (Country Code)

ON* Transmit the EAN-13 Country Code.

OFF Do not transmit the EAN-13 Country Code.

EAN-8 CCode (Country Code)

ON* Transmit the EAN-8 Country Code.

OFF Do not transmit the EAN-8 Country Code.

EAN-13 Chkdig (Check Digit)

ON* Transmit the EAN-13 Check Digit character.

OFF Do not transmit the EAN-13 Check Digit character.

EAN-8 Chkdig (Check Digit)

ON* Transmit the EAN-8 Check Digit character.

OFF Do not transmit the EAN-8 Check Digit character.

ISBN # Cnvt (Number Conversion)

ON Convert 13 DIGIT BOOKLAND/EAN (978 prefix) to its corresponding 10 DIGIT ISBN number.

EXAMPLE:	BAR CODE DATA	=	9780806957906
	ISBN OUTPUT DATA	=	0806957905

OFF* Do not convert Bookland/EAN to an ISBN number.

UPC/EAN Addons (SUPPLEMENTS)

Decoder

ON Enable reading UPC & EAN supplements.

OFF* Disable reading UPC & EAN supplements.

2 Digit

ON* Enable reading 2 digit supplements. Decoder must be set ON.

OFF Disable reading 2 digit supplements.

5 Digit

ON* Enable reading 5 digit supplements. Decoder must be set ON.

OFF Disable reading 5 digit supplements.

Required

Specifies how the reader handles various supplements.

OFF * UPC/EAN bar codes are read with or without valid supplements.

UPC UPC bar codes are not read unless they are accompanied by a valid supplement.

EAN EAN bar codes are not read unless they are accompanied by a valid supplement.

BOOKLD Bookland EAN bar codes are not read unless they are accompanied by a valid supplement.

ALL UPC/EAN bar codes are not read unless they are accompanied by a valid supplement.

Send Space

ON Insert a space between the standard bar code data and the supplemental data.

OFF* No separator space is inserted.

I 2 OF 5

Decoder

ON* Enable reading INTERLEAVED 2 of 5 labels.

OFF Disable reading INTERLEAVED 2 of 5 labels.

Check Digit

Specifies which type of check digit is used with INTERLEAVED 2 of 5:

NONE* NONE (no check digit required)

USS UNIFORM SYMBOLOGY SPECIFICATION (3-1-3 MOD 10)

OPCC OPTICAL PRODUCT CODE COUNCIL (2-1-2 MOD 10)

Send Check (Digit)

ON Transmit the INTERLEAVED 2 of 5 check digit with the bar code data.

OFF* The check digit is not transmitted.

Fixed Size

ON Read only FIXED LENGTH INTERLEAVED 2 of 5 bar code labels that match the lengths specified in the Fixed Size 1 and 2 options defined below. The check digit can be ON or OFF.

OFF* Disable FIXED LENGTH mode. Read all INTERLEAVED 2 of 5 labels without regard to length.

FIXED Size 1 (2-60)

Sets the first valid FIXED LENGTH for Interleaved 2 of 5. Valid lengths are 2 to 60 characters. By definition, the length of Interleaved 2 of 5 labels are an even number of characters. The default FIXED LENGTH is 6 characters. Fixed Size 1 is disabled when set to 0 characters.

FIXED Size 2 (2-60)

Sets a second valid FIXED LENGTH for Interleaved 2 of 5. The default length is set to 0 characters (i.e. the second FIXED LENGTH is disabled).

CODABAR

Decoder

ON * Enable reading CODABAR labels.

OFF Disable reading CODABAR labels.

Start/Stop

ON Transmit the CODABAR Start/Stop characters.

OFF * Do not transmit the CODABAR Start/Stop characters.

CLSI Format

ON The M3000 inserts a blank after the 1st, 5th, and 10th characters of a 14-character CODABAR label. The label length does not include the start and stop characters.

OFF * Disable CLSI formatting.

CLSI ChkDig

ON Enable the CLSI check digit. When this option is enabled, all fourteen digit numeric bar codes must contain a valid check digit.

OFF* Disable the CLSI check digit. Check digit verification will not be performed.

CODE 128

Decoder

ON * Enable reading Code 128 labels.

OFF Disable reading Code 128 labels.

UCC Verify

ON A valid MOD 10 CHECK DIGIT is required on UCC-MOD 10 bar codes. (Applies to 20-digit serial shipping container bar codes.)

OFF * UCC-MOD 10 bar codes are accepted without a valid MOD 10 CHECK DIGIT.

Send Mod 10 (Check Digit)

ON * Transmit the Mod 10 Check Digit with the bar code entry.

OFF Do not transmit the Mod 10 Check Digit

CODE 93

Decoder

ON* Enable reading Code 93 labels.

OFF Disable reading Code 93 labels.

Concatenate

ON Enable Concatenate mode. The concatenate mode allows the M3000 to concatenate multiple Code 93 bar codes in its buffer, then send them to the computer just like they were a single bar code. When a Code 93 label with a leading space is read, the M3000 beeps twice and buffers the data without transmission. This process continues until a Code 93 label without a leading space is read or 128 characters are buffered. Any Code 93 bar code label that only contains dashes (minus sign) will clear the buffer.

OFF* Disable Concatenate Mode

MSI/Plessey

Decoder

ON Enable reading MSI/PLESSEY labels.

OFF * Disable reading MSI/PLESSEY labels.

2 Check Dig

ON Two valid check digits are required for each label. The first check digit is defined by **Mod 11 Chk** below. The second check digit is always MOD 10.

OFF * One valid check digit is required for each label. The check digit must be MOD 10.

Mod 11 Chk (Check Digit)

ON The First check digit must be MOD 11.

OFF * The First check digit must be MOD 10.

Send Check 1

ON Transmit the FIRST CHECK DIGIT.

OFF * Do not transmit the FIRST CHECK DIGIT.

Send Check 2

ON Transmit the SECOND CHECK DIGIT.

OFF * Do not transmit the SECOND CHECK DIGIT.

ISBN

ON Enable reading of Modified Plessey ISBN bar codes.
Only eleven digit ISBN bar codes are be read.

OFF* Do not read Modified Plessey ISBN bar codes.

Code 11

Decoder

ON Enable reading Code 11 labels.

OFF * Disable reading Code 11 labels.

2 Check Dig

ON Two valid check digits are required for each label.

OFF * One valid check digit is required for each label.

Send Check 1

ON Transmit the FIRST CHECK DIGIT.

OFF * Do not transmit the FIRST CHECK DIGIT.

Send Check 2

ON Transmit the SECOND CHECK DIGIT.

OFF * Do not transmit the SECOND CHECK DIGIT.

Termination Character

The optional TERMINATION CHARACTER is transmitted at the end of the bar code data. This option is applicable only during non portable mode operation. You can select from the following termination character options:

Termination Char

NONE

TAB (ASCII 09)

CR* (CARRIAGE RETURN, ASCII 13)

LF (LINE FEED, ASCII 10)

CR + LF (CARRIAGE RETURN & LINE FEED, ASCII 13 & ASCII 10)

USER Selects the user defined termination character (00H - F9H).

User Term

Valid only if **Termination Char** is set to USER.

Override

ON If any control character or special character (i.e., function key, arrow key, etc.) is embedded in the bar code data, the Preamble, Postamble, and the TERMINATION CHARACTER are not transmitted.

OFF * The Preamble, Postamble TERMINATION CHARACTER will be transmitted with all bar code data.

Preamble

Preamble refers to a user-defined set of characters transmitted before the bar code data. The preamble is active only during Non Portable mode operation.

Enter Preamble

This set of user-defined characters is transmitted at the beginning of bar code data. To define this preamble, enter the ASCII characters from the keypad and press ENTER. Refer to ***Appendix K, M3000 ASCII Character Chart***, for specific code definitions.

Send Delay (0.0 - 9.9 SEC)

This option specifies the amount of delay that occurs after the bar code preamble is transmitted. The delay period is programmable from 0.0 to 9.9 seconds. The default is 0.0 seconds.

Postamble

Postamble refers to a user-defined set of characters transmitted after the bar code data and before the termination character. The postamble is active only during Non Portable mode operation.

Enter Postamble

This set of user-defined characters is transmitted at the end of bar code data. To define this postamble, enter the ASCII characters from the keypad and press ENTER. Refer to ***Appendix K, M3000 ASCII Character Chart***, for specific code definitions.

Send Delay (0.0 - 9.9 SEC)

This option specifies the amount of delay that occurs after the bar code postamble is transmitted. The delay period is programmable from 0.0 to 9.9 seconds. The default is 0.0 seconds.

Bar Code Edit

Must be ON for any of the editing options below to be valid. Editing can apply to either ALL bar code types or one Bar Code type. The default is ALL, Bar Code types.

Editing

ON Enable Bar Code Editing.

OFF * Disable Bar Code Editing.

Lead Strip (Leading Strip) (0-30)

Editing must be ON. Refers to the number (0-30) of bar code characters to be stripped, or removed from the beginning of the Bar Code data.

Trail Strip (Trailing Strip) (0-30)

Editing must be ON. Refers to the number (0-30) of bar code characters to be stripped, or removed from the end of the Bar Code data.

NOTE: If the total number of strip characters (both Leading and Trailing) is greater than the number of characters of the bar code, no characters will be stripped.

Space Strip

Editing must be ON.

ON Any LEADING & TRAILING SPACES are stripped from the data.

OFF * No spaces are stripped.

Code

Editing must be ON. Refers to which bar code type Bar Code Edit enables. The choices are listed below:

CODE 39	CODABAR
UPC-A	CODE 128
UPC-E	CODE 93
EAN-13	MSI
EAN-8	CODE 11
INTERLEAVED 2 of 5	ALL*

Bar Code Beeper

The following settings allow you to set the Tone or pitch, and the Length or duration of the beeps emitted from the M3000 while scanning bar codes..

Tone

NONE
LOW
MEDIUM*
HIGH

Length

SHORTEST
SHORT*
LONG
LONGEST

Laser/CCD Opts (Options)

Timeout

If the LASER or CCD does not read a bar code within the designated time period, the device is turned off. Select from OFF, or 1 to 9 seconds; the default is 1 second.

CAUTION: IF THE ABOVE OPTION IS SET TO OFF, IT WILL OVERRIDE THIS SAFETY FEATURE.

OFF

1-9 Sec

Trigger Off

ON * Releasing the trigger turns off the LASER or CCD.

OFF The LASER or CCD continues to run until a successful read or until the **Timeout** period lapses.

NOTE: To use "Blink Mode" with a CCD or laser, set this option OFF, and LASER/CCD **Always Run** option ON. (Note that "Blink Mode" does not operate properly for lasers that employ thermal shut-down.)

Always Run

ON The Laser or CCD runs continuously as long as the trigger is pulled. The scanner is not affected by the LASER/CCD **Timeout** and does not shut off after a "good read".

OFF * The Laser or CCD runs only when the trigger is pulled. (The LASER/CCD **Timeout** option remains in effect.)

Read Delay (0.0 - 9.9 SEC)

Valid only if **Always Run** is ON. This option sets the delay period between successive reads of the same bar code. This allows the removal of the bar code from the scan field without multiple reads. The read delay can be set for 0.0 (no delay) to 9.9 seconds, in tenth of a second increments. The default setting is 1.0 second.

Other Options

Bar Code ID

ON Transmit the bar code identifier character at the beginning of the bar code data. There is one space between the ID character and the bar code data. The following characters identify Bar Code ID's:

A CODE 39
B UPC-A
C UPC-E
D EAN-13
E EAN-8
F INTERLEAVED 2 of 5
G CODABAR
H CODE 128
I CODE 93
J MSI
K CODE 11

OFF * Do not transmit Bar Code ID

Dupli Reads (Duplicate Reads)

ON * Enable reading the same bar code multiple times.

OFF Disable reading the same bar code twice in a row.

F1-F10 Keys

ON* Enable reading of FUNCTION KEYS in place of ASCII characters.

OFF Disable reading of FUNCTION KEYS.

Special Keys

ON* Enable reading of SPECIAL KEYS in place of ASCII characters.

OFF Disable reading of SPECIAL KEYS.

NOTE: See *Appendix L Non-ASCII Special Character Definitions* for FUNCTION KEY and SPECIAL CHARACTER definitions.

Transmit Setup

The Transmit Setup allows you to specify the type of data the M3000 sends, the mode that transmits the data, and presets features such as dialing type, phone number, and serial communications parameters.

NOTE: Transmit Setup is used for **FUNC XMIT** only, and is not used for Non Portable Modes.

Data

Data options are MENU and SEND ALL. The default is MENU.

MENU* Enables the "Upload Selection" menu in the Transmit Mode. This option allows you to select specific data files for transmission.

SEND ALL Bypasses the "Upload Selection" menu, and transmits ALL data files stored in the M3000.

Mode

Mode specifies which mode is automatically used when the M3000 transmits data and does not require the operator to specify the transmission mode each time the M3000 transmits data, unless MENU is enabled.

MENU* Requires you to manually select one of the following transmission modes each time the M3000 transmits data.

KBD WEDGE (KEYBOARD WEDGE)

SER WEDGE (SERIAL WEDGE)

RS232 PORT

MODEM

Dialing

Sets the modem for one of the following telephone dial types:

TONE*
PULSE

Phone Number

Sets the destination phone number for modem communications.

Protocol

NONE* No PROTOCOL is used. The serial buffer can contain a maximum of 128 characters.

XON/XOFF Enables XON/XOFF PROTOCOL. When receiving, the M3000 transmits an XOFF (control S) character to stop incoming serial data. This prevents the serial buffer from overflowing. Once the reader is ready to accept more data, an XON (control Q) character is transmitted to enable reception of more serial data. The XOFF will be transmitted when the buffer fills to 128 characters.

XMODEM Enable the XMODEM protocol. The M3000 automatically detects and supports XMODEM CRC and XMODEM CHECK SUM.

XMODEM protocol is commonly used to ensure data integrity when communicating over phone lines .

Output

The Output setting sets the data format for one of the following modes:

ASCII* The mode used with standard ASCII terminals.

PCSCAN This mode is commonly used with "PC Terminals" that transmit PC SCAN Codes to the computer, instead of standard ASCII Codes. Some operating systems that use PCSCAN Codes are: PC-MOS, and CONCURRENT DOS.

Baud Rate

The baud rate sets the data transmission speed for the M3000 serial port. The M3000's baud rate must match the baud rate of the attached computer's serial interface. Select one of the following:

300	600
1200	2400
4800	9600*
19200	38400

Data Bits

This option sets the character length (number of data bits per character) for the serial data. The M3000's Data Bits setting must match the data bits setting of the attached computer's serial interface. Select one of the following:

7
8*

Parity

The M3000's Parity setting must match the parity setting of the attached computer's serial interface. Select one of the following:

NONE*	EVEN
ODD	MARK

Stop Bits

This option sets the number of Stop Bit characters for the serial data. Select one of the following:

1*
2

Character Delay (Char Delay)

Character Delay (also known as inter character delay) specifies the amount of delay that the M3000 inserts between each transmitted character. This option slows the transmission rate to compensate for slow host computers that require more time to process each character.

Default setting = 1 millisecond

Programmable range: 0ms - 99ms

Duplex

The Duplex setting determines whether the M3000 sends data to the Host only, or to both the Host and Terminal. The M3000's Duplex setting must match the duplex setting of the Terminal's serial interface.

FULL* In the Full Duplex mode data is sent only to the Host. The host computer receives the data and echoes it back to the terminal.

HALF In the Half Duplex mode data is sent to both the Host and Terminal at the same time.

Modem TmOut

The Modem Time Out, when set to "ON" aborts the Transmit Receive mode after approximately 4 Min. 15 Sec, if a call is not received. The M3000 must be connected to a modem, and operating in the Transmit Receive Mode for this feature to take effect.

ON The M3000 aborts Transmit Receive after approximately 4 Min 15 Sec when a call is not received.

OFF* The M3000 waits for a call indefinitely.

Caps Lock

Use this option to match the terminal keyboard's CAPS LOCK status.

ON * Select ON when the terminal keyboard's CAPS LOCK is turned ON. This setting transmits lower case Alpha characters as Shifted characters.

OFF Select OFF when the terminal keyboard's CAPS LOCK is turned OFF. This setting transmits upper case Alpha characters as Shifted characters.

Num Lock

Use this option to match the terminal keyboard's NUM LOCK status.

ON Select ON when the terminal keyboard's NUM LOCK is turned ON.

OFF * Select OFF when the terminal keyboard's NUM LOCK is turned OFF.

SOT Text (Start of Transmit)

SOT Text (Start of Transmit) Text and special characters in the SOT field are transmitted before any other data during **FUNCTION TRANSMIT**.

The start of transmit text can be any text or special characters that you want transmitted before any data files are transmitted. This string of text or special characters can be used to send commands to your computer so it will be ready for the data file transmission.

Field Requirements:

SOT is not required

0 to 250 characters allowed

Alpha, numeric, and all other ASCII characters are accepted.

> **NOTE:** Any ASCII character may be input by a 3 character sequence of "/nn" (/nn is the HEX value of the character). Since a / is the start of any HEX value, you must type "//" to output a slash. PC function keys may be defined as /F0 through F9. Function key F10 is defined as /F0. Refer to ***M3000 User's Guide, Appendix K and L*** for Special Character values.

SOT Delay

The start of transmit text transmit delay defines the amount of time delay that is inserted between each character of the SOT Text during file transmission. This is used to slow down the data output rate so that the M3000 does not generate a data overrun on the host computer during transmission, especially when transmitting data by keyboard wedge. The time delay is in tenths of a second (0.0 - 9.9 seconds). Most systems do not need an SOT Delay.

Field Requirements:

SOT Delay is required

1 to 2 characters allowed

Numeric data accepted (0 to 99), Default is 0.

EOT Text (End of Transmit)

EOT Text (End of Transmit) Text and special characters are the last characters transmitted at the end of **FUNCTION TRANSMIT**. The end of transmit text can be any text or special characters that you want transmitted at the end of **FUNCTION TRANSMIT**. This string of text or special characters can be used to send commands that close the current data file.

Field Requirements:

EOT is not required

0 to 250 characters allowed

Alpha, numeric, and all other ASCII characters are accepted.

NOTE: Any ASCII character may be input by a 3 character sequence of "/nn" (/nn is the HEX value of the character). Since a / is the start of any HEX value, you must type "//" to output a slash. PC function keys may be defined as /F0 through F9. Function key F10 is defined as /F0. Refer to ***M3000 User's Guide, Appendix K and L*** for Special Character values.

EOT Delay

The end of transmit text transmit delay defines the amount of time delay that is inserted between each character of the EOT Text during file transmission. This is used to slow down the data output rate so that the M3000 does not generate a data overrun on the host computer during transmission, especially when transmitting data by keyboard wedge. The time delay is in tenths of a second (0.0 - 9.9 seconds). Most systems do not need an EOT Delay.

Field Requirements:

EOT Delay is required

1 to 2 characters allowed

Numeric data accepted (0 to 99) Default is 0

Other Setup

Timeout

Sets the amount of time the M3000 remains ON after the last activity on the unit. Timeout is disabled while operating in NON PORTABLE modes. Default Timeout is 5 minutes.

1-99 Minutes or OFF.

Password

ON The SETUP mode password must be entered to access the SETUP mode. The SETUP password is **"OK".** This is a fixed password and cannot be changed.

OFF* Entry of the SETUP mode password is not required to access the SETUP mode.

Auto Input (Automatic Input)

When you select Automatic Input the M3000 automatically loads a program and data file any time **FUNC INPUT** is selected.

Automatic Input uses the first program found in RAM. If no data file exists for the program, the M3000 creates a file named- FILE #1. If a data file, or multiple data files exist for the active program, the M3000 uses the first file created for that program.

ON Enables Auto Input.

OFF* Disables Auto Input.

Auto Save

ON Automatically saves the data file when the user exits **FUNCTION INPUT.**

OFF* Does not automatically save the data file on **EXIT**. User must respond to display prompt:

```
Save Data File?
```

View Delay (0.0 to 9.9 Seconds)

View Delay sets the duration of the displayed characters for bar code data, serial data, and lookup file entries.

Field Requirements:

Valid duration - 0 to 9.9 Seconds

Default - 0.5 Seconds

Overwrite

Enables and disables bar code data and serial data overwriting of input data in the current input.

ON* Bar code data and serial data will automatically overwrite the contents of the current input.

OFF Current input data must be manually deleted before bar code or serial data can be entered at the current input.

Halt On Err

Enables and dispables the halting of M3000 operation when an error is encountered.

ON M3000 halts operation when an error condition occurs during operation, and displays the appropriate error message until any key is pressed. Also, any error condition disables the bar code reader input until any key is pressed.

OFF* M3000 displays a brief error message when an error occurs, then re-displays the current input without user intervention.

Wedge Kypad

Wedge Kypad (Wedge Keypad) enables and disables keypad output directly from the M3000 during any wedge mode operations.

ON Keypad output is enabled.

OFF* Keypad output is disabled.

Reset Setups

This option resets all setup options to System Default values.

7Communications

Introduction

The M3000 supports both on-line communications using the keyboard wedge and wedge emulation using ***SOFTCOM*** keyboard emulation software, and file transfers that operate in combination with a PC communications program such as ***PCOM*** *and the* ***M3000 Programmer***. All communications modes depend on properly operating components, including serial ports, cable assemblies, and modems. Serial communication parameters must have exactly the same settings on the M3000 and on the PC's or host's communication software.

Transmitting Files

The M3000 allows uploading of data files and uploading and downloading M3000 programs and setup, and lookup files. This chapter explains the M3000 transmit upload, receive, and send menus. The M3000 displays the current name being transmitted and the percentage of the file that has been transmitted. You can abort any transmit or receive operation by pressing ANY key on the keyboard.

If transmitting with the serial port, select XMIT before connecting the M3000 to any other device. This will prevent any serial port transients from being interpreted as data characters when the M3000 serial port powers up. Pressing any key on the M3000 during a file transmission will abort the file transmission.

NOTE: The M3000 stores all system files in a compressed format. This includes programs, setup files, lookup files and clone files. You can send them to a PC, but you cannot edit them. All systems files are transmitted using the "Send Select" menus.

Attempts to view system files will be futile. Your display may show arrays of meaning-less ASCII characters, or possibly HEX values depending on the editor in use. If you attempt to edit a system file using a PC editor or file viewer, the system file may become unusable.

```
Transmit Select
>Upload Data
```

Transmit Select>Upload Data gives you the choice of transmitting ALL DATA FILES or transmitting individual program/data files from the M3000. ALL DATA FILES will transmit every data file stored in your M3000. If you want to send data from a specific program, select the program used to enter the data, then choose ALL DATA FILES for that program or select a specific data file saved using that program. When either option is selected, the M3000 will prompt you for one of the following configurations:

KEYBOARD WEDGE connects between the keyboard and personal computer.

SERAL WEDGE connects in-line between the host computer and any RS232 ASCII terminal.

RS232 SERIAL connects to the RS232 port of a personal computer.

MODEM connects to a Hayes compatible modem.

NOTE: If the M3000 FUNC SETUP, "Transmit Select>Upload Data" has been preset to "All Data Files", all data files in the M3000 will be transmitted and you will not be allowed to select individual data files for transmission. The "Transmit Setup" can also be set to send in a preset transmission mode (i.e. Keyboard Wedge, Serial Wedge...). When the transmission mode is pre-selected, the M3000 will automatically transmit in the preset mode.

```
Transmit Select
>Receive
```

Transmit Select >Receive allows you to receive ASCII files, System Files, and M3000 Clone files.

```
Receive Select
>ASCII Files
```

Receive Select, >ASCII Files allows you to receive individual ASCII files from a computer system. The RECEIVE option does NOT erase any target files UNLESS the file name is exactly the same.

For example, if you receive a file named SAMPLE and already had a file with the same name, the target file would be copied over by the source file.

With this option, the M3000 will prompt you for either RS232 SERIAL or MODEM mode. Once a selection is made, the "Receive Waiting" message will appear. Once transmission has occurred from the source M3000 or computer, a "Complete" message will appear. After the "Complete" message, the M3000 processes each received file.

```
Receive Select
>System Files
```

Receive Select, >System Files allows you to receive individual M3000 system files from another M3000, or computer system. System files include: programs, setup, lookup, and clone files previously sent from an M3000. The RECEIVE option does NOT erase any target M3000 system files UNLESS the file name is exactly the same.

For example, if you receive a program named SAMPLE and already had a program with the same name, the target file would be copied over by the source file.

With this option, the M3000 will prompt you for either RS232 SERIAL or MODEM mode. Once a selection is made, the "Receive Waiting" message will appear. Once transmission has occurred from the source M3000 or computer, a "Complete" message will appear. After the "Complete" message, the M3000 processes each received file. The new files will replace the old ones, and any data files created by replaced programs will be erased.

```
Receive Select
>Clone
```

Receive Select, >Clone allows an M3000 to receive all system files including SETUP menu selections and PROGRAMS, and LOOKUP files from a source M3000 or computer to your target M3000. This option works with Send Select>Clone if you are transmitting from an M3000 to an M3000.

The M3000 will prompt you to select either RS232 SERIAL or MODEM as the transmission mode. Once a selection is made, the "Receive Waiting" message will appear. When a transmission has occurred from the source M3000 or computer, a "Complete" message will appear. After the "Complete" message, the M3000 processes each received PROGRAM, SETUP, or LOOKUP file. The name of the file being processed will be displayed.

NOTE: When Receive Select, >Clone is used, the M3000 will erase all previous SETUP menu selections, PROGRAMS, LOOKUP and data files from the target M3000.

```
Send Select
>Programs
```

Send Select, >Programs functions the same as UPLOAD DATA, except you will be transmitting your M3000 programs instead of data. With this option you have the choice of transmitting ALL PROGRAM FILES or transmitting individual programs. Immediately following the selection of either transmission mode, the M3000 will begin transmission.

Programs can be transmitted by RS232 Serial or by Modem.

```
Send Select
>Setup
```

Send Select, >Setup allows you to upload all your M3000 SETUP menu selections. Immediately following the selection of either transmission mode, the M3000 will begin transmission.

The SETUP can be transmitted by RS232 SERIAL or MODEM.

```
Send Select
>Lookup Files
```

Send Select, >Lookup Files allows you to upload all your M3000 Lookup files. Immediately following the selection of either transmission mode, the M3000 will begin transmission.

Lookup files can be transmitted by RS232 SERIAL or MODEM.

```
Send Select
>Clone
```

Send Select, >Clone actually "clones" an existing M3000. CLONE SEND transmits all M3000 system files including: SETUP menu selections, all PROGRAMS, and LOOKUP files saved in the source M3000 to a target M3000 or computer. You will be prompted for transmission by either RS232 SERIAL or MODEM. Once a selection is made, transmission will begin.

Minimum System Requirements for M3000 Communication Software

The M3000 is shipped with a ***PORTABLE COMMUNICATIONS SOFTWARE*** DISK. This disk contains three programs and associated files that are used for M3000 communications.

These programs include:

PCOM	A file transfer program.
SOFTCOM	A memory resident, keyboard emulation program using RS232 serial communications.
MONITOR	A communications diagnostics program.

Requirements:

Computer	IBM PC, XT, AT, PS/2 and all true compatibles		
Operating System	MS DOS 2.1 or higher		
System Memory	Computer with at least 256K of memory		
Disk Space	***PCOM***	***SOFTCOM***	***MONITOR***
	< 120K	< 120K	< 100K
TSR Memory Overhead	None	< 2 K	None

NOTE: Refer to the applicable documentation file supplied with each communications program for installation instructions. For example, the installation instructions for *PCOM* are located in the PCOM.DOC file.

FUNC + XMIT
M3000 Communications Selection Menus
Transmit Select

> Menu Level 1	> Menu Level 2	> Menu Level 3	> Menu Level 4	Comments:
Upload Data ↵	**All Data Files**	↵	Keyboard Wedge ↵ Serial Wedge RS232 Serial ↵ Modem ↵ ↵	Select the **XMIT** mode then, press the **ENTER** key to transmit **All Data Files** stored in the M3000.
	Pgm "Name"	All Data Files ↵	Keyboard Wedge ↵ Serial Wedge RS232 Serial ↵ Modem ↵ ↵	Select the **XMIT** mode, then press the **ENTER** key to transmit **All Data Files** for the selected program.
		"Data File Name" ↵	Keyboard Wedge ↵ Serial Wedge RS232 Serial ↵ Modem ↵ ↵	Select the **XMIT** mode, then press the **ENTER** key to transmit selected data file.
Receive ↵	**ASCII**	RS232 Serial ↵ Modem ↵		Select the **XMIT** mode and press the **ENTER** key to receive the selected data file.
	System Files	RS232 Serial ↵ Modem ↵		Select the **XMIT** mode and press the **ENTER** key to receive the selected system file.
	Clone	RS232 Serial ↵ Modem ↵		Select the **Receive** mode, and press the **ENTER** key to receive a clone file of the M3000 settings. **Caution: ERASES ALL M3000 memory, then writes all clone file data into memory.**
Send ↵	**Programs**	All Program Files ↵	RS232 Serial ↵ Modem ↵	Select the **XMIT** mode, then press the **ENTER** key to transmit **All Program Files** stored in the M3000.
		"Program File Name" ↵	RS232 Serial ↵ Modem ↵	Use **Up/Down Arrow** keys to select a program file. Select the **XMIT** mode and press the **ENTER** key to transmit the selected program file.
	Setup	Transmits the current M3000 setup options. ↵	RS232 Serial ↵ Modem ↵	Select the **XMIT** mode, then press the **ENTER** key to transmit the current M3000 setup options.
	Lookup Files	All LookupFiles ↵	RS232 Serial ↵ Modem ↵	Select the **XMIT** mode, then press the **ENTER** key to transmit **ALL Lookup Files** stored in the M3000.
		"Lookup file Name" ↵	RS232 Serial ↵ Modem ↵	Use **Up/Down Arrow** keys to select a Lookup file. Select the **XMIT** mode and press the **ENTER** key to transmit the selected Lookup file.
	Clone	All Program Files ↵	RS232 Serial ↵ Modem ↵	Select the **XMIT** mode and press the **ENTER** key to clone the M3000 system files.

PCOM COMMUNICATION SOFTWARE

PCOM is a communications program that runs on any MS DOS compatible computer which allows you to transfer files between a PC and your Model 3000 portable bar code reader. *PCOM* even provides an automated unattended file reception mode (Auto Receive).

PCOM has five Menu Options. These are SETUP, SEND FILE, RECEIVE FILE AUTO RECEIVE, and EXIT PROGRAM. Below is a description of each Menu Option.

SERIAL PORT SETUP. The Serial Port section of the **SETUP** menu defines the serial port parameters. This setup procedure is used for both sending and receiving files.

SERIAL PORT defines which communication port will be used. *PCOM* supports two serial ports:

NOTE: If you have a serial port board which allows you to set the interrupt and port addresses use the following assignments for COM1 and COM2:

	COM1	**COM2**
Interrupt	IRQ4	IRQ3
Port Address	3F8 Hex	2F8 Hex

BAUD RATE. This option defines the speed of the serial port. *PCOM* supports many data transmission speeds: 300, 600, 1200, 2400, 4800, 9600, 19200, and 38400 bps.

NOTE: If you experience loss of data during serial communication, reduce the BAUD Rate.

DATA BITS. This option defines the number of data bits used during serial communication. *PCOM* supports both 7 and 8 data bits.

STOP BITS This option defines the number of stop bits used during serial communication. *PCOM* supports both 1 and 2 stop bits.

PARITY This option defines the type of parity used during serial communication. *PCOM* supports three different parity settings: 1) NONE, 2) ODD, and 3) EVEN.

Selecting a Protocol

The Protocol Section of the SETUP contains options specific to the protocol used for file transfer.

PROTOCOL This option defines the protocol being used during file transfer. *PCOM* supports three different protocols 1) NONE, 2) XON/XOFF, and 3) XMODEM.

NOTE: When using the XMODEM protocol, *PCOM* will support both XMODEM Checksum, and XMODEM CRC.

XON/XOFF BEEP. This option is only applicable when the XON/XOFF protocol is being used. This option indicates whether a beep will occur whenever a XOFF state occurs. This may occur when the sender receives an XOFF from the receiver.

XMODEM RETRIES. This option is only applicable when the XMODEM protocol is being used. This option defines how many times that the same block will be resent when an error occurs before *PCOM* will abort the file transfer.

Auto Receive Mode

INTERFACE. This option defines the type of interface *PCOM* will be using for file transfers. *PCOM* supports both a DIRECT connect, and Hayes compatible modem communications.

FILE MODE. This option defines how the files will be collected during the auto receive mode.

APPEND. In this mode, *PCOM* appends all received files to the same filename. The user specifies the filename before entering the auto receive function.

INCREMENT. In this mode, *PCOM* will create a new file for each received file. The user specifies the filename, and a three digit starting extension. Each file will have the same filename, but the extension will be incremented after each received file.

When sending or receiving files from the M3000, the interface must be directly connected by a NULL Modem cable, or if the user wants to receive files from the M3000 via a modem, then the **AUTO RECEIVE** function must be used.

The user is prompted for the filename to be sent or received. After the filename is entered, the file transmission begins. During the file transfer, the user may abort the transfer by pressing the Escape key at any time.

NOTE: Before sending or receiving files, make sure that all setup options are set correctly to match the options of the M3000.

AUTO RECEIVE. The Auto Receive function provides the capability to receive files from the M3000 in an unattended mode. The Auto Receive function will receive multiple files from the M3000 without user intervention. *PCOM* will create a log file (LOG.TXT) that will provide statistics of the file transfers. The auto receive function supports a DIRECT connection to the M3000 by a NULL Modem cable, and also supports a HAYES compatible MODEM. When using a modem, *PCOM* will automatically:

1. Answer each incoming phone call automatically and switch to the connection speed of the incoming call.
2. Initiate a file transfer when using XMODEM, or wait for data in the other protocols.
3. After the transfer is completed, Make an entry in the log file and go back to Step 1.

The File Mode option in the SETUP function determines how each file will be processed by PCOM.

While in APPEND mode, *PCOM* will append each incoming file to the same filename.

While in INCREMENT mode, each file will be received in a separate filename. The user specifies the filename, a three digit starting extension. Each file will have the same filename with a different extension. After each file is received, the extension is incremented.

NOTE: Because three digits are incremented for a unique filename in the INCREMENT mode, the user must process the files before 999 files have been received.

Before using the AUTO RECEIVE function, make sure that all setup options are set correctly to match the options of the M3000. Also make sure that the Auto Receive Section options are set to your preference.

SOFTCOM Keyboard Emulation Software

SOFTCOM is a memory resident PC program which allows data received from the serial port to appear as direct keyboard input. *SOFTCOM* may be used with a bar code reader, or any serial output device.

Once *SOFTCOM* receives data from a serial port, it will make the data appear as keyboard input. *SOFTCOM* should work with most well behaved programs, but may not work with programs which modify the COM port settings, or programs that intercept keyboard input. *SOFTCOM* supports a wide range of serial port options and also supports flow control via the XON/XOFF protocol.

SOFTCOM Kill Program

The *SOFTCOM* kill program will unload *SOFTCOM* from memory. This same function may be performed from the Configuration program, but is also included as a standalone program, so that it

may be called from batch files or other programs. To remove *SOFTCOM* from resident memory, type **SKILL** from the DOS prompt, and press the ENTER key.

Using *SOFTCOM*

Following is a list of the steps needed to run *SOFTCOM*:

1. Run the *SOFTCOM* Configuration Program by typing **SCONFIG** from the DOS prompt, and press the ENTER key. For Example: C:\> SCONFIG <ENTER>
2. Set up the serial port parameters to match your bar code reader or other serial output device being used.
3. Exit the SOFTCOM Configuration program, saving your changes.
4. Load the *SOFTCOM* memory resident program by typing *SOFTCOM* from the DOS prompt, and press the ENTER key. For Example: C:\> SOFTCOM <ENTER>

SOFTCOM is now loaded and making serial input appear as if it were keyboard input.

SOFTCOM Configuration Program.

The *SOFTCOM* configuration program allows the user to configure the many options of *SOFTCOM*. All of these options are explained in detail in the *SOFTCOM* Configuration Program.

Communication Options

Serial Port
This option defines which serial port *SOFTCOM* will be using. *SOFTCOM* supports both COM1 and COM2.

NOTE: If you have a serial port board which allows you to set the interrupt and port addresses use the following assignments for COM1 and COM2:

	COM1	**COM2**
Interrupt	IRQ4	IRQ3
Port Address	3F8 Hex	2F8 Hex

BAUD Rate
This option defines the serial port transmission speed. *SOFTCOM* supports the following transmission speeds:

300	**600**
1200	**2400**
4800	**9600**
19200	**38400**

NOTE: If you experience loss of data from the serial port, your BAUD rate may need to be decreased.

Data Bits
This option defines the number of data bits used during serial communication. *SOFTCOM* supports both 7 and 8 data bits.

This option defines the number of stop bits used during serial communication. *SOFTCOM* supports both 1 and 2 stop bits.

Use XON/XOFF
This option indicates whether XON/XOFF will be used for flow control during serial communication. XON/XOFF is a protocol used by the receiver to control the flow of data. The receiver sends an XOFF to the sender when the receiver buffer is full. When the sender receives an XOFF, the sender will not send any more data until the sender receives an XON. If your serial device uses the XON/XOFF protocol, enable this parameter.

Speed
This option defines how many times that *SOFTCOM* will check the keyboard buffer per second. *SOFTCOM* supports three different settings:

Slow	- 36.4 checks per second
Medium	- 72.8 checks per second
Fast	- 145.6 checks per second

NOTE: If you experience loss of data from the serial port, your Speed may need to be decreased.

Function Keys
This option provides a mechanism for *SOFTCOM* to represent Function Keys even though Function Keys are not part of the ASCII character set. Please refer to Appendix A and L for a complete list of all available Function Keys. There are three options:

- **No Function Keys** - No Function Keys may be represented with this option.
- **Use DC1 - SUB (11H-1AH)** - Function keys F1 through F10 are represented by the ASCII characters 17 - 26.

  NOTE: With this option on, it is not possible to represent the normal ASCII characters 17 - 26.

- **Use 81H - 8AH** - Function keys F1 through F10 are represented by the Extended ASCII characters 129 - 138.

  NOTE: With this option on, it is not possible to represent the Function keys in a bar code. This is because all bar code symbologies only support the ASCII character set from 0 - 127.

- **Use Both** - With this option enabled, Function keys may be represented using both ranges: Use DC1 - SUB and Use 81H - 8AH.

Special Keys
This option provides a mechanism for many non-ASCII special keys to be represented using *SOFTCOM*. Please refer to *Appendix A* and *L* for a complete list of all available special keys. Following is a list of the three options:

- No Special Keys - No Special keys are represented using this option.
- Use 01H - 1FH - Special keys will be represented within this range of numbers. Please refer to *Appendix A* and *L* for a complete list of all available special keys.

  NOTE: With this option on, it is not possible to represent the normal ASCII characters 17 - 26.

- Use 8CH - 9BH - Special keys will be represented within this range of numbers.

  NOTE: With this option on, it is not possible to represent the special characters in a bar code. This is because all bar code symbologies only support the ASCII character set from 0 - 127.

- Use Both - With this option enabled, special keys may be represented using both ranges: Use 01H - 1FH and Use 8CH - 9BH.

MONITOR Communication Diagnostics Program

Getting Started
MONITOR is a diagnostic PC program which allows keyboard data and data received from the serial port to appear in a readable form. *MONITOR* may be used with a bar code reader, or any serial output device to receive data.

Once *MONITOR* receives data from the keyboard or a serial port, it will make the data appear in a readable format (i.e. {F1} to represent the Function 1 key). *MONITOR* supports a wide range of serial port options and also supports flow control via the XON/XOFF protocol.

Using *MONITOR*
Perform the following steps to run *MONITOR*:

1. Run the *MONITOR* Program by typing *MONITOR* from the DOS prompt and press the ENTER key. For Example: C:\> MONITOR <ENTER>
2. Set up the serial port parameters to match your bar code reader or other serial output device being used or select none to serial port option if no serial device is being used.
3. Press the ESC key to return to the main menu and select RECEIVE DATA and begin transmission of data from device being diagnosed. Each key or serial data will be displayed on the screen in a readable format. (i.e. {F1} to represent the Function 1 key).
4. Once transmission is complete, type key combination Ctrl + PrtSc to return to the main menu where you may view, print, or save to a disk file, the data uploaded to *MONITOR*.

***MONITOR* Configuration**
Communication Options Serial Port This option defines which serial port *MONITOR* will be using. *MONITOR* supports both COM1 and COM2, or may be disabled by selecting none if no serial device is to be used.

NOTE: If you have a serial port board which allows you to set the interrupt and port addresses use the following assignments for COM1 and COM2:

	COM1	**COM2**
Interrupt	IRQ4	IRQ3
Port Address	3F8 Hex	2F8 Hex

BAUD Rate
This option defines the serial port transmission speed. *MONITOR* supports the following transmission speeds:

300	**600**
1200	**2400**
4800	**9600**
19200	**38400**

NOTE: If you experience loss of data from the serial port, your BAUD rate may need to be decreased.

Data Bits
This option defines the number of data bits used during serial communication. *MONITOR* supports both 7 and 8 data bits.

Stop Bits
This option defines the number of stop bits used during serial communication. *MONITOR* supports both 1 and 2 stop bits.

Use XON/XOFF
This option indicates whether XON/XOFF will be used for flow control during serial communication. XON/XOFF is a protocol used by the receiver to control the flow of data. The receiver sends an XOFF to the sender when the receiver buffer is full. When the sender receives an XOFF, the sender will not send any more data until the sender receives an XON. If your serial device uses the XON/XOFF protocol, enable this parameter.

Function Keys
This option provides a mechanism for *MONITOR* to represent Function Keys even though Function Keys are not part of the ASCII character set. Please refer to Appendix A and L for a complete list of all available Function Keys. There are three options:

- **No Function Keys** - No Function Keys may be represented with this option.
- **Use DC1 - SUB (11H-1AH)** - Function keys F1 through F10 are represented by the ASCII characters 17 - 26.

  NOTE: With this option on, it is not possible to represent the normal ASCII characters 17 - 26.

- **Use 81H - 8AH** - Function keys F1 through F10 are represented by the Extended ASCII characters 129 - 138.

  NOTE: With this option on, it is not possible to represent the Function keys in a bar code. This is because all bar code symbologies only support the ASCII character set from 0 - 127.

- **Use Both** - With this option enabled, Function keys may be represented using both ranges: Use DC1 - SUB and Use 81H - 8AH.

Special Keys
This option provides a mechanism for many non-ASCII special keys to be represented using *MONITOR*. Please refer to Appendix A and L for a complete list of all available special keys. Following is a list of the three options:

- **No Special Keys** - No Special keys are represented using this option.
- **Use 01H - 1FH** - Special keys will be represented within this range of numbers. Please refer to *Appendix A* and *L* for a complete list of all available special keys.

  NOTE: With this option on, it is not possible to represent the normal ASCII characters 17 - 26.

- **Use 8CH - 9BH** - Special keys will be represented within this range of numbers.

  NOTE: With this option on, it is not possible to represent the special characters in a bar code. This is because all bar code symbologies only support the ASCII character set from 0 - 127.

- **Use Both** - With this option enabled, special keys may be represented using both ranges: Use 01H - 1FH and Use 8CH - 9BH.

8Advanced Operations

Creating and Using a Lookup Table

A lookup table allows the programmer of an M3000 program to define lookup data within the structure of the program. Lookup table data serves to restrict the contents of the input during data entry. Unless allowed by a lookup option, only data listed in the lookup table will be accepted by the program during input.

To illustrate the operation of a lookup table let's modify built-in program P4 so that the UOM (Unit of Measure) input will accept only specific types of measurements.

For example:

1. Copy built-in program P4 into memory. For additional information on using the Programming mode, refer to the ***M3000 User's Guide, Chapter 5 Programming.***
2. Press **FUNC + Right Arrow** three times to advance to input record #3.
3. Use the **Down Arrow** to scroll down the program options list until the display shows:

   ```
   Lookup Tbl/File
   ```

4. Enter the following:

   TA,EA,DOZ,CTN,LBS,OZ

   In this example the lookup table settings do the following:

   T - Instructs the M3000 that the type of lookup is a "table" as opposed to a "file".

   A - Is an option that allows mismatches, and will cause the M3000 to ask the user if the data is acceptable anyway.

   Abbreviations EA,DOZ,CTN,LBS,OZ are the only data inputs accepted by the program without displaying an error message. In this case, since mismatches are allowed, the M3000 displays the following message when a user enters anything other than the allowable inputs:

   ```
   Input Not Found
   Accept Anyway?
   ```

   Press the **ENTER** key.

5. Press the **EXIT** key, followed by **Y** or **YES** to exit the program. Press **EXIT** again to leave the program mode.

6. To experiment with the new table settings, select program P4 in the Input mode, create a new data file and observe the results of entering allowed and un-allowed inputs. For additional information on using the Input mode, refer to the ***M3000 User's Guide, Chapter 4 Quick Start-Basic Operations.***

Lookup Table Definition

FORMAT - ID+OPTIONS,ITEM,...,?ERRMSG

ID - T or t - Identifier for a Lookup Table

OPTIONS - A or a - Accept Mismatches (Prompts User)

- C or c - Exact Case Matches Only

- P or p - Partial Matches (Accepts all inputs beginning with the "ITEM" text characters)

ITEM - The Text to Match

ERRMSG - Optional Custom Error Message when the item is not found in the LOOKUP TABLE (can be 2 lines Long - 32 Chars). A '?' character is required at the beginning of the ERROR MESSAGE in order to differentiate it from any of the TABLE ITEMS. This in turn means that LOOKUP ITEMs cannot begin with a '?' character. The ERROR MESSAGE is ignored if OPTION 'A' (Accept Mismatches) is ENABLED.

EXAMPLES - T,EA,DZ,BX,CS,?INVALID UNIT OF MEASURE!

TP,ABC1 (Accepts ABC1, ABC1234, but rejects A, B, C, etc.)

Creating and Using a Lookup File

A lookup file allows the programmer of an M3000 program to specify a Lookup File which the M3000 uses for data verification. Lookup file data serves to restrict the contents of the specified input during data input. Unless allowed by a lookup option, only data listed in the lookup data file will be accepted by the program during input.

In operation, lookup files are similar to lookup tables. They differ in several respects, however. Whereas lookup table data resides within the program, lookup file data resides in an external file that is referred to in the lookup specifications of the program. The structure of a lookup file is critical to proper operation. Details of lookup file structure will be shown in the Lookup File Definition chart that follows later in this explanation.

Simple Lookup File

To illustrate the operation of a lookup file let's modify built-in program P4 so that the P/N input will only accept part numbers included in a lookup file.

For example:

1. Copy built-in program P4 into memory if you haven't done so already. For additional information on using the Programming mode, refer to the ***M3000 User's Guide, Chapter 5 Programming.***
2. Press **FUNC + Right Arrow** one time to advance to input record #1.
3. Use the **Down Arrow** to scroll down the program options list until the display shows:

```
Lookup Tbl/File
```

4. Enter the following:

   F,LOOKUP1

In this example the lookup file settings do the following:

F - Instructs the M3000 that the type of lookup is a "file" as opposed to a "table".

LOOKUP1 - Name of the ASCII lookup file that contains the allowable part numbers for the "P/N" input.

Press the **ENTER** key.

5. Press the **EXIT** key, followed by **Y** or **YES** to exit the program. Press **EXIT** again to leave the program mode.
6. Next, to create the lookup file, use a text editor such as the editor supplied with DOS 5.0 and later DOS releases, to enter and format the lookup text. The size of this file is limited only by M3000 memory. Unless your lookup file has several thousand lines of text, it is unlikely you will ever approach this limit.

File Example:

```
L
LOOKUP1
<Blank Line>
123456
789012
345678
901234
567890
```

7. Save the file.
8. After matching the communications setup between **FUNCTION SETUP, Transmit Setup** with the setup parameters of a communications program such as ***PCOM***, use the **FUNCTION XMIT**, Receive ASCII menu on the M3000 to receive the ASCII lookup file you created.
9. To experiment with the lookup file, select program P4 from within the Input Mode and begin entering part numbers. Notice that only numbers listed in the lookup file are allowed. For additional information on using the Input mode, refer to the ***M3000 User's Guide, Chapter 4 Quick Start-Basic Operations.***

Lookup File Definition

FORMAT ID+OPTIONS,FILENAME,RECFLDS,CMPFLD,DSPFLD,DSPROW,ERRMSG

ID - F or f - Identifier for a Lookup File

OPTIONS - A or a - Accepts mismatches (prompts user)

- C or c - Exact case matches only
- O or o - Lookup File is optional
- P or p - Partial Matches (Accepts all inputs beginning with the "CMPFLD" text characters)

FILE NAME - LOOKUP FILE NAME 8 (Characters Maximum)

RECFLDS - # of fields per Lookup File record (default = 1)

CMPFLD - Field # to compare to in the Lookup record (default =1). Entering a '0' OR '1' will compare to field #1.

DSPFLD - Field # to display if a match is found. Entering a '0' OR '1' will display field #1.

DSPROW - Row to display the display data on (default=1). Valid rows are '0' and '1'.

> **NOTE:** If the Lookup file **DSPROW** overlaps any portion of the display area allocated for the input, then the Input data will overwrite the Lookup display data.

ERRMSG - Optional custom error message when the item is not found on file (can be lines long- 32 characters). A '?' character is required at the beginning of the custom error message if any of the Lookup Field/Display Parameters are not being used. The error message is not used if option 'A' (accept mismatches) above is enabled.

EXAMPLE - FAC, LOOKUP1,2,1,2,1,INCORRECT ITEM PLEASE RE-ENTER

Lookup File with Display

The following lookup file supplies the CMPFLD (compare field) in the first field of each record, and the DSPFLD (display field) in the second field of each record:

```
L
LOOKUP2
<Blank Line>
123456
Widget A
789012
Widget B
345678
Widget C
901234
Widget D
```

These settings when used with Lookup file, "LOOKUP2" will display the appropriate lookup display during **FUNCTION INPUT:**

FAC,LOOKUP2,2,1,2,1

When used with a data file during **FUNCTION INPUT**, this lookup will:

- Display "Widget A" for a match for input data "123456"
- Accept mismatches
- Exact case matches only

Lookup File with a Partial Match

In the following example we have intentionally shortened the number of leading characters in the first field to illustrate the partial match option.

```
L
LOOKUP3
<Blank Line>
123
789012
345678
901234
567890
```

The following lookup definition accepts partial matches for a lookup file named "LOOKUP3":

FP,LOOKUP3

Since we used the partial match option, the M3000 will accept any input that begins with all the leading characters of a lookup field. In this example, the M3000 will accept 123, 123456 or any other combination of characters beginning with "123", but will reject entries such as 1, 12, or 3.

Creating and Using an ASCII Data File

Understanding how to create and import ASCII files is crucial to the utilization of data files. When using an ASCII data file, some of the data fields of an input record contain data; other fields can be left blank and require user input. Program options control whether or not the user can append new data to the file during input, and whether the user can create data files for the program in use.

Typical ASCII Data File Applications

Typical data file applications include, but are not limited to:

- Delivery routes
- Utility meter reader routes
- Sales order pick lists
- Inspection check lists

Creating the ASCII Data File

In the following example you will create an ASCII data file for built-in program P2. We'll show you how to modify P2 to use "Receive Data Files Only", and then how to import the file into the M3000 from the PC. To create the data file, use a text editor such as the text editor supplied with DOS 5.0 and later DOS releases, to enter and format the data file text. The size of this file is limited only by M3000 memory. Unless your data file has several thousand lines of text, it is unlikely you will ever approach this limit.

The first three lines of a data file are reserved for use by the program. These three lines supply M3000 file header information and identify the type of file, the file name and the owner program name. All remaining lines are data. The data structure must conform exactly to the data input structure as defined in the owner program. When a program has header inputs, those header inputs must be placed between the M3000 file header information and the record input data.

Let's take a moment to examine the data structure of built-in program P2. After loading P2 and entering the INPUT mode, P2 displays the following screen:

```
P/N
QTY
```

Each record of a P2 data file has one input for P/N (Part Number) and one input for QTY (Quantity). In the example file that we create, the data file will supply the part number data and leave the quantity input blank for user input. Here's how its done.

Using an ASCII text editor on your PC, enter the following information: (Be sure to insert the blank line between each series of numbers)

```
 D
DATA1
P2
123456
<Blank Line>
789012
<Blank Line>
345678
<Blank Line>
901234
<Blank Line>
```

Save this file giving it the file name "DATA1". You now have a data file that can be used by the M3000. ASCII files imported by the M3000 must conform to the following guidelines.

ASCII File Format Definitions

File ID	- D or d - Data File	+ <CR> [LF]
	or	
	- L or l - Lookup File	+ <CR> [LF]
File Name	- 8 Characters Maximum	+ <CR> [LF]
Program Name	- 8 Characters Maximum	+ <CR> [LF]

NOTE: If the file is a data file, the program name is required, and the program must exist in the M3000 or an error will occur while importing the file.

Data Fields			+ <CR> [LF]
	.		+ <CR> [LF]
	.	+	<CR> [LF]

NOTE: If the file is a data file, a data field must be supplied for each header input defined in the program or a "File Format" error will occur. The last record of a data file must contain all fields or blank lines in place of fields for each allocated field. If data for the last record is incomplete, the entire last record will be deleted by the program.

Maximum data field length is 250 characters

The following data file illustrates how the M3000 can be used to show a delivery route. An easy way to create a program that displays this data file, is to modify built-in program P2. By changing Record 1 and Record 2 prompts of P2 to:

```
CO:
ST:
```

and saving the program with the name "ROUTE1", you can then import and use this data file, which is also named, "Route1". Be sure to add a space after both colons.

```
D
ROUTE1
P2
AJAX MFG
101 MAIN
FRANKLIN HWD
246 MAIN
WE BRAKE
502 W. 5TH
IC OPTICS
900 W. 7TH
LABELWORKS
2190 REGAL PKWY
```

When you view the first record of data file "ROUTE1", the display shows:

```
CO: AJAX MFG
ST: 101 MAIN
```

Controlling How an ASCII Data File Is Used by the M3000

A new screen has been added to the program options in the PROG mode, immediately after the EOF Delay screen. When you cursor down to this screen the display shows:

```
Use Receive Data
Files Only? N
```

Leaving this option set to 'N' or 'NO' allows the user to create new files during FUNCTION INPUT. The 'NO' setting, however, does not prohibit the use of imported ASCII data files.

When this option is changed to 'Y' or 'YES', the M3000 will accept only imported ASCII data files, and does not allow the user to create new data files for the program during FUNCTION INPUT.

After responding 'Yes' to the "Use Receive Data Files Only" screen, another screen appears. This new screen asks?

```
Allow Append To
End of File? Y
```

If you do not allow append, user input is restricted to the existing contents of the data file in use and the user may not add additional records.

CAUTION: Selecting "Allow Append To End of File? Y", can cause LOSS OF DATA when the user EXITs a data file without satisfying the input requirements of ALL REQUIRED INPUT FIELDS in the last record. When the user violates this precaution the M3000 deletes the LAST RECORD in the data file. This condition continues to occur each time the user fails to complete ALL REQUIRED INPUT FIELDS and EXITs DATA ENTRY.

You can avoid this problem by using either of these options in each USER SUPPLIED input field:

1. Setting Input Size, Min=0

   or

2. Require Input=N

Importing an ASCII Data File

The **FUNCTION XMIT** mode screens have been changed to accommodate the new features of Version 2.0. Before attempting to use the **XMIT** mode, make sure the options selected under **FUNC SETUP, >Transmit Setup**, match the setup parameters of the communications program that you are using on the PC. Also, make sure that you have connected the M3000 RS232 serial cable, or Modem cable. If you're using a modem we recommend you use XMODEM protocol. To import the data file "DATA1", do the following:

1. Press the **XMIT** key. The display shows:

   ```
   Transmit Select
   >Upload Data
   ```

   press the **Down Arrow**, followed by the **ENTER** key. The display shows:

   ```
   Receive Select
   >ASCII Files
   ```

2. Use the **Up/Down arrow** keys to select either RS232 Serial or Modem, and press the **ENTER** key. The M3000 displays a "Receive Waiting" message or if you are using XMODEM protocol, "Waiting for XMODEM Connect".

3. From your PC communications program select either Send File, or Upload and enter the file name "DATA1". Press the **ENTER** key on the PC keyboard. Do not touch the M3000 keyboard until after the M3000 displays:

   ```
   Receive complete
   ```

   Press the **ENTER** key.

   The display shows:

   ```
   Files Received
   Data=1  LkUp=0
   ```

You can now exit the **XMIT** mode and use the data file from within the **FUNCTION INPUT** mode. If the file transfer failed, the M3000 displays an appropriate error message. Correct your communication settings and try again.

Other Advanced Options

The following information describes other advanced options in FUNCTION PROGRAM. Related information is located in ***Creating and Using a Lookup Table***, ***Creating and Using an ASCII Lookup File***, and ***Creating and Using an ASCII Data File***.

Restricting Input to Downloaded ASCII Data Files Only

```
Use Receive Data
Files Only? N
```

When this program option is set to 'No', the M3000 allows the user to create data files at the beginning of **FUNCTION INPUT**. When this input is set to 'Yes', user input is restricted to the use of downloaded ASCII data files. For more information on ASCII data files, see Creating and Using an ASCII Data File. After selecting Yes to this option, the display shows:

```
Allow Append To
End of File? N
```

We do not recommend the use of the file append option unless it is absolutely necessary.

> **CAUTION:** Selecting "Allow Append To End of File? Y", can cause LOSS OF DATA when the user EXITs a data file without satisfying the input requirements of ALL REQUIRED INPUT FIELDS in the last record. When the user violates this precaution , the M3000 deletes the LAST RECORD in the data file. This condition continues to occur each time the user fails to complete ALL REQUIRED INPUT FIELDS and **EXIT**s DATA ENTRY.

For more information on "Allow Append To End of File? Y", see ***Creating and Using an ASCII Data File.***

Creating Un-Editable Input Fields

A new Data Input Type has been added to the M3000 Program Options that prevents a user from changing the input data.

```
Input Type
D,S,Y,E or N: D
```

The new data type is 'N'. An 'N' Input Type has the same general parameters of a 'D' Input Type with these exceptions:

1. Data can be entered into the field ONE time only.
2. Once entered, the data cannot be edited. No editing is allowed.

If "Input Type" is set to 'N', "Use Receive Data Files Only" is set to 'Y', and "Auto Advance" is set to 'Y' then the cursor automatically advances past any imported data and stops in the next input that requires user input.

New Input Source Type- RS-232 Serial

A new Input Source Type has been added to the M3000 Program Options that allows the unit to receive serial data during **FUNCTION INPUT**. Some devices such as scanners, and automatic weight scales output serial data. This option is controlled from the following display:

```
Input Source
K,B,S or X: B
```

When this option is set to 'S', only serial and keyboard inputs are allowed. When set to 'X', the M3000 accepts ALL input source types.

Serial Input requires additional setup and connection procedures. To prepare the M3000 for serial input:

1. Verify that **FUNCTION SETUP**, **>Serial Port**, setup parameters match the parameters of the serial device you intend to use.
2. Set the **FUNCTION PROGRAM** option for the input field that requires serial input, as shown:

```
Input Source
K,B,S or X: S
```

3. Make sure power is OFF on both the M3000, and the serial device.
4. Connect the M3000 RS232 Serial Cable to the serial device.
5. Power ON the serial device and the M3000.
6. Create a data file and enter some sample data using the serial input device. If the M3000 fails to accept the serial data, check **FUNCTION SETUP, >Serial Port** parameters, serial device parameters, and cable connections.

NOTE: Enabling RS-232 serial input reduces battery life. To achieve maximum battery performance, select RS-232 serial input only when actually needed.

Embedding the Data File Name in the Output

When you want to embed the 'Data File Name' in the prefix or suffix of any input field, enter **/A0**.

Embedding Header Information in Record Input Fields

When you want to embed the contents of a Header Input into the prefix or suffix of any record input field, enter /A followed by the number of the header. For example:

/A1 is the reserved variable for 'Header Input 1'.

You can have from 1 to 9 header variables. The contents of one header cannot be transmitted from within a different header using embedded header information commands.

Pause During FUNCTION TRANSMIT

You can now embed a 'Transmit Pause' that causes the M3000 to stop file transmission during **FUNCTION TRANSMIT** and display:

```
Transmit Paused
Press Any Key
```

During this pause, the user can manually enter data into data base fields, or do other operations. To resume file transmission, press any key on the M3000 keyboard.

To embed a 'Transmit Pause' enter a **/FA** at any of the following M3000 inputs:

Prefix	Suffix
SOF Text	EOF Text
SOT Text	EOT Text

A program can have multiple pauses embedded at varied locations throughout program.

NOTE: Transmit pauses will not pause if using a modem or if using XMODEM protocol, instead, you will get stray 0FAH characters.

9Troubleshooting

Introduction

The M3000 detects and informs you of many of the errors that can occur during operation. The following table lists these messages and explains their meaning. A Troubleshooting Guide follows the table of error messages.

Transmit Error Messages

Message	Definition	Solution
Aborting...	Displayed whenever the M3000 is going to abort communications.	Retry Communications.
Connect Error	Modem connected, but did not indicate at what speed.	Modem must be Hayes compatiible. Retry communications.
Data Overrun	M3000 received more data than it could fit into memory.	Erase un-wanted data files and programs.
Host Abort	The host/receiving computer aborted an XMODEM transmission from the M3000.	Retry Communications.
Lost Carrier	'CARRIER DETECT' was lost.	Retry Communications.
Lost CTS	'CLEAR TO SEND' was lost.	Retry Communications.
Lost DSR	'DATA SET READY' was lost.	Retry Communications.
Modem Not Ready	Modem is not ready, or cannot be found. No 'CTS' from modem was detected.	Check modem cable and modem switch settings
No Carrier	No carrier detect was found.	Retry communications & check modem cable.
No Connect	Modem was unable to connect with another modem.	Verify that a modem is at the number being dialed.
No Data Files Found	There are no data files in the M3000 to transmit.	Enter data files before selecting **FUNC + XMIT.**
No Program Files Found	There Are No Programs In The M3000 To Transmit.	Create programs using **FUNC + PROG**
No Response	M3000 stopped receiving responses when using XMODEM protocol.	Decrease baud rate. Retry communications.
No Valid Receive Data Found	The M3000 received unrecognizable data.	Verify transmit settings. Retry communications.
Power Failed	Power failure occurred during communications.	Replace battery. Check power supply.
Receive Error	Indicates that the receive communications aborted with an error.	Retry communications.
Retries Exceeded	XMODEM retry count exceeded.	Decrease baud rate.

Message	Cause	Solution
Transmit Error	Indicates that the transmit communications aborted with an error.	Retry communications.
User Abort	A key was pressed on the M3000, causing an abort.	Decrease baud rate.
Wedge Cable Is Not Connected	The keyboard wedge cable is not connected when trying to do a keyboard wedge upload.	Check cables and check transmit setup parameters.
Xmodem Error	Unable to connect using XMODEM protocol.	Check cables and check transmit setup parameters.

Bar Code Data Errors

Bar Code Is Too Long For Input	Bar code has more characters than allowed by maximum input size specification.	Scan correct size bar codes or midify input size in the program.
Bar Code Is Too Short For Input	Bar code has fewer characters than allowed by minimum input size specification.	Scan correct size bar codes or midify input size in the program.
Invalid Bar Code Data For Input	Bar code data does not match the current input's data specifications	Scan correct bar codes or modify input data specifications in the program.
Invalid Bar Code Type	Scanned bar code does not match acceptable bar code types specified for the current input.	Scan correct bar codes or modify bar code types in the program.

Function Recall Errors

Recall Buffer Is Empty	No information has been stored using **FUNC** + **STORE** .	Enter data and save for **FUNC** + **RECALL**
Recall Data Not Valid For Input	**RECALL** data does not match the current input's data specifications.	Modify recall data or change input data specifications in the program.
Recall Data Too Large For Input	Contents of **RECALL** buffer exceed maximum input size specification.	Modify recall data or change input size in the program.

Miscellaneous Errors

END OF FILE No More Inputs	End of defined program inputs has been reached.	None.
Battery Low Press Any Key	Battery low detected.	Replace 9V Alkaline battery.
Clock Error No Response	Real Time Clock is not responding.	Call for service.
External Ram Error	M3000 has detected an external RAM error.	Call for service.
FATAL FILE ERROR	M3000 has detected an un-recoverable file error.	None
FILE ERROR	M3000 has detected a file error and will attempt to repair file contents	None
Input Is Full Cannot Insert	Maximum input size specification has been reached, and will not allow additional characters.	Press **INS** key to exit out of the insert mode.

Message	Definition	Solution
`Record Requires 1 Operator Input`	Each record loop requires at least 1 operator input.	Create and interactive input in the record loop.
`Inserted Record Must Be Complete`	An inserted record is not complete.	Continue entering data until inserted record is complete.
`Insufficient Memory`	Not Enough Memory for a built-in program to load into RAM.	Erase unwanted programs and data files.
`Memory Near Full ___ Bytes Free`	When current memory is less that 255 bytes, M3000 displays amount of memory remaining.	Erase unwanted programs and data files.
`No Edit Allowed`	Attempt to change to mask using **FUNC** + **HELP** is not allowed.	None.
`No Programs Loaded In Memory`	No built-in programs have been copied into RAM, and no new programs have been created.	Create programs using **FUNC** + **PROG**.
`Not Enough Memory`	M3000 does not have sufficient memory available to accept input.	Erase unwanted programs and data files.
`Program Already Loaded In Ram`	M3000 can have only one program of the same name. Duplicate program names not allowed.	Change program name.
`Program Has Data No Edit Allowed`	Program cannot be changed until data file has been **ERASED**.	Erase any data files created by this program.
`Program Has Data No New Inputs`	Cannot add new records to program because the program has an associated data file.	Erase any data files created by this program.
`Program Input Limit Reached`	M3000 limits the number of input definitions to 250.	None.
`Program Requires 1 Operator Input`	Each program requires at least 1 operator input	Create an input definition.
`Program Requires At Least 1 Input`	You cannot save a program file having less than one input definition.	Create an input definition.
`Shutdown Failure Remove Power`	M3000 is unable to power down.	Remove the 9V Alkaline battery and any power source.
`Unit Was Shutoff By Power Fail`	A power failure caused the M3000 to shut off.	Replace 9V Alkaline battery.

Allow Duplicates Error Messages

`Input Already On File, Go There?`	A duplicate input has been detected when **No Duplicates Allowed** is enabled, and the record has more than one input.	Enter **Y** or **Yes** to proceed to the duplicate input. Enter **N** or **No** and enter other, non duplicate data.
`Input Is Already On File`	A duplicate input has been detected when **No Duplicates Allowed** is enabled.	Enter other, non duplicate data.

Function Search Errors

Message	Definition	Solution
`Complete Input Before Searching`	You attempted a **FUNC SEARCH** before completing minimum input requirements for the current field.	Continue to enter data until minimum input requirements are satisfied.
`Complete Record Before Searching`	You attempted a **FUNC SEARCH** before completing all inputs of an inserted record.	Complete all remaining inputs before attempting **FUNC SEARCH**

Lookup/Data File Errors During FUNCTION TRANSMIT

Message	Definition	Solution
`Field Length`	The data field contains more than 250 characters	Reduce the size of the data string.
`File ID Error`	The file does not have a valid ID in the file header definition.	Use a valid ID. Valid ID's are: L, l, D, d
`File Name Error`	Received file does not have a valid name.	File names must be 1 to 8 characters in length.
`Pgm Name Error`	The received data file does not have a valid program name, or the program does not reside in memory.	File names must be 1 to 8 characters in length. Create or load the program into M3000 memory.
`File Format ERR`	The received data file does not have the correct number of header inputs.	Ensure that data file structure matches program input file structure.

Serial Input Error Messages

Message	Solution
`Serial Data Too Short For Input`	Ensure serial device is scanning , measuring, or otherwise outputting valid information.
`Serial Data Too Long For Input`	Ensure serial device is scanning , measuring, or otherwise outputting valid information.
`Serial Data Not Valid For Input`	Take action necessary to ensure serial device is scanning, measuring, or otherwise outputting valid information.

Input Error Message while Using Lookup Tables

Message	Solution
`Input Not Found In Lookup Table`	Ensure input data matches one of the lookup table entries.
`Lookup File Is Not In Memory`	Download the lookup file using, **FUNCT** + **XMIT**, Receive ASCII Files.
`Input Not Found In Lookup File`	Enter or scan only valid data.
`Input Not Found Accept Anyway?`	Enter or scan valid data, or answer 'Yes' to accept the data.

Troubleshooting Guide

Problem	Definition	Solution
PC Keyboard does not operate after disconnecting the M3000 from the Keyboard Wedge Cable	Shunt is not connected to M3000 Y-Cable connector.	Connect M3000 shunt to Keyboard Wedge Y-Cable connector, or unplug Y-Cable and connect keyboard connector directly to PC.
The 25-pin serial connector does not fit my PC's 9-pin input.	Connector mismatch.	Connect 25-pin to 9-pin adapter to end of M3000 Serial or Serial Y-Cable.
No data from M3000 Keypad.	M3000 in non portable mode.	Normal condition.
Difficulty scanning bar codes while using Laser/CCD scanner.	Laser too close to bar code. Scanner too far from bar code. Scanner pointing angle incorrect.	Scan within the guidelines specified for the scanner you are using. Adjust Laser/CCD Opts/Timeout
M3000 does not accept special character or function key codes.	Formatting error while programming.	Precede HEX valure by a "/". Use "//" to output a slash.
Short battery life.	Continous operation in RS232 Serial or Serial Wedge modes on battery power alone.	Use External Power Supply. Automatic shut-off is disabled during non portable modes.
Losing data during serial communications.	Baud rate too fast. Protocol incorrect.	Use slower baud rate. Select appropriate protocol.
How do I select the proper XMODEM mode?	No problem.	M3000 auto detects proper XMODEM mode, ie. Checksum, CRC.
2 beeps at Power On and nothing is displayed	LCD display error detected.	Call for service.
M3000 locks up and will not shut off. **NOTE:** While in keyboard wedge mode the M3000 cannot be shut off.	M3000 Lock Up	1. Turn off computer. 2. Disconnect M3000 from the computer. 3. Disconnect any external power supply and remove the 9V battery. 4. Reconnect 9V battery. 5. Press and hold down the **N** key and **R** key. Then press the **ON** key. The M3000 will power up showing the main display.

10Specifications

General Specifications

Input Devices:	Wand, CCD, 5V Laser, RS-232 Serial
Keyboard:	54 key embossed tactile membrane keyboard with separate alpha and numeric keys.
Special Keys:	Function Keys F1-F10, Ctrl, Alt, Shift, Home, End, PgUp, PgDn, Ins, Del, Arrow Keys.
Display:	2x16 Super-Twist LCD (wide viewing angle)
Memory:	64K EPROM, 64K RAM with data compression and variable length fields
Date/Time:	Real-time clock supports date and time stamps
Bar Codes:	Code 39, Extended Code 39 (Full ASCII), Interleaved 2 of 5, UPC-A, UPC-E, EAN-8, EAN-13, UPC & EAN supplements, Code 128, Code 93, Code 11, CODABAR, MSI/Plessey
Serial	**Baud rates:** 300 - 38,400 **Data bits:** 7 or 8 **Stop Bits:** 1 or 2 **Parity:** ODD, EVEN, MARK, NONE **Inter-character delay:** 0 - 99 msec
Protocols:	**RS-232:** XON/XOFF, XMODEM, ASCII, HAYES Modem **Serial Wedge:** ASCII or PC-TERMINAL scan codes **Keyboard Wedge:** IBM PC/XT/AT or PS/2
Power:	**Operating:** 9V Alkaline battery or external power supply. **Backup:** Lithium battery for memory backup
Physical:	4.0"W x 7.5"L x 1.3"H, 14 oz.
Environmental:	**Operating Temperature:** 0°C to +50°C (+32°F to +120°F) **Relative Humidity:** 5% to 95% (non-condensing)
Warranty:	One year, 30-Day Money-Back Guarantee

External Power Supply Interface

Connector, Female: 2.1mm X 5.5mm (9-12 VDC center negative)

Battery Performance

INPUT DEVICE	RUN TIME	NO. OF DECODES
Hewlett-Packard HBCS-A300 Wand	65 Hours	More than 37,000
Opticon 2.3 Inch CCD	74 Hours	More than 44,000
Metrologic Instruments 941 Laser	13 Hours	More than 7,000
Symbol LS-2000 Laser	71 Hours	More than 42,000
Photographic Sciences PSC 5310 Laser	56 Hours	More than 33,000

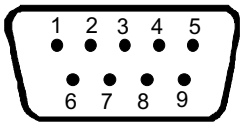
NOTES:

1. The M3000 ran continuously for the duration of each test using a standard EVEREADY ENERGIZER , 9V Alkaline battery.
2. Test label was a standard 100% UPC-A bar code, read approximately once every six seconds.
3. Above test results are not a guaranteed minimum, only typical results. Your results may vary due to battery condition, input device, ambient temperature, etc.

Input/Output Specifications

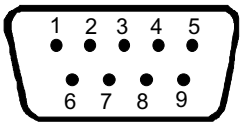
Laser Interface:

PIN	SIGNAL
1	Sync
2	Data
3	Decode LED
4	No Connection
5	Trigger
6	Head Enable
7	Ground
8	Shield Ground
9	Power, +5V

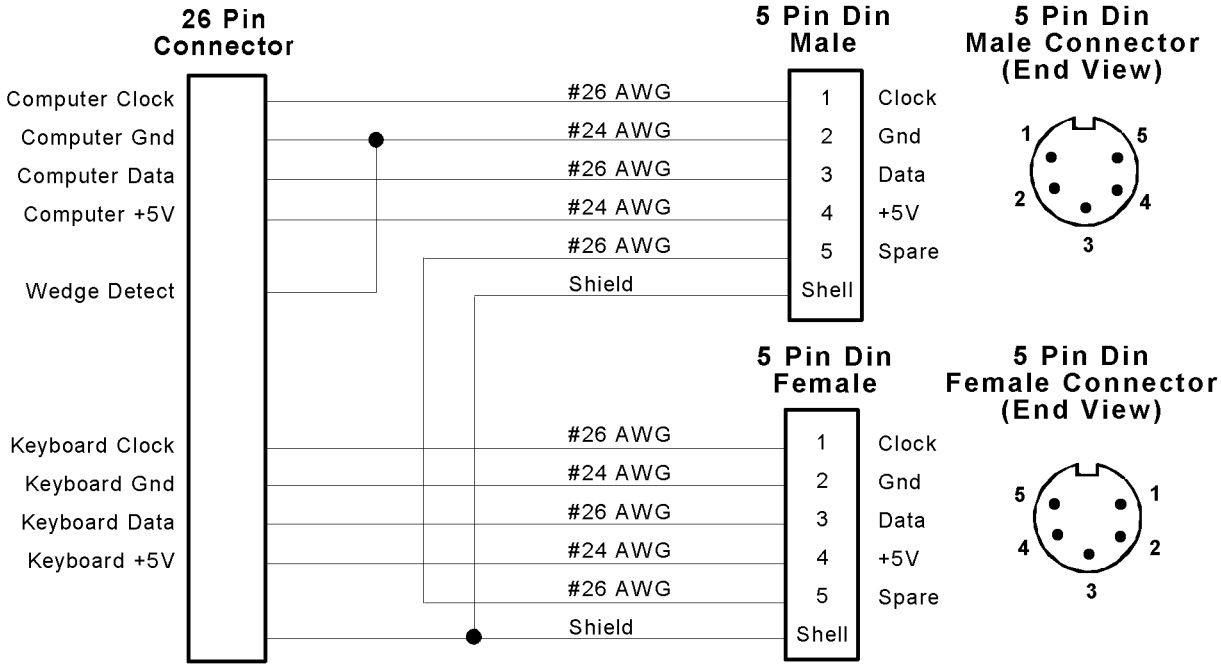


Wand Interface:

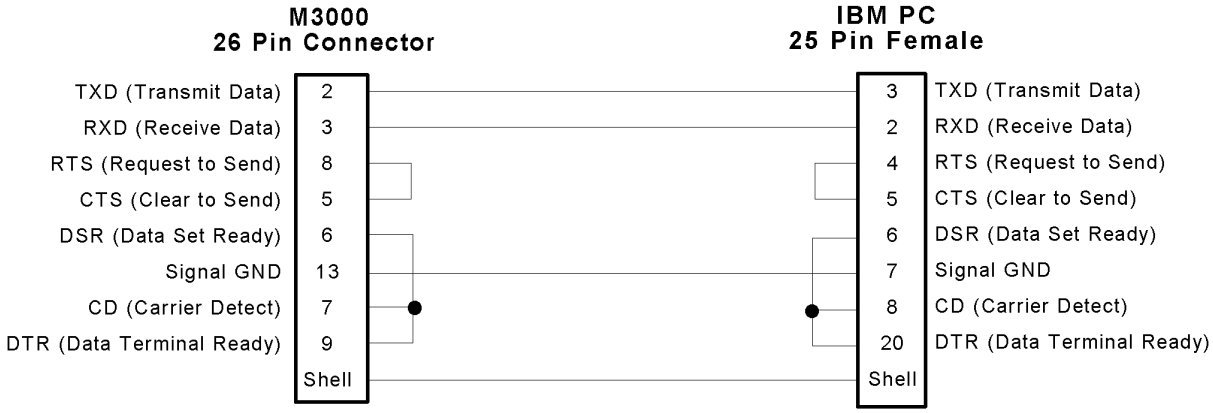
PIN	SIGNAL
2	Data
7	Ground
8	Shield Ground
9	Power



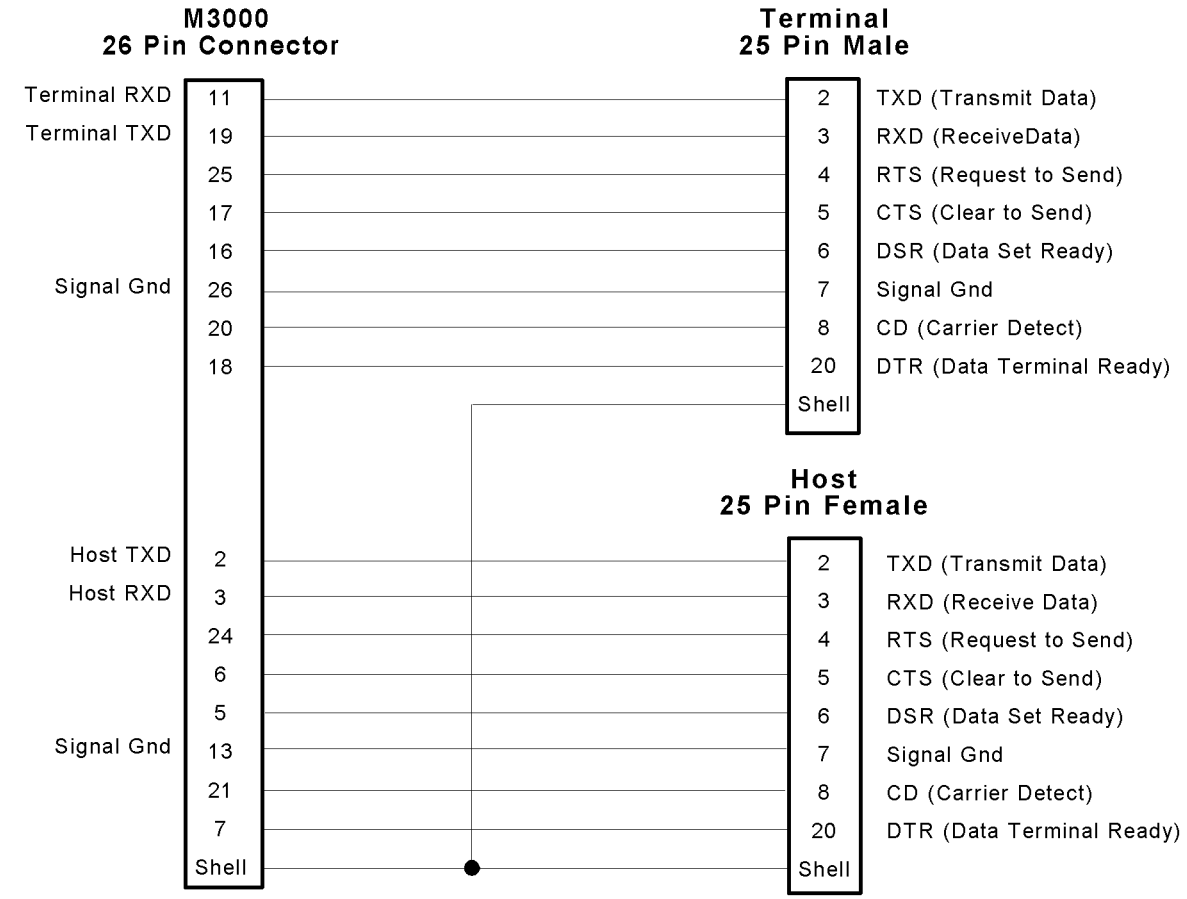
Keyboard Wedge "Y" Cable Wiring Diagram



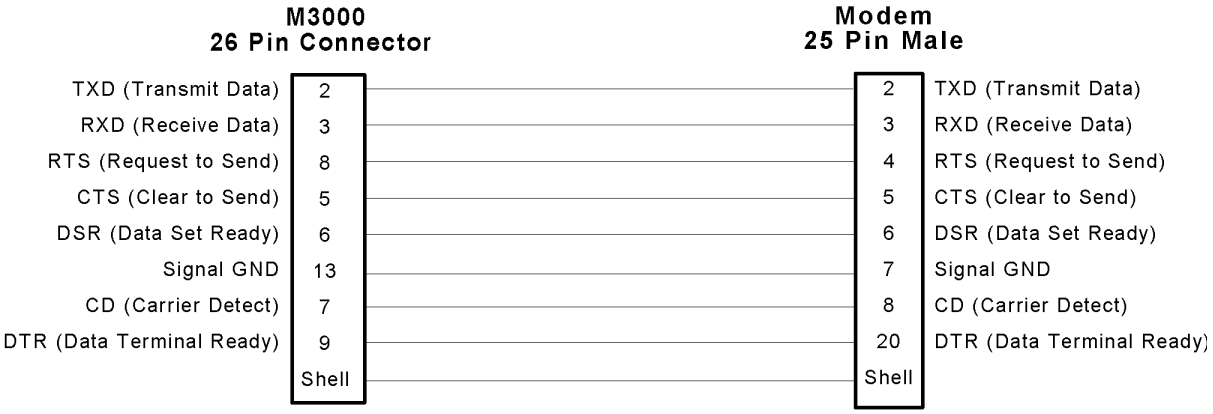
RS232 Serial Cable Wiring Diagram



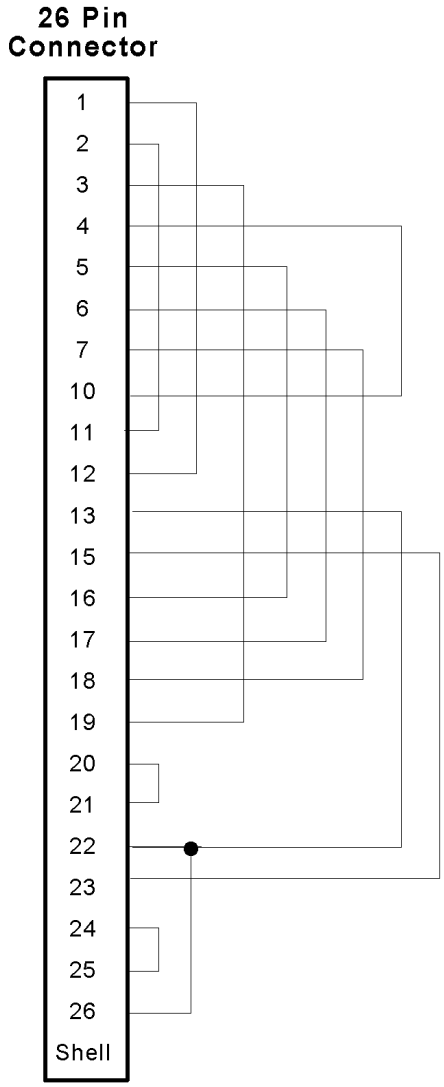
Serial Wedge "Y" Cable Wiring Diagram

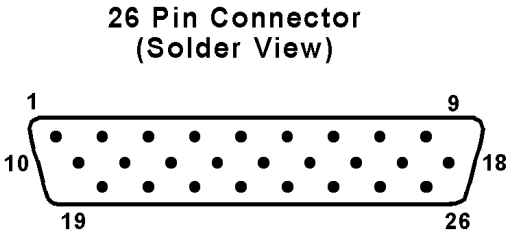


Modem Cable Wiring Diagram



Keyboard Wedge Shunt Wiring Diagram





11Maintenance

Introduction

With proper care the M3000 should provide years of trouble-free operation. The following provides general information on the care and upkeep of the unit.

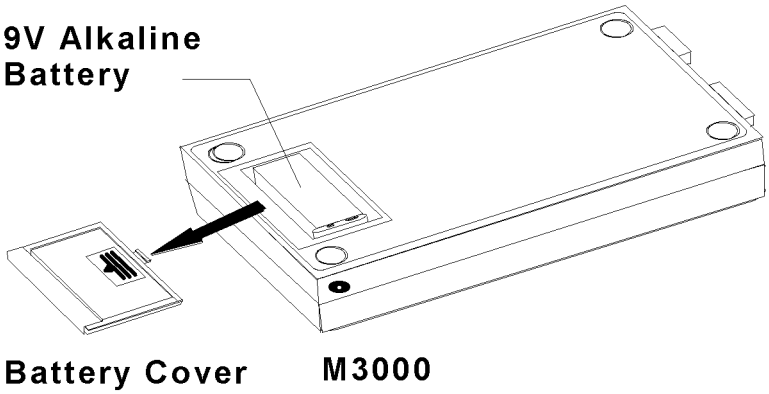
Battery Replacement

Depending on operating conditions, the 9V Alkaline battery should provide from 10 to 70 hours of operation. When the battery power drops below an acceptable level the M3000 prompts:

```
Battery Low
Press Any Key
```

To replace the battery:

1. Place the M3000 face down as shown in the following illustration.



2. Press down on the battery compartment cover, and slide the cover away from the case of the M3000.
3. Carefully lift the battery from the case.
4. Un-snap the old battery and replace with a new, **9-Volt Alkaline battery**.
5. Replace the battery cover.

EPROM Replacement

1. Disconnect any cables, scanning devices and power supplies from the M3000 portable.
2. Turn on the M3000. Press the **EXIT** key until the display shows:

   ```
    Portable Mode
   Select Function
   ```

   and then shut the M3000 off.

   NOTE: This is a very important step and will prevent loss of any data or programs

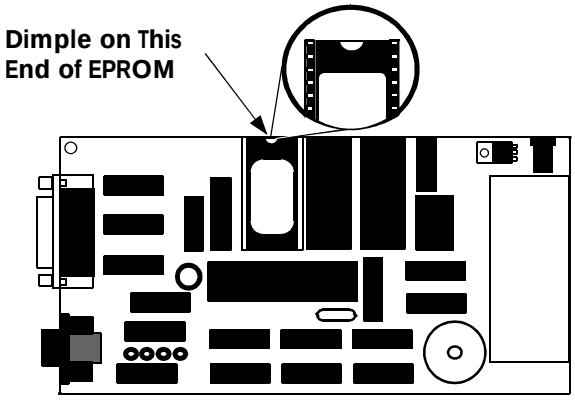
3. Turn the M3000 upside down and remove the four screws from the bottom of the case. Return the M3000 back to the upright position.
4. Lift the top half of the M3000 case straight up until the four plastic posts have cleared the circuit board. Next, fold the top of the case back until the keyboard is facing downward.

   NOTE: Do not disconnect the keyboard.

5. Carefully lift the circuit board up out of the M3000 lower case and fold it over on the top part of the case that you removed earlier.

   NOTE: The battery wires still connect the circuit board to the lower case - do not disconnect the battery wires.

6. Locate the EPROM chip that has the white label on top. Using a small slot head screwdriver - carefully pry the chip from the socket.



M3000 EPROM Alignment

7. Take the new version EPROM chip and insert it into the socket with the dimple in the end of the chip facing the outer edge of the circuit board. If the pins of the chip do not line up with the socket, you may need to bend the chip's pins slightly to align them with the the socket. Press the EPROM chip firmly into place.

   NOTE: Sometimes if the pins are not aligned correctly, the pins will bend out or in, and will not make proper contact with the socket.

8. Verify that all EPROM pins are inserted into the socket
9. Carefully re-assemble the M3000 portable unit making sure that the battery cables do not get pinched between the circuit board and the battery compartment.

Avoiding Damage

The M3000 can be damaged by any of the following conditions:

Electrical

The electronic components of the M3000 can be damaged by exposure to intense electrical fields. If possible, avoid exposing the unit to the following conditions:

- Electrostatic discharge produced by friction. For example, heavily carpeted areas during periods of low humidity.
- Avoid using the M3000 with a Modem during electrical storms.
- Avoid exposure to any source of intense arcing.
- Exposure to powerful electromagnetic fields. For example, large motors, induction coils, transformers, etc.
- Exposure to sources of ionizing radiation. For example, nuclear reactors, x-rays, etc.

Mechanical

Avoid the following:

- Direct exposure to water. Do not immerse.
- Severe drops or physical impact.
- Extreme heat or open flame. For example, do not leave on the dash board or inclosed in a vehicle.
- Highly corrosive environments
- Strong industrial cleaning solvents

Cleaning

When the unit needs cleaning, use only a soft cloth, dampened in clean warm water. Do not use petroleum based solvents, or powerful detergents.

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12Maintenance

Introduction

With proper care the M3000 should provide years of trouble-free operation. The following provides general information on the care and upkeep of the unit.

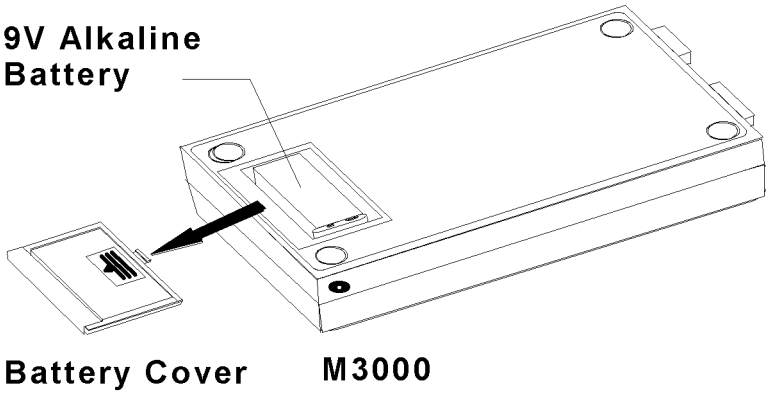
Battery Replacement

Depending on operating conditions, the 9V Alkaline battery should provide from 10 to 70 hours of operation. When the battery power drops below an acceptable level the M3000 prompts:

```
Battery Low
Press Any Key
```

To replace the battery:

1. Place the M3000 face down as shown in the following illustration.



2. Press down on the battery compartment cover, and slide the cover away from the case of the M3000.
3. Carefully lift the battery from the case.
4. Un-snap the old battery and replace with a new, **9-Volt Alkaline battery**.
5. Replace the battery cover.

EPROM Replacement

1. Disconnect any cables, scanning devices and power supplies from the M3000 portable.
2. Turn on the M3000. Press the **EXIT** key until the display shows:

   ```
    Portable Mode
   Select Function
   ```

   and then shut the M3000 off.

   NOTE: This is a very important step and will prevent loss of any data or programs

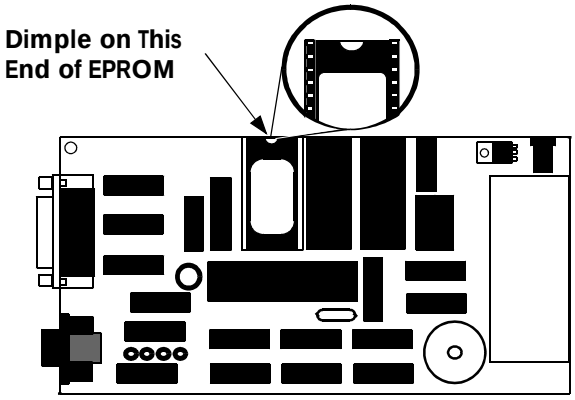
3. Turn the M3000 upside down and remove the four screws from the bottom of the case. Return the M3000 back to the upright position.
4. Lift the top half of the M3000 case straight up until the four plastic posts have cleared the circuit board. Next, fold the top of the case back until the keyboard is facing downward.

   NOTE: Do not disconnect the keyboard.

5. Carefully lift the circuit board up out of the M3000 lower case and fold it over on the top part of the case that you removed earlier.

   NOTE: The battery wires still connect the circuit board to the lower case - do not disconnect the battery wires.

6. Locate the EPROM chip that has the white label on top. Using a small slot head screwdriver - carefully pry the chip from the socket.



M3000 EPROM Alignment

7. Take the new version EPROM chip and insert it into the socket with the dimple in the end of the chip facing the outer edge of the circuit board. If the pins of the chip do not line up with the socket, you may need to bend the chip's pins slightly to align them with the the socket. Press the EPROM chip firmly into place.

   NOTE: Sometimes if the pins are not aligned correctly, the pins will bend out or in, and will not make proper contact with the socket.

8. Verify that all EPROM pins are inserted into the socket
9. Carefully re-assemble the M3000 portable unit making sure that the battery cables do not get pinched between the circuit board and the battery compartment.

Avoiding Damage

The M3000 can be damaged by any of the following conditions:

Electrical

The electronic components of the M3000 can be damaged by exposure to intense electrical fields. If possible, avoid exposing the unit to the following conditions:

- Electrostatic discharge produced by friction. For example, heavily carpeted areas during periods of low humidity.
- Avoid using the M3000 with a Modem during electrical storms.
- Avoid exposure to any source of intense arcing.
- Exposure to powerful electromagnetic fields. For example, large motors, induction coils, transformers, etc.
- Exposure to sources of ionizing radiation. For example, x-rays, etc.

Mechanical

Avoid the following:

- Direct exposure to water. Do not immerse.
- Severe drops or physical impact.
- Extreme heat or open flame. For example, do not leave on the dash board or inclosed in a vehicle.
- Highly corrosive environments
- Strong industrial cleaning solvents

Cleaning

When the unit needs cleaning, use only a soft cloth, dampened in clean warm water. Do not use petroleum based solvents, or powerful detergents.

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Appendixes

APPENDIX A - BAR CODE FUNCTION & SPECIAL KEYS

With FUNCTION KEYS enabled, the decoder can accept a given ASCII character and transmit a corresponding FUNCTION KEY to the computer. The ASCII characters and values are listed in the table below.

FUNCTION KEYS

ASCII CHARACTERS	FUNCTION KEYS	ASCII VALUES
DC1	F1	17
DC2	F2	18
DC3	F3	19
DC4	F4	20
NAK	F5	21
SYN	F6	22
ETB	F7	23
CAN	F8	24
EM	F9	25
SUB	F10	26

SPECIAL KEYS

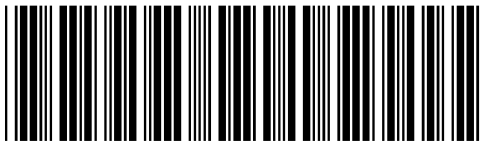
With SPECIAL KEYS enabled, the decoder can accept a given ASCII character and transmit a corresponding SPECIAL KEY to the computer. The ASCII characters and values are listed in the table below.

ASCII CHARACTERS	SPECIAL KEYS	ASCII VALUES
SOH	← (Left Arrow)	1
STX	→ (Right Arrow)	2
ETX	↑ (Up Arrow)	3
EOT	↓ (Down Arrow)	4
ENQ	HOME	5
ACK	END	6
BEL	DELETE	7
VT	PAGE UP	11
FF	PAGE DOWN	12
SO	SHIFT ON	14
SI	SHIFT OFF	15
DLE	INS	16
FS	CTRL ON	28
GS	CTRL OFF	29
RS	ALT ON	30
US	ALT OFF	31

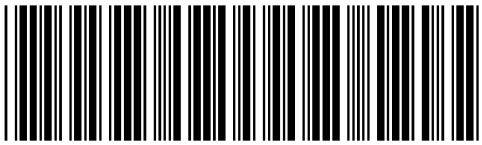
APPENDIX B - CODE 39 SPECIFICATIONS

Code 39 is a variable length alphanumeric code. Each character is made up of nine elements, five bars and four spaces. Three of the elements are wide and six are narrow. Code 39 is a popular choice for applications because:

- it is easy to print with low cost dot matrix printers
- large character set (A-Z, 0-9, 7 special characters)
- code can be extended to include the entire 128 ASCII character set variable length



0123456789



ABCDE12345

CHARACTERISTICS:

Character Set:	26 uppercase letters (A - Z) 10 digits (0 - 9) 7 special characters (SPACE -.$/+%)
Symbol Length:	Variable
Check Digit:	Optional
Bi-directional Decoding:	Yes
Maximum Density:	9.8 char./inch (using .0075 inch narrow element)

Char-acter	Pattern	Bars	Spaces	Char-acter	Pattern	Bars	Spaces
1		10001	0100	M		11000	0001
2		01001	0100	N		00101	0001
3		11000	0100	O		10100	0001
4		00101	0100	P		01100	0001
5		10100	0100	Q		00011	0001
6		01100	0100	R		10010	0001
7		00011	0100	S		01010	0001
8		10010	0100	T		00110	0001
9		01010	0100	U		10001	1000
0		00110	0100	V		01001	1000
A		10001	0010	W		11000	1000
B		01001	0010	X		00101	1000
C		11000	0010	Y		10100	1000
D		00101	0010	Z		01100	1000
E		10100	0010	-		00011	1000
F		01100	0010	.		10010	1000
G		00011	0010	Space		01010	1000
H		10010	0010	*		00110	1000
I		01010	0010	$		00000	1110
J		00110	0010	/		00000	1101
K		10001	0001	+		00000	1011
L		01001	0001	%		00000	0111

An optional check character can be used for applications requiring higher levels of data security. When used, the check character immediately follows the last data character. The check digit is calculated as follows:

1. Each data character is assigned a numerical value as shown in the following table:

CHAR	VALUE	CHAR	VALUE	CHAR	VALUE
0	0	F	15	U	30
1	1	G	16	V	31
2	2	H	17	W	32
3	3	I	18	X	33
4	4	J	19	Y	34
5	5	K	20	Z	35
6	6	L	21	-	36
7	7	M	22	.	37
8	8	N	23	SPACE	38
9	9	O	24	$	39
A	10	P	25	/	40
B	11	Q	26	+	41
C	12	R	27	%	42
D	13	S	28		
E	14	T	29		

2. Sum all of the numerical values for each data character in the bar code.
3. Divide this sum by 43.
4. The remainder is the numerical value for the check digit. Use the table in step 1 to look-up the corresponding character.

EXAMPLE: Sample Code 39 data = A394T

1. Use the table to lookup the numerical value for each character.
2. 10 + 3 + 9 + 4 + 29 = 55
3. 55 / 43 = 1 remainder 12
4. Check digit numerical value = 12
   The check digit = C.
   Bar code with check digit = A394TC

APPENDIX C - FULL ASCII EXTENSION TO CODE 39

The FULL ASCII EXTENSION expands standard CODE 39 to include the entire 128 ASCII character set. This is accomplished by pairing standard CODE 39 characters. The $, +, /, and % characters are paired as shown in the following table:

ASCII	CODE	ASCII	CODE	ASCII	CODE	ASCII	CODE
NUL	%U	!	/A	A	A	a	+A
SOH	$A	"	/B	B	B	b	+B
STX	$B	#	/C	C	C	c	+C
ETX	$C	$	/D	D	D	d	+D
EOT	$D	%	/E	E	E	e	+E
TB	$E	&	/F	F	F	f	+F
ACK	$F	'	/G	G	G	g	+G
BEL	$G	(	/H	H	H	h	+H
BS	$H	)	/I	I	I	i	+I
HT	$I	*	/J	J	J	j	+J
LF	$J	+	/K	K	K	k	+K
VT	$K	,	/L	L	L	l	+L
FF	$L	-	-	M	M	m	+M
CR	$M	.	.	N	N	n	+N
SO	$N	/	/O	O	O	o	+O
SI	$O	0	0 or /P	P	P	p	+P
DLE	$P	1	1 or /Q	Q	Q	q	+Q
DC1	$Q	2	2 or /R	R	R	r	+R
DC2	$R	3	3 or /S	S	S	s	+S
DC3	$S	4	4 or /T	T	T	t	+T
DC4	$T	5	5 or /U	U	U	u	+U
NAK	$U	6	6 or /V	V	V	v	+V
SYN	$V	7	7 or W	W	W	w	+W
ETB	$W	8	8 or X	X	X	x	+X
CAN	$X	9	9 or Y	Y	Y	y	+Y
EM	$Y	:	/Z	Z	Z	z	+Z
SUB	$Z	;	%F	[	%K	{	%P
ESC	%A	<	%G	\	%L	¦	%Q
FS	%B	=	%H	]	%M	}	%R
GS	%C	>	%I	^	%N	~	%S
RS	%D	?	%J	_	%O	DEL	%T, %X,
US	%E	@	%V	`	%W		%Y or
SP	SPACE						%Z

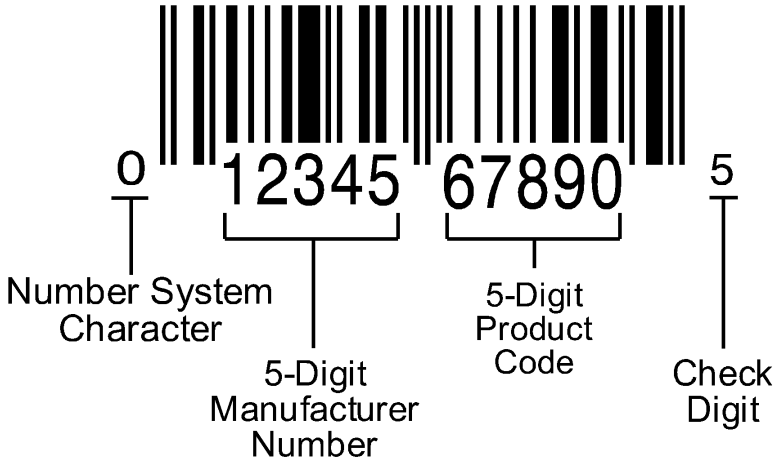
EXAMPLE: When Full ASCII Extension to CODE 39 is enabled by M3000 Setup , **"$M"** is read as a Carriage Return.

APPENDIX D - UPC SPECIFICATIONS

The Universal Product Code (UPC) symbols can be found on almost all retail products today. The UPC coding system was designed to uniquely identify a product and its manufacturer.

UPC VERSION A

UPC-A is a fixed length (12 digits) numeric only code with the following features:



UPC-A BAR CODE

The NUMBER SYSTEM CHARACTER indicates the type of product the symbol is identifying:

0,7	Regular UPC codes with numbers assigned by the Uniform Code Council
2	Random-weight items such as meat and produce.
3	National Drug Code and National Health Related Items Code.
4	For in-store marking of non-food items.
5	Reserved for coupons.
1,6,8,9	Reserved for future use.

The last digit in UPC bar codes is a MODULO 10 CHECK DIGIT. It is calculated in the following manner:

1. From right to left, sum the digits in the odd positions.
2. Multiply this sum by 3.
3. From right to left, sum the digits in the even positions.
4. Add this sum to the product of step 2.
5. The modulo-10 check digit is the smallest number, which when added to the sum of Step 4 produces a multiple of 10.

EXAMPLE: UPC bar code = 01234567890C where C is the CHECK DIGIT.

1. Sum 0 + 8 + 6 + 4 + 2 + 0 = 20
2. Multiply 20 x 3 = 60
3. Sum 9 + 7 + 5 + 3 + 1 = 25
4. Sum 60 + 25 = 85
5. 85 + 5 = 90 (check digit = 5)

Therefore: UPC bar code - 012345678905

UPC VERSION E

UPC Version E is a six digit variation of the UPC symbology. The last digit indicates the type of compression used. Because of this data compression process, the version E symbol is often referred to as a zero-suppressed symbol.

The following table illustrates the expansion process for converting UPC-E to its UPC-A equivalent:

Version E Number	Insertion Digits	Insertion Location	Resultant Version A
XXXXX0	00000	Position 3	XX00000XXX
XXXXX1	10000	Position 3	XX10000XXX
XXXXX2	20000	Position 3	XX20000XXX
XXXXX3	00000	Position 4	XXX00000XX
XXXXX4	00000	Position 5	XXXX00000X
XXXXX5	0000	Position 6	XXXXX00005
XXXXX6	0000	Position 6	XXXXX00006
XXXXX7	0000	Position 6	XXXXX00007
XXXXX8	0000	Position 6	XXXXX00008
XXXXX9	0000	Position 6	XXXXX00009

VERSION E

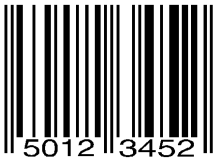
VERSION A EQUIVALENT

UPC/EAN SUPPLEMENTS

UPC and EAN bar codes can contain supplements that provide two or five digits of additional information. The supplements are located to the right of standard UPC/EAN labels. The reader can be programmed to either read or ignore the supplements.

APPENDIX E - EAN SPECIFICATIONS

The European Article Numbering system (EAN) is a superset of UPC. EAN has two versions: EAN-13 (13 digits) and EAN-8 (8 digits).



Country codes 00, 01, 03, 04, and 06 - 09 are assigned to the U.S. for compatibility with UPC.

APPENDIX F - INTERLEAVED 2 of 5 SPECIFICATIONS

The Interleaved 2 of 5 bar code symbology is a numeric code (0 - 9) which has different start and stop characters. The name Interleaved 2 of 5 is derived from the fact that two characters are paired together using the bars to represent the first character and spaces to represent the second. Each character has two wide elements and three narrow elements.

CHARACTERISTICS:

Character Set:	Numeric only (0 - 9)
Symbol Length:	Variable (must be an even number of digits)
Check Digit:	Optional
Bi-directional Decoding:	Yes
Maximum Density:	18 char./inch (using .0075 inch narrow element)

CHARACTER SET:

The following table illustrates the data patterns. A "1" represents a wide bar or space and a "0" represents a narrow bar or space.

CHARACTER	PATTERN
0	00110
1	10001
2	01001
3	11000
4	00101
5	10100
6	01100
7	00011
8	10010
9	01010
start	0000
stop	100

OPTIONAL CHECK DIGIT:

Interleaved 2 of 5 may contain an optional check digit. The reader supports two types of check digits:

1. Uniform Symbology Specification (USS) - calculated as modulo 10 check digit based on 3-1-3 weightings.
2. Optical Product Code Council (OPCC) - calculated as modulo 10 check digit based on 2-1-2 weightings.

USS CHECK DIGIT CALCULATION:

1. From right to left, sum the digits in the odd positions.
2. Multiply this sum by 3.
3. From right to left, sum the digits in the even positions.
4. Add this sum to the product of step 2.
5. The modulo-10 check digit is the smallest number which when added to the sum of Step 4 produces a multiple of 10.

EXAMPLE: USS check digit. Sample bar code data: 513827

1. Sum 7 + 8 + 1 = 16
2. Multiply 16 x 3 = 48
3. Sum 2 + 3 + 5 = 10
4. Sum 48 + 10 = 58
5. 58 + 2 = 60 (check digit = 2)

Therefore: Data + check digit = 5138272

NOTE: A leading zero will be required to make it an even number of characters. The resulting bar code will be: 05138272

OPCC CHECK DIGIT CALCULATION:

1. From right to left, assign every digit a weighting factor from the sequence: 2,1,2,1,2,1,2,1,...
2. Multiply each digit by its weighting factor.
3. Sum the products in step 2, treating two digit products as the sum of the individual digits.
4. The check digit is the smallest number which when added to the sum of step 3 produces a multiple of 10.

EXAMPLE: OPCC check digit. Sample bar code data: 020489713

1. Assign weighting factors: 020489713 212121212
2. Calculate the products: 0 2 0 4 16 9 14 1 6
3. Sum the products: 0+2+0+4+1+6+9+1+4+1+6 = 34
4. 34 + 6 = 40 (check digit = 6)

Therefore: Data + check digit = 0204897136

APPENDIX G - CODABAR SPECIFICATIONS

The Codabar bar code symbology is a numeric code (0 - 9) that also contains six special characters and four start/stop characters. The start/stop characters may or may not be transmitted. Characters are constructed of four bars and three spaces. Codabar is commonly used in libraries, blood banks, cotton industry, and the transportation industry.

CHARACTERISTICS:

Character Set:	10 digits (0 - 9) 6 special characters (- $: / . +) 4 stop/start characters (a b c d)
Symbol Length:	Variable
Check Digit:	Optional
Bi-directional Decoding:	Yes
Maximum Density:	12.8 char./inch (using .0075 inch narrow element)

CHARACTER SET:

The following table illustrates the data patterns. A "1" represents a wide bar or space and a "0" represents a narrow bar or space.

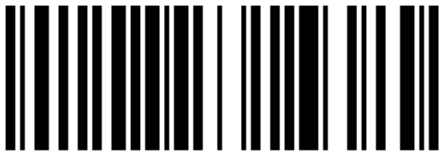
CHARACTER	PATTERN
0	0000011
1	0000110
2	0001001
3	1100000
4	0010010
5	1000010
6	0100001
7	0100100
8	0110000
9	1001000
-	0001100
$	0011000
:	1000101
/	1010001
.	1010100
+	0010101
a	0011010
b	0101001
c	0001011
d	0001110

APPENDIX H - CODE 128 SPECIFICATIONS

The CODE 128 symbology is a variable length alphanumeric code containing the full 128 ASCII character set. Each character is made up of 11 modules containing three bars and three spaces. Bars and spaces can be from 1 to 4 modules wide. Three different start characters are used to select one of three character sets. Code 128 is the bar code of choice for new applications.

CHARACTERISTICS:

Character Set:	All 128 ASCII characters 4 function characters 4 code set selection characters 3 start/stop characters
Symbol Length:	Variable
Check Character:	1
Bi-directional Decoding:	Yes
Maximum Density:	12.1 alphanumeric char./inch 24.2 numeric digits/inch (using .0075 inch module element)



UCC-128 MOD 10 SERIAL SHIPPING CONTAINER CODE:

FORMAT:	**STARTC**	**FNC1**	**00000123455555555555**	**8**	**C**	**STOP**
	(1)	(2)	(3)	(4)	(5)	(6)

1. Start Code "C"
2. FNC1 Character
3. 19 Digits
4. MOD 10 Check Digit
5. MOD 103 Check Digit
6. Stop Code

CHARACTER SET:

The following table contains the character set for Code 128 subsets A, B, and C:

CODE 128 (USD-6)

VALUE	CODE A	CODE B	CODE C	BAR PATTERN					
				B	S	B	S	B	S
0	SP	SP	00	2	1	2	2	2	2
1	!	!	01	2	2	2	1	2	2
2	"	"	02	2	2	2	2	2	1
3	#	#	03	1	2	1	2	2	3
4	$	$	04	1	2	1	3	2	2
5	%	%	05	1	3	1	2	2	2
6	&	&	06	1	2	2	2	1	3
7	'	'	07	1	2	2	3	1	2
8	(	(	08	1	3	2	2	1	2
9	)	)	09	2	2	1	2	1	3
10	*	*	10	2	2	1	3	1	2
11	+	+	11	2	3	1	2	1	2
12	,	,	12	1	1	2	2	3	2
13	-	-	13	1	2	2	1	3	2
14	.	.	14	1	2	2	2	3	1
15	/	/	15	1	1	3	2	2	2
16	0	0	16	1	2	3	1	2	2
17	1	1	17	1	2	3	2	2	1
18	2	2	18	2	2	3	2	1	1
19	3	3	19	2	2	1	1	3	2
20	4	4	20	2	2	1	2	3	1
21	5	5	21	2	1	3	2	1	2
22	6	6	22	2	2	3	1	1	2
23	7	7	23	3	1	2	1	3	1
24	8	8	24	3	1	1	2	2	2
25	9	9	25	3	2	1	1	2	2
26	:	:	26	3	2	1	2	2	1
27	;	;	27	3	1	2	2	1	2
28	<	<	28	3	2	2	1	1	2
29	=	=	29	3	2	2	2	1	1
30	>	>	30	2	1	2	1	2	3
31	?	?	31	2	1	2	3	2	1
32	@	@	32	2	3	2	1	2	1
33	A	A	33	1	1	1	3	2	3
34	B	B	34	1	3	1	1	2	3
35	C	C	38	1	3	1	3	2	1
36	D	D	36	1	1	2	3	1	3
37	E	E	37	1	3	2	1	1	3
38	F	F	38	1	3	2	3	1	1
39	G	G	39	2	1	1	3	1	3
40	H	H	40	2	3	1	1	1	3
41	I	I	41	2	3	1	3	1	1
42	J	J	42	1	1	2	1	3	3
43	K	K	43	1	1	2	3	3	1
44	L	L	44	1	3	2	1	3	1
45	M	M	45	1	1	3	1	2	3
46	N	N	46	1	1	3	3	2	1
47	O	O	47	1	3	3	1	2	1
48	P	P	48	3	1	3	1	2	1
49	Q	Q	49	2	1	1	3	3	1
50	R	R	50	2	3	1	1	3	1
51	S	S	51	2	1	3	1	1	3
52	T	T	52	2	1	3	3	1	1
53	U	U	53	2	1	3	1	3	1
54	V	V	54	3	1	1	1	2	3
55	W	W	55	3	1	1	3	2	1
56	X	X	56	3	3	1	1	2	1
57	Y	Y	57	3	1	2	1	1	3
58	Z	Z	58	3	1	2	3	1	1
59	[	[	59	3	3	2	1	1	1

CODE 128 (USD-6)

VALUE	CODE A	CODE B	CODE C	BAR PATTERN					
				B	S	B	S	B	S
60	\	\	60	3	1	4	1	1	1
61	]	]	61	2	2	1	4	1	1
62	^	^	62	4	3	1	1	1	1
63	_	_	63	1	1	1	2	2	4
64	NUL	`	64	1	1	1	4	2	2
65	SOH	a	65	1	2	1	1	2	4
66	STX	b	66	1	2	1	4	2	1
67	ETX	c	67	1	4	1	1	2	2
68	EOT	d	68	1	4	1	2	2	1
69	ENQ	e	69	1	1	2	2	1	4
70	ACK	f	70	1	1	2	4	1	2
71	BEL	g	71	1	2	2	1	1	4
72	BS	h	72	1	2	2	4	1	1
73	HT	i	73	1	4	2	1	1	2
74	LF	j	74	1	4	2	2	1	1
75	VT	k	75	2	4	1	2	1	1
76	FF	l	76	2	2	1	1	1	4
77	CR	m	77	4	1	3	1	1	1
78	SO	n	78	2	4	1	1	1	2
79	SI	o	79	1	3	4	1	1	1
80	DLE	p	80	1	1	1	2	4	2
81	D1	q	81	1	2	1	1	4	2
82	D2	r	82	1	2	1	2	4	1
83	D3	s	83	1	1	4	2	1	2
84	D4	t	84	1	2	4	1	1	2
85	NAK	u	85	1	2	4	2	1	1
86	SYN	v	86	4	1	1	2	1	2
87	ETB	w	87	4	2	1	1	1	2
88	CAN	x	88	4	2	1	2	1	1
89	EM	y	89	2	1	2	1	4	1
90	SUB	z	90	2	1	4	1	2	1
91	ESC	{	91	4	1	2	1	2	1
92	FS	¦	92	1	1	1	1	4	3
93	GS	}	93	1	1	1	3	4	1
94	RS	~	94	1	3	1	1	4	1
95	US	DEL	95	1	1	4	1	1	3
96	FNC 3	FNC 3	96	1	1	4	3	1	1
97	FNC 2	FNC 2	97	4	1	1	1	1	3
98	SHIFT	SHIFT	98	4	1	1	3	1	1
99	CODE C	CODE C	99	1	1	3	1	4	1
100	CODE B	FNC 4	CODE B	1	1	4	1	3	1
101	FNC 4	CODE A	CODE A	3	1	1	1	4	1
102	FNC 1	FNC 1	FNC 1	4	1	1	1	3	1
103	START	(CODE A)		2	1	1	4	1	2
104	START	(CODE B)		2	1	1	2	1	4
105	START	(CODE C)		2	1	1	2	3	2

	B	S	B	S	B	S	B
STOP	2	3	3	1	1	1	2

APPENDIX I - CODE 93 SPECIFICATIONS

The Code 93 bar code symbology is a variable length alphanumeric code containing the full 128 ASCII character set. Each character is made up of 9 modules with three bars and three spaces. The bars can be 1, 2, or 3 modules wide except for the start/stop character. The spaces can be 1, 2, 3, or 4 modules wide. Code 93 bar codes contain a mandatory two digits for data integrity.

CHARACTERISTICS

Character Set:	128 ASCII character set
Symbol Length:	Variable
Check Digit:	2
Bi-directional Decoding:	Yes
Maximum Density:	14.8 char./inch (using .0075 inch narrow element)

CHARACTER SET

The following tables represent Code 93 data. Table 1 defines all of the USS-93 character assignments. Table 2 shows the full ASCII character set with the special control characters.

Table 1. USS-93 Character Assignments

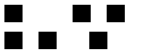
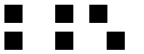
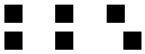
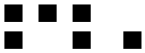
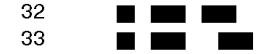
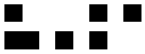
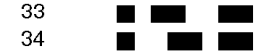
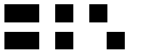
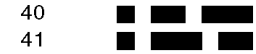
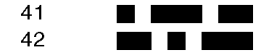
Char-acter	Value (for Check Digit Purposes)	Pattern	Encodation	Char-acter	Value (for Check Digit Purposes)	Pattern	Encodation
0	0		100010100	O	24		100101100
1	1		101001000	P	25		100010110
2	2		101000100	Q	26		110110100
3	3		101000010	R	27		110110010
4	4		100101000	S	28		110101100
5	5		100100100	T	29		110100110
6	6		100100010	U	30		110010110
7	7		101010000	V	31		110011010
8	8		100010010	W	32		101101100
9	9		100001010	X	33		101100110
A	10		110101000	Y	34		100110110
B	11		110100100	Z	35		100111010
C	12		110100010	-	36		100101110
D	13		110010100	.	37		111010100
E	14		110010010	Space	38		111010010
F	15		110001010	$	39		111001010
G	16		101101000	/	40		101101110
H	17		101100100	+	41		101110110
I	18		101100010	%	42		110101110
J	19		100110100	($)	43		100100110
K	20		100011010	(%)	44		111011010
L	21		101011000	(/)	45		111010110
M	22		101001100	(+)	46		100110010
N	23		101000110	□			101011110

Table 2. Encoding the Full ASCII Character Set

ASCII	CODE 93	ASCII	CODE 93	ASCII	CODE 93	ASCII	CODE 93
NUL	(%) U	SP	Space	@	(%) V	`	(%) W
SOH	($) A	!	(/) A	A	A	a	(+) A
STX	($) B	"	(/) B	B	B	b	(+) B
ETX	($) C	#	(/) C	C	C	c	(+) C
EOT	($) D	$	$	D	D	d	(+) D
ENQ	($) E	%	%	E	E	e	(+) E
ACK	($) F	&	(/) F	F	F	f	(+) F
BEL	($) G	'	(/) G	G	G	g	(+) G
BS	($) H	(	(/) H	H	H	h	(+) H
HT	($) I	)	(/) I	I	I	i	(+) I
LF	($) J	*	(/) J	J	J	j	(+) J
VT	($) K	+	+	K	K	k	(+) K
FF	($) L	,	(/) L	L	L	l	(+) L
CR	($) M	-	-	M	M	m	(+) M
SO	($) N	.	.	N	N	n	(+) N
SI	($) O	/	/	O	O	o	(+) O
DLE	($) P	0	0	P	P	p	(+) P
DC1	($) Q	1	1	Q	Q	q	(+) Q
DC2	($) R	2	2	R	R	r	(+) R
DC3	($) S	3	3	S	S	s	(+) S
DC4	($) T	4	4	T	T	t	(+) T
NAK	($) U	5	5	U	U	u	(+) U
SYN	($) V	6	6	V	V	v	(+) V
ETB	($) W	7	7	W	W	w	(+) W
CAN	($) X	8	8	X	X	x	(+) X
EM	($) Y	9	9	Y	Y	y	(+) Y
SUB	($) Z	:	(/) Z	Z	Z	z	(+) Z
ESC	(%) A	;	(%) F	[	(%) K	{	(%) P
FS	(%) B	<	(%) G	\	(%) L	;	(%) Q
GS	(%) C	=	(%) H	]	(%) M	}	(%) R
RS	(%) D	>	(%) I	^	(%) N	~	(%) S
US	(%) E	?	(%) J	_	(%) O	DEL	(%) T

APPENDIX J - SOURCES OF BAR CODE STANDARDS

ABC (American Blood Commission)
1117 North 19th Street
Suite 501
Arlington, VA 22209-1749
(703) 522-8414

- Committee for Commonality in Blood Banking Automation (CCBBA) Report (Codabar)

AIM (Automatic Identification Manufacturers Inc.)
1326 Freeport Road
Pittsburgh, PA 15238
(412) 963-8588

- USD-1 (Interleaved 2 of 5)
- USD-2 (A Subset of Code 39)
- USD-3 (Code 39)
- USD-4 (Codabar)
- USD-6 (Code 128)
- USD-7 (Code 93)
- USD-8 (Code 11)

AIAG (Automotive Industry Action Group)
26200 Lahser Road
Suite 200
Southfield, MI 48034
(313) 358-3570

- AIAG-B-1 1984 Bar Code Symbology Standard
- AIAG-B-3 Shipping/Parts Identification Label Standard
- AIAG-B-6 Standard for Bar Code Data Identifiers

ANSI (American National Standards Institute)
11 West 42nd Street
New York, NY 10036
(212) 642-4900

- ANSI MH10.8M-1983 Specification for Bar Code Symbols on Transport Packages and unit Loads. (Code 39, Interleaved 2 of 5, Codabar)
- ANSI X3A1.3 Bar Code Print Quality (Draft)

DOD (Department of Defense)
Naval Publications & Forms Center
5801 Tabor Avenue
Philadelphia, PA 19120
(215) 697-2000

- MIL-STD-1189A (B) - Standard Department of Defense Bar Code Symbology
- MIL-STD-129J - Military Standard - Marking for Shipment & Storage - Bar Code Markings
- FED-STD-123D - Federal Standard - Marking for Shipment (Civil Agencies) Bar Code Markings

EAN (International Article Numbering Association)
Rue des Colonies, Bte 8
1000 Brussels
BELGIUM
011 322 218 7585

HIBCC (Health Industry Business Communications Council)
5110 North 40th Street, Suite 250
Phoenix, AZ 85018
(602) 381-1091

- HIBC Supplier Labeling Standard
- HIBC Provider Applications Standard
- HIBC Guidelines

UCC (Uniform Code Council)
8163 Old Yankee Rd., Suite J
Dayton, OH 45458
(513) 435-3870

- UPC Symbol Specification
- UPC Location Guidelines
- UPC Shipping Container Symbol Specifications Manual
- UPC Industrial Code Guidelines Manual
- UPC Film Master Verification Manual

APPENDIX K - M3000 ASCII CHARACTER CHART

DEC	HEX CODE	ASCII
0	/00	NUL (CTRL 2)
1	/01	SOH (CTRL A)
2	/02	STX (CTRL B)
3	/03	ETX (CTRL C)
4	/04	EOT (CTRL D)
5	/05	ENQ (CTRL E)
6	/06	ACK (CTRL F)
7	/07	BEL (CTRL G)
8	/08	BS (CTRL H)
9	/09	HT (CTRL I)
10	/0A	LF (CTRL J)
11	/0B	VT (CTRL K)
12	/0C	FF (CTRL L)
13	/0D	CR (CTRL M)
14	/0E	SO (CTRL N
15	/0F	SI (CTRL O)
16	/10	DLE (CTRL P)
17	/11	DC1 (CTRL Q)
18	/12	DC2 (CTRL R)
19	/13	DC3 (CTRL S)
20	/14	DC4 (CTRL T)
21	/15	NAK (CTRL U)
22	/16	SYN (CTRL V)
23	/17	ETB (CTRL W)
24	/18	CAN (CTRL X)
25	/19	EM (CTRL Y)
26	/1A	SUB (CTRL Z)
27	/1B	ESC (CTRL [)
28	/1C	FS (CTRL \)
29	/1D	GS (CTRL])
30	/1E	RS (CTRL 6)
31	/1F	US (CTRL _)
32	/20	SP
33	/21	!
34	/22	"
35	/23	#
36	/24	$
37	/25	%
38	/26	&
39	/27	'
40	/28	(
41	/29	)
42	/2A	*
43	/2B	+
44	/2C	,
45	/2D	-
46	/2E	.
47	/2F	/
48	/30	0
49	/31	1
50	/32	2
51	/33	3
52	/34	4
53	/35	5
54	/36	6
55	/37	7
56	/38	8
57	/39	9
58	/3A	:
59	/3B	;
60	/3C	<
61	/3D	=
62	/3E	>
63	/3F	?

DEC	HEX CODE	ASCII
64	/40	@
65	/41	A
66	/42	B
67	/43	C
68	/44	D
69	/45	E
70	/46	F
71	/47	G
72	/48	H
73	/49	I
74	/4A	J
75	/4B	K
76	/4C	L
77	/4D	M
78	/4E	N
79	/4F	O
80	/50	P
81	/51	Q
82	/52	R
83	/53	S
84	/54	T
85	/55	U
86	/56	V
87	/57	W
88	/58	X
89	/59	Y
90	/5A	Z
91	/5B	[
92	/5C	\
93	/5D	]
94	/5E	^
95	/5F	_
96	/60	`
97	/61	a
98	/62	b
99	/63	c
100	/64	d
101	/65	e
102	/66	f
103	/67	g
104	/68	h
105	/69	i
106	/6A	j
107	/6B	k
108	/6C	l
109	/6D	m
110	/6E	n
111	/6F	o
112	/70	p
113	/71	q
114	/72	r
115	/73	s
116	/74	t
117	/75	u
118	/76	v
119	/77	w
120	/78	x
121	/79	y
122	/7A	z
123	/7B	{
14	/7C	¦
125	/7D	}
126	/7E	~
127	/7F	DEL

APPENDIX L - NON-ASCII SPECIAL CHARACTER DEFINITIONS FOR PC's AND PC TERMINALS

HEX CODE	ASCII
/8C	ALT ON
/8D	ALT OFF
/8E	CTRL ON
/8F	CTRL OFF
/90	SHIFT ON
/91	SHIFT OFF

NOTE: The above keys must be used in pairs. For example, a desired "Alt A" must be transmitted as: **"Alt On", "A", "Alt Off"**

HEX CODE	FUNCTION KEY
/92	PAGE UP
/93	PAGE DOWN
/94	HOME
/95	END
/96	DEL
/97	INSERT
/98	LEFT ARROW
/99	RIGHT ARROW
/9A	UP ARROW
/9B	DOWN ARROW

HEX CODE	FUNCTION KEY
/F1	1
/F2	2
/F3	3
/F4	4
/F5	5
/F6	6
/F7	7
/F8	8
/F9	9
/F0	10

NOTE: In order for the above keys to work on a PC/XT or PC Terminal, ensure the following condition: **The "Num Lock" setting (from the M3000 Setup) must be the same as the setting on the PC or Terminal.**

NON-ASCII Delay Character Values *

HEX CODE	DELAY (IN SECONDS)
/D1	1
/D2	2
/D3	3
/D4	4
/D5	5
/D6	6
/D7	7
/D8	8
/D9	9

*** NOTE**: The above characters are valid for use in **Start-Of-Transmit (SOT)** text, **End-Of-Transmit (EOT)** text, **Start-Of-File (SOF)** text, **End-Of-File (EOF)** text, **Output Prefix**, **Output Suffix**, **Bar Code Preamble**, and **Bar Code Postamble** fields.

APPENDIX L -
M3000 SPECIAL & FUNCTION KEYS FOR BAR CODES (Continued)

Characters to be Transmitted During NONPORTABLE Mode Usage *
With "SPECIAL KEYS" & "FUNCTION KEYS" Enabled

DEC	HEX CODE	ASCII	OUTPUT CHARACTER	SPEC. KEYS ENABLED	FUNCT KEYS ENABLED
1	/01	SOH	LEFT ARROW	X	
2	/02	STX	RIGHT ARROW	X	
3	/03	ETX	UP ARROW	X	
4	/04	EOT	DOWN ARROW	X	
5	/05	ENQ	HOME	X	
6	/06	ACK	END	X	
7	/07	BEL	DEL	X	
11	/0B	VT	PAGE UP	X	
12	/0C	FF	PAGE DOWN	X	
14	/0E	SO	SHIFT ON	X	
15	/OF	SI	SHIFT OFF	X	
16	/10	DLE	INS	X	
17	/11	DC1	F1		X
18	/12	DC2	F2		X
19	/13	DC3	F3		X
20	/14	DC4	F4		X
21	/15	NAK	F5		X
22	/16	SYN	F6		X
23	/17	ETB	F7		X
24	/18	CAN	F8		X
25	/19	EM	F9		X
26	/1A	SUB	F10		X
28	/1C	FS	CTRL ON	X	
29	/1D	GS	CTRL OFF	X	
30	/1E	RS	ALT ON	X	
31	/1F	US	ALT OFF	X	

***Requirements:** For data transmitted while in "Keyboard Wedge" or "Serial Wedge" modes. If in Serial Wedge Mode, the Serial Port Setup Output must be set to PScan Codes.

APPENDIX M -
M3000 SPECIAL CHARACTER DEFINITIONS FOR EMBEDDED HEADER INPUTS AND TRANSMIT PAUSE*

DEC	HEX CODE	ACTION
160	/A0	SENDS DATA FILE NAME
161	/A1	SENDS HEADER INPUT # 1
162	/A2	SENDS HEADER INPUT # 2
163	/A3	SENDS HEADER INPUT # 3
164	/A4	SENDS HEADER INPUT # 4
165	/A5	SENDS HEADER INPUT # 5
166	/A6	SENDS HEADER INPUT # 6
167	/A7	SENDS HEADER INPUT # 7
168	/A8	SENDS HEADER INPUT # 8
169	/A9	SENDS HEADER INPUT # 9
250	/FA	TRANSMIT PAUSES UNTIL A KEY IS PRESSED ON THE M3000

***NOTE:** **/A0 - A9** are valid for use in **Output Prefix** and **Output Suffix** fields. **/FA** Pause Character is valid for use in **Start-Of-Transmit (SOT)** text, **End-Of-Transmit (EOT)** text, **Start-Of-File (SOF)** text, **End-Of-File (EOF)** text, **Output Prefix**, **Output Suffix**, **Bar Code Preamble**, and **Bar Code Postamble** fields.

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