

Introducing the M5000 PDT

American Microsystems, Ltd. first introduced the M3000 Portable Bar Code Reader in 1991. The overwhelming success of the M3000 was due in part to the versatility, and durability of the unit. Now, American Microsystems introduces the ultra-versatile, high performance, designed-to-fit-your-budget, M5000 Portable Data Terminal (PDT). American Microsystems came up with the clever idea to combine the reliability and durability of the M3000 with the convenience and accuracy of a data terminal. This unit not only has limitless uses, but also has a rugged, simple ergonomic design that easily fits one-hand and a small budget.

The ergonomic design is built smart: rugged, lightweight, compact, easy-to-use, easy to upgrade and has the advantage of two superior integrated units. Our specially designed software guides the user through the data collection process with a four by twenty character line LCD display. Our competitive advantage is that the M5000 PDT is user friendly especially for non-computer users and it's easily flash upgradeable.

What to Expect

This user's guide provides you with an overall physical description, keypad values, technical specifications and performance capabilities of the Model 5000 Portable Data Terminal. In addition you will learn how to:

- ✓ Connect to your host computer
- ✓ Customize your M5000 PDT
- ✓ Connect your input device
- ✓ Install the M5000 Programmer Software
- ✓ Run Softcom software
- ✓ Create and send programs
- ✓ Use and load built-in programs
- ✓ Collect and upload data
- ✓ Send and receive data
- ✓ Connect and use the M5100 Keyboard Wedge
- ✓ Connect and use the RS232 Serial interface
- ✓ Download amended or updated firmware

Warranty

We guarantee that you will be one-hundred percent satisfied with products purchased from American Microsystems, Ltd., however, you can return the M5000 Portable Data Terminal within thirty days from the invoice date for a full refund (excluding shipping charges).

A two-year warranty against material defects and workmanship from the date of shipment is guaranteed by American Microsystems, Ltd. Products are sold on the basis of specifications applicable at the time of manufacture. AML shall have no obligation to modify or update products once sold. At our option, we will repair or replace, at no charge, any unit that proves to be defective providing the appropriate steps are taken to procure an RMA number and shipping instructions from American Microsystems, Ltd.

When You Need Support

American Microsystems, Ltd. provides telephone support for all Model 5000 Portable Data Terminal users. If you have questions or a problem you are unable to resolve after consulting the operation manual, the Help feature, or our web address, <http://www.barcodepower.com>, you can telephone (800) 648-4452 during business hours Monday through Thursday (excluding holidays) 8:00 a.m. to 5:30 p.m. CST and Friday 8:00 a.m. to 5:00 p.m. In addition, you can refer to our website to download software updates, program updates, and documentation, check for new releases, firmware revisions and product updates.

You can call for a Return Merchandise Authorization number (RMA) to return the product for refund or repair. Before contacting Technical Support, please be prepared to furnish the following information:

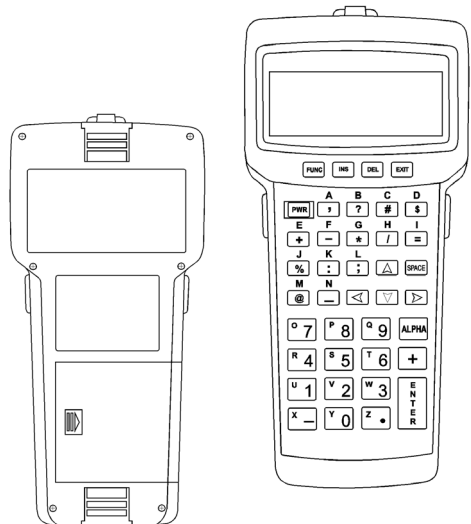
- ✓ Your company information: company address, ship-to address, telephone number, and AML customer number
- ✓ Product model number
- ✓ Product serial number
- ✓ Date of purchase
- ✓ Copy of invoice

When returning the product for a refund, it must be returned prepaid in “like new” condition including all documentation and packaging (original and unmarked) together with a copy of the invoice. To expedite the repair process, include information as to the nature of the problem.

Physical Description

The M5000 PDT features a four-line by twenty character LCD (5 X 7 dot matrix) display and a thirty-nine-key keypad. It is fitted with a customized keypad and built-in configuration memory for optimum use. Parts of the M5000 PDT include:

- ✓ LCD Display
- ✓ Keypad
- ✓ Serial Port
- ✓ RJ45 10-pin Connector
- ✓ Hand Strap
- ✓ Battery Compartment
- ✓ Scanner Triggers (right and left-hand accessibility)



Getting to Know the Keypad

The M5000 Portable Data Terminal is equipped with thirty-nine keys that are divided into blue, grey, red and white keys. When pressed, each key emits an audible beep that can be disabled if desired. Refer to *Keypad Beep* for instructions on how to disable the key beep.

The six blue keys consist of Func, four arrow keys and the Alpha key. The Func key activates the Select Function menu during data collection mode. Hot keys select specific menu items without scrolling the entire menu. For example, press **F** in order to Find Text.

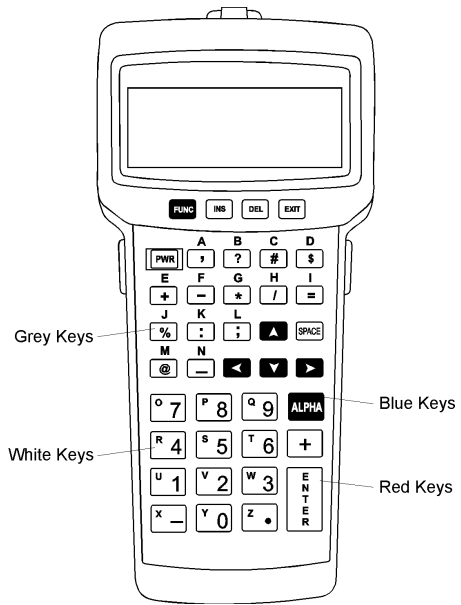
The alpha key toggles between alpha and normal mode and is used to switch between upper and lower keys. When in alpha mode, press a key to insert the letter that appears on or above the upper part of the key. A flashing solid block will let you know when you are in alpha mode.

Eighteen grey keys represent letters, special characters, spaces and calculator keys. Six keys can be used to function as a calculator (+ - * / = %). Each key also serves a dual function and can be used either in normal or alpha mode except the INS, DEL, EXIT and SPACE keys.

Red keys are the PWR key and the Enter key. The PWR key is used to power the M5000 PDT on and off except in M5100 Keyboard Wedge mode. When the M5000 PDT is powered off or laps into the time-out mode, you will return to the same display at which you were powered off, after you power on again. The Enter key selects menu items as well as accepts information for an input file.

The remaining thirteen white keys are numeric keys. When in alpha mode, the keys produce the designated letter with the exception of the plus key. All other numbers, plus sign, minus sign and decimal are inserted when you toggle to normal mode. A flashing cursor lets you know that you are in normal mode.

For specific key values, see the chart on the following page.



Key Values

Blue Keys	Key Value
Func	Activates the Select Function menu that only operates during data collection mode (Input). Refer to <i>Select Function Menu</i> for key descriptions.
Func + Hot Key	Selects specific menu items without scrolling through the entire menu
Alpha	Toggles between alpha & normal modes; inserts the character printed on or above the actual key
▲ Up arrow	Moves the display screen up one line at a time or moves the display screen up one menu level
◀ Left arrow	Moves the cursor left one character at a time and toggles between menu selection options
▼ Down arrow	Moves the display screen down one line at a time or moves the display screen down one menu level
▶ Right arrow	Moves the cursor right one character at a time and toggles between menu selection options
Grey Keys	
Alpha	A-Z Special Keys: ? # \$ + - * / = % ; : ; space @ _
INS	Inserts data at the cursor position and moves all existing data to the right
DEL	Deletes characters at the cursor position or if cursor follows a string of characters, it deletes the characters to the left of the cursor
EXIT	Exits operation being performed
SPACE	Enters the space character
Red Keys	
PWR	Powers unit off/on
Enter	Accepts information in an input file & advances the cursor to the next input field; also selects menu items
White Keys	
Numeric	0-9, + - . When 7 through period (.) are in alpha mode, letters O-Z are produced.

Display Screen

The display screen is a liquid crystal display (LCD) and exhibits up to four lines of text with a maximum of twenty characters per line. An obvious advantage to this type of display screen is that you are able to view four lines of twenty characters per line of data at a time.

Beep

When pressed, each key emits an audible beep that can be disabled if desired. Choose Setup from the Main Menu, arrow down and choose Other Setup, arrow down to select Keypad Beep; use either left or right arrow key to toggle the off/on option.

The M5000 PDT also provides an audible beep when a bar code has been successfully scanned. To change the tone and length of the beep, choose Setup, Bar Codes, Bar Code Beeper and toggle between desired beeper options.

Other beep sequences are programmed to let you know about possible problems. For a full range of system errors, please refer to *System Warnings*.

Batteries

Three AA alkaline batteries are used to power the M5000 PDT and serve as a power source for input devices attached to the unit. When the battery power drops below an adequate level, the unit indicates Battery Low on the display screen. To replace the batteries, follow the steps below:

1. Turn off the power to the M5000 PDT.
2. Place the unit face down and unlatch the bottom strap from the unit.
3. Press down slightly on the battery compartment and slide the cover to the right, away from the case.
4. Carefully lift the batteries from the case.
5. Replace the batteries with three new AA batteries in the positions indicated by the diagram inside the compartment.
6. Replace the battery cover by sliding it to the left until it snaps into place.
7. Replace the hand strap latch into its fastener.

The internal lithium battery provides backup power that supports the RAM memory when the main batteries are removed. Collected data as well as system defaults including the internal clock are protected by backup battery power.

Taking Care of your M5000 PDT

Protect your M5000 Portable Data Terminal from damage by following the simple recommendations below.

Electrical components can be damaged by exposure to intense electrical fields, therefore avoid exposing the M5000 PDT to the following conditions:

- ✓ Avoid electrostatic discharge produced by friction such as heavily carpeted areas during periods of low humidity.
- ✓ Avoid using the unit with a modem during electrical storms.
- ✓ Avoid exposure to sources of intense arcing
- ✓ Avoid exposure to powerful electromagnetic fields such as large motors, induction coils, transformers, etc.
- ✓ Avoid exposure to sources of ionizing radiation such as x-rays, etc.

Mechanical components can be damaged by exposure to the following conditions:

- ✓ Direct exposure to water – do not immerse
- ✓ Physical contact or hard impact
- ✓ Extreme heat or open flame; do not leave on a vehicle dashboard or enclosed vehicle
- ✓ Highly corrosive environments
- ✓ Strong industrial cleaning solvents

Technical Specifications

Type	Description
Dimensions	Height: 7.75" Width: 3.75" Depth: 1.625" Weight: 13 oz.
Input Devices	Wand, Laser, CCD & Slot Reader (undecoded)
Accessories	M5100 Keyboard Wedge, Memory Module, M5005 Integrated Laser Scanner (Contact your AML Sales Rep for more details.) Case, Belt and Shoulder Strap
Keypad	39-key keypad with alphanumeric & special character keys
Special Keys	Alphanumeric, function, insert, delete, exit, power, space, arrow keys
Display	4-line X 20 character LCD display
Memory	256K bytes standard RAM memory with expandable Memory Module available (contact your AML Sales Rep for more details); 2 MB flash EPROM
Symbology Decodes	Code 39, UPC-A, UPC-E, EAN-13, EAN-8, UPC/EAN Addons, Interleaved 2 of 5, Codabar, Code 128, Code 93, MSI/Plessey, Code 11
Serial	Baud rates: 300-57600 Data bits: 7, 8 Stop bits: 1, 2 Parity: none, odd, even Intercharacter delay: 0-99ms
Microprocessor	16.67 MHz
Interface	RS-232 Serial, optional M5100 Keyboard Wedge or modem
Power	Operating: 3 AA batteries Backup: Lithium
Durability	Shock resistant with drops up to 6'
Environmental	Operating temperature: 0° centigrade to +50° centigrade (+32° Fahrenheit to +120° Fahrenheit) Relative humidity: 5% to 95% (non-condensing)
Warranty	Two-year warranty, thirty-day money back guarantee

Main Menu

When you first power on the M5000 PDT, the Main Menu prompts you to select from the following options.

Function	Hot Key	Description
Input	I	Initiates data collection.
Communications	C	Allows transfer of files between the M5000 PDT & the PC.
Setup	S	Configures all system-wide parameters: Date/Time, Bar Codes, Comm. Setup, Laser/CCD options, Other Setup, and Reset Setups.
Status	?	Displays the following information: <ul style="list-style-type: none"> ✓ ROM version ✓ ROM Checksum ✓ Flash Version ✓ Total Memory ✓ Number of bytes available ✓ Percentage of memory available ✓ Total number of Programs stored ✓ Total number of Lookup files stored ✓ Total number of Data files stored ✓ AA Battery status ✓ Lithium battery status ✓ Recall Data
Calculator	A	Provides access to a 4-function calculator. (Alpha mode is not active during calculator mode.)
Erase	E	Erases stored data, lookup and program files.
Copy program	P	Loads a built-in program into RAM that enables you to collect data.
Non-port mode	N	Places M5000 PDT in either M5100 Keyboard Wedge mode or RS-232 non-portable mode.
Time	T	Displays setting for the year, month, day, hour, minute, second, a.m. or p.m.
LCD Contrast	L	Adjusts display contrast with left and right arrows.
Upgrade Flash	U	Updates the M5000 PDT using the communications interface cable, PC, and M5000 Programmer software.

Note: Five minutes after the last activity is performed on the M5000 PDT, it automatically powers off. This timeout can be adjusted from one to sixty minutes (refer to Setup, Other Setup, Timeout). When you power on the M5000 PDT again, the last menu that you accessed is then displayed.

Select Function Menu

During data collection mode (Input), you can press the Func key, and the Select Function menu prompts you to choose one of the following functions:

Function	Hot Key	Description
Find	F	Allows you to search during input mode for a string of characters that match the find text. Up arrow searches for a match previous to the current field. Down arrow searches for a match following the current field. Enter searches for the first match from the beginning of the file. (Search method used for scanning within this field.)
Goto Record	G	Moves to a specified record
Status	?	Displays the following information: ✓ ROM version, ROM Checksum, Flash version ✓ Total memory, number of bytes available, percentage of memory available ✓ Current record, current program stored, current file stored ✓ Number of program files stored, number of lookup files stored, total number of data files stored ✓ AA Battery status, Lithium battery status ✓ Recall data
Insert Record	I	Inserts records into Input and Program modes. While collecting data, press Func, then press I (Insert) to insert an empty data record <i>before</i> the one being viewed.
Clear	C	Clears an entire input field
Calculator	A	Provides access to a 4-function calculator
Erase	E	Erases a record or an entire data file
Recall	R	Inserts data that has been stored with the Store function. Press Func, then R (Recall); the information is inserted in place of existing data in the current input field.
Store	S	Stores the current input field to be used with the Recall function. Press Func, then press S (Store); the information is stored in memory and can be recalled using Func R (Function Recall).
First Record	M	Moves to the first record of the current program
Last Record	N	Moves to the last record of the current program
Prev. Record	J	Moves to the previous record of the current program
Next Record	K	Moves to the record after the current record
View Lookup	V	Displays selected lookup file
Time	T	Displays setting for the year, month, day, hour, minute, second, a.m. or p.m.
LCD Contrast	L	Adjusts display contrast with left and right arrows

Quickly Getting Started

This section takes you through the basics of installing the M5000 Programmer in Windows and connecting your input device to the M5000 PDT. It also shows you how to use built-in programs, create your own program, how to load a program, as well as how to collect and upload data to your computer. You can refer to the Help feature in the M5000 Programmer for further details on all dialog prompts used in the examples presented.

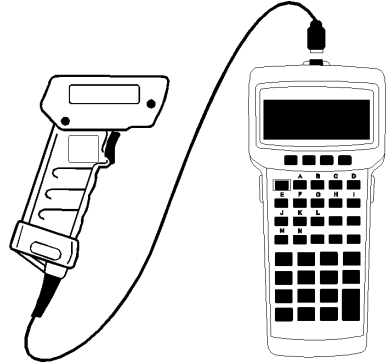
Connecting Your Input Device

The M5000 PDT can be coupled with a variety of input devices such as wands, lasers, slot readers and CCDs (undecoded).

⚡Note: Be sure your M5000 PDT is not on during the connection process.

How to connect to your M5000 PDT:

1. As shown, plug the 9-pin connector located on the bottom of the input device (laser), into the 9-pin receptacle located on the top of the M5000 PDT.
2. Turn on the power to your M5000 PDT. (In M5100 Keyboard Wedge mode, power is automatically received from the PC.)



M5000 Programmer Installation & Setup

To install the M5000 Programmer and related utilities, insert the CD-ROM into the drive, and follow the instructions presented by the installation wizard (you may need to manually start the Setup.exe application if the installation wizard does not start automatically).

To uninstall the M5000 Programmer or related utilities, click on Start, Control Panel and use the Add/Remove Programs utility to remove the options you wish to uninstall.

The M5000 Programmer and M5000 PDT work with a number of types of files, each of which has a different purpose.

Program File—a M5000 program is a collection of identifiers that indicate to the user a request for data.

Project File—a M5000 project is a single program and any associated lookup file and data file. This allows you to quickly and efficiently manage any files that your program is using.

Lookup File—a lookup file allows you to specify an input field used for data verification. Lookup file data restricts the contents of specified input during data input. Unless allowed by a lookup option during input, the program accepts data listed only in the lookup data file.

Configuration File—a configuration file contains all of the possible configuration properties and attributes that are available on the M5000 PDT.

Library File—a library file is used to completely configure the M5000 PDT.

Data File—a data file is created as the result of entering data into a program's prompts. However, it can also supply pre-existing data to a program's prompts as they are displayed on the M5000 PDT.

Using Built-In Programs

Six programs are pre-programmed into the M5000 PDT for data collection. To use these programs, select Copy Program. The prompts for each program (P1 through P6) are as they appear in the display below. Comma delimited programs (P2C through P5C) are also included.

P1	P2	P3	P4	P5	P6
ITEM NUMBER	P/N	P/N	P/N	P/N	
	QTY	QTY LOC	QTY UOM	QTY	
				DESCRIPTION	
Rec 1 of 1	Rec 1 of 1	Rec 1 of 1	Rec 1 of 1	Rec 1 of 1	Rec 1 of 1

How to Load Sample P2 Program on the M5000 PDT

1. In the Main Menu, select Copy Program.
2. Arrow down and select sample P2 program. The prompt reads Copying P2 to RAM, then P2 Copied to RAM, press any key.
3. After you press any key, the Main Menu appears. The P2 program is loaded and ready to collect data.

How to Collect Data on the M5000 PDT Using Sample P2 Program

1. In the Main Menu, select Input. Choose P2 from the Select Program list.
2. Select ***New File*** and input a filename. (You are now prompted to enter data: (P/N, QTY and Rec 1 of 1.)
3. When you finish entering data, press exit. The M5000 PDT prompts you with a confirmation message to Exit Data Entry Are You Sure? (No), to exit press Y or toggle the arrow key to select yes.
4. Press Y to Save Data File? or toggle the arrow key to select yes. The M5000 PDT returns you to the Select Program menu where you can choose another program or exit and return to the Main Menu.

How to Send a Program to the M5000 PDT

We assume that the serial cable is connected to an available com port and all default communication parameters (xmodem, 9600, N, 8, 1) are used. The following steps can be used to send a program to the M5000 PDT.

1. Using the M5000 PDT select Communications, choose Receive.
2. Select RS-232 Serial under Communications Mode, (prompt shows Waiting for Connect).
3. On your PC, select Send icon or you can go into the Communications Menu and choose Send File.
4. Select a program file to send, choose ok, and select Send.

↪ *Note: If an error occurs, select Setup to choose an available com port or repeat steps 2 and 3.*

The M5000 PDT displays Receive Complete when the file is received.

5. Press exit to return to the M5000 PDT Main Menu.

Warning! *When duplicate filenames are used during data file transmission, the new file automatically overrides the existing file. All previous data will be lost.*

How to Collect Your Data

1. In the Main Menu, select Input, and select the program that you downloaded.
2. Select ***New File***, and input a filename. (You are now in data collection mode.)
3. When finished with data collection, press exit; you are prompted with a confirmation message, Exit Data Entry, Are You Sure? (No). You can either press Y or toggle with the arrow key to select yes.
4. Press Y or press enter at Save Data File (Yes)? This action returns you to the Select Program menu, press exit to access Main Menu.

How to Upload Your Collected Data

We assume that the serial cable is connected to an available, functioning com port and all default communication parameters (xmodem, 9600, N, 8, 1) are used. If a timeout error occurs during this process, you will need to repeat all the steps to upload collected ASCII data. (Refer to *Transmitting Files Using the M5000 PDT* for details on ASCII files.)

1. Using the M5000 Programmer software on your PC choose Communications, then Receive File.
2. Enter a filename (.TXT) to receive and select Save. This action takes you to the Receive File dialog where you select Receive; Status Shows Waiting.

↪ *Note: If Error Opening Com Port appears on the screen, click ok. Then select **Communications, Setup** and change the serial port to the available port you are using. (Default is Com1.)*
3. In the Main Menu on the M5000 PDT, choose Communications, and select Send, Data Files.

Status shows:
 Sending (data file name)
 100% complete
 Transmit complete
 Press any key

The M5000 Programmer status box displays Completed when a file is successfully received.

↪ *Note: You can view the file with a text editor or word processor.*
4. Once your file is successfully transmitted and a key is pressed you are prompted by a confirmation message, Erase Uploaded Data Files? (No), if desired, press Y or toggle the arrow key to select yes. When yes is chosen, the M5000 PDT verifies your selection and returns you to the Communication Select menu. Press exit to return to the Main Menu.

Connecting to Your Host Computer

The M5000 Portable Data Terminal can be connected to your host computer with the M5100 Keyboard Wedge (optional accessory), RS-232 serial or a Hayes compatible modem.

The M5100 Keyboard Wedge configuration integrates a specialized decoder between the host computer and the M5000 PDT allowing you to transmit data directly to your computer via the keyboard interface port.

The RS-232 serial configuration utilizes communications software to a) transfer data directly into your application as keyboard data using Softcom, b) transfer data and programs back and forth between your host computer and the M5000 PDT using the M5000 Programmer software.

The M5000 Portable Data Terminal supports xmodem protocol and can be connected to a Hayes compatible modem through the RS-232 serial port.

Using the M5100 Keyboard Wedge

The M5100 Keyboard Wedge is an optional accessory of the M5000 Portable Data Terminal. It interfaces between a standard IBM compatible keyboard and your personal computer. The M5100 Keyboard Wedge transmits data to the computer as if it were typed from the keyboard.

The advantage of using a keyboard wedge is that software is not needed for connectivity. The M5100 Keyboard Wedge interface connects between the keyboard and the PC with a Y-cable. The M5000 PDT connects to the wedge to upload data. The computer remains fully functional while data is transmitted via the keyboard directly into your computer's application. In addition, the M5100 Keyboard Wedge has the ability to convert standard RS-232 data into keyboard data.

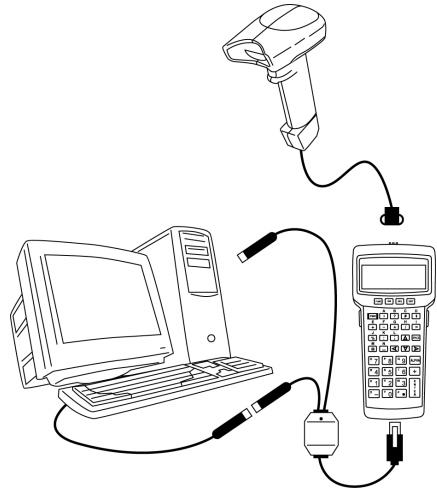
M5100 Wedge Programmer Software is included with the purchase of the M5100 Keyboard Wedge. This application allows for modification of keyboard wedge settings such as transmit speed, keyboard type and RS-232 conversion settings. In most cases, the manufacturer default settings programmed into the M5100 Keyboard Wedge are acceptable and changes to the wedge programmer settings are not necessary.

How to connect the M5100 Keyboard Wedge to your computer:

1. Turn off the power to your computer.

Warning! Failure to terminate the power can permanently damage the system.

2. Unplug the keyboard connector from the back of your computer and plug it into the female end of the Y-cable.
3. Plug the male end of the Y-cable into your keyboard port.
4. Connect the wedge to the 9-pin connector on the Y-cable.
5. Connect the interface cable to the 9-pin male connector on the wedge.
6. Connect the RJ45 10-pin connector end (resembles a telephone jack) of the interface cable to the bottom of the M5000 PDT.
7. Turn on the power to your computer. In keyboard wedge mode, power to the M5000 PDT is automatically received from the PC.



Using the M5100 Wedge Programmer

When the keyboard wedge cable is connected, the M5000 PDT switches to the keyboard wedge mode automatically. During keyboard wedge mode the M5000 PDT receives all its power from the keyboard port and does not use its internal battery. The M5000 PDT turns on and off with the host computer.

The M5000 Utilities automatically includes the M5000 Programmer, M5100 Wedge Programmer, and Softcom. You may run these programs by selecting the appropriate icon.

Follow these steps to initiate the M5100 Wedge Programmer software:

1. To start the Wedge Programmer, choose Start, select Programs, select M5000 Utilities, select M5100 Wedge Programmer program icon.
2. When you start the wedge programmer and have made necessary changes, choose OK to accept the settings.

Wedge Settings—define options such as interface mode, keyboard type, strip linefeeds, caps lock, num lock, auto caps, and alternate scan code however, default settings are acceptable and in most cases software changes are not necessary.

Interface Mode—the M5100 Wedge Programmer settings include two modes for data transfer, the M5000 PDT mode (default) and the RS232 Serial mode. The M5000 PDT mode is the recommended method to transmit data while using the M5000 PDT. The RS-232 Serial mode is used when connecting an RS-232 device for the purpose of converting its output to keyboard data. Options for the RS-232 Serial must match the settings on your RS-232 device in order for data to transmit correctly.

Keyboard Type—option used to select keyboard type include:

- US standard (English)
- German
- French
- Italian
- Universal

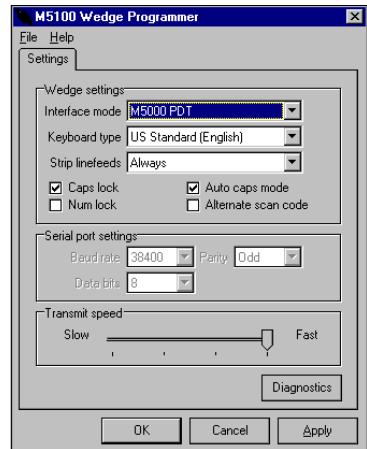
Strip Linefeeds—option used to remove the line feed character from the data. Options include:

- None
- LF CR (line feed, carriage return)
- CR LF (carriage return, line feed)
- Always

Caps Lock—select either on or off to match the computer keyboard Auto Caps setting. If the Auto Caps option does not operate on your computer, use this function. Select on when the host computer's keyboard Caps Lock setting is on. This setting transmits lower case alpha characters as shifted characters. Select off when the host computer's keyboard Caps Lock is off. This setting transmits upper case alpha characters as shifted characters.

Num Lock—select either on or off to match the computer keyboard Auto Caps setting. If the Auto Caps option does not operate on your computer, use this function. Select on when the host computer's keyboard num lock setting is on. This setting transmits lower case alpha characters as shifted characters. Select off when the host computer's keyboard num lock is off. This setting transmits upper case alpha characters as shifted characters.

Auto Caps mode—the M5000 automatically transmits data in the correct upper and lower case, whether the host computer's keyboard settings is on or off when Auto Caps is on.



Alternate Scan Code—this option is used only for computers that run Scan Code Set 3 (some Xwindows terminals and concurrent DOS).

Serial Port Settings—allows the Wedge Programmer to select the baud rate, parity and data bits and are applicable only in RS-232 serial mode.

Baud Rate—sets the transmission speed for the serial port on the wedge and must match the baud rate of the RS-232 device. Select one of the following:

300	2400	19200
600	4800	38400
1200	9600	

Data Bits—sets the character length (number of data bits per character) for serial data and must match the data bits setting of the RS-232 device. Select either 7 or 8.

Parity—the parity setting must match the parity setting of the RS-232 device. Parity is used to provide a self-checking method for data transmission. Select one of the following:

- None
- Even
- Odd
- Mark

Transmit Speed—this option incorporates a slide bar and sets the speed at which data will be transmitted to the computer. Older computer systems may require the transmission speed set to a slower rate.

Diagnostics—option that executes a self-test program and performs the following tests on the M5000 PDT. Close the Diagnostics window when tests are completed.

- RAM Test
- ROM Checksum
- EEPROM Test
- Character Set
- LED Test
- RS-232 Serial Loopback Test (loopback connector required)
- RTS/CTS Loopback Test (loopback connector required)
- Status Log

How to Upload Collected Data Using the M5100 Keyboard Wedge

We assume that you followed the previous steps in this section, connecting the M5100 Keyboard Wedge and the interface cable, you are now ready to upload the collected data. The cursor must be in the active application for you to upload your data. You can use Notepad for testing your M5000 PDT program settings.

1. In the Main Menu of the M5000 PDT, choose Communications, select Send, Data Files.
2. From your PC, select the M5000 Programmer, select Communications, Send and then select the collected data file. Your data then begins transmitting into your application and appears as keyboard data.
3. Once your file is successfully transmitted and a key is pressed you are prompted with a confirmation message to Erase Uploaded Data Files? (No), if desired, press Y or toggle an arrow

key to select yes. When yes is chosen, the M5000 PDT verifies your selection and returns you to the Communications Select menu.

4. Press exit to return to the Main Menu.

Using RS-232 Serial Configuration

The M5000 PDT uses software developed by American Microsystems, Ltd. and runs on a Windows compatible computer. With the help of M5000 Programmer software, programs or data files can be transferred back and forth between the M5000 PDT and your host computer. Softcom can also be utilized when uploading data to emulate keyboard input.

As pictured, the RS-232 serial interface is established by connecting the communications interface cable to an available RS-232 port on the host computer and attaching the RJ45 10-pin connector (resembles a telephone jack) to the bottom of the M5000 PDT.

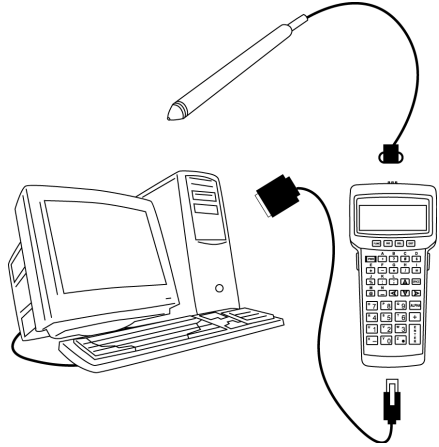
You must utilize the M5000 Programmer software to generate and transfer custom programs and configurations to the M5000 PDT for data collection in portable mode.

To use the M5000 PDT in RS-232 serial non-portable mode select Non-port mode from the Main Menu (or press N). Use Softcom to enable RS-232 serial data to appear as keyboard data to the PC.

Parameter settings such as baud rate, data bits, parity, etc. are preprogrammed at the manufacturing plant. These parameter settings can be changed through Comm. Setup (Communications Setup).

How to connect the M5000 PDT to your computer:

1. Connect the 9-pin end of the communications interface cable (RS-232) into an available RS-232 port on your computer.
2. Connect the opposite end of the communications interface cable to the RJ45 10-pin connector on the bottom of the M5000 PDT.



Working with Softcom Software

Softcom is a memory-resident PC program that allows data received from the serial port to appear as direct keyboard input and can be used with a bar code reader or serial output device. Softcom supports a wide range of serial port options and also supports flow control. Flow control regulates the incoming serial data and prevents the buffer from overflowing.

Softcom runs in the background monitoring data from the serial port. When data is read from the serial port, the currently active application receives the data as keyboard input.

Installation & Setup for Windows

1. Insert the Softcom diskette into your floppy drive.
2. From the Windows taskbar, choose Run, type **a:/setup**.
3. Installation dialogs guide you through the rest of the setup process.

Running Softcom 32:

1. To start Softcom, from the Windows taskbar, choose Start.
2. Select Programs, choose Softcom 32 and select Softcom 32 program icon. The application runs from the Windows task tray.

If you need to change the communications options, right-click on the Softcom icon in the task tray and choose Configuration. Softcom has the option to automatically load when Windows starts. In addition, you can disable Softcom, exit the application or utilize the test utilities.

Softcom Communications

Softcom options such as serial port, baud rate, parity, data bits, stop bits and xon/xoff flow control are defined by selecting Communications.

Serial Port—defines the PC serial communication port that Softcom uses. Select one of the following:

- Com1 (default)
- Com2
- Com3
- Com4

Baud Rate—sets the transmission speed for the serial port and must match the baud rate of the M5000 PDT. Select one of the following:

- | | | |
|------|----------------|-------|
| 300 | 2400 | 19200 |
| 600 | 4800 | 38400 |
| 1200 | 9600 (default) | 57600 |

Parity—the parity setting must match the parity setting of the M5000 PDT. Parity is used to provide a self-checking feature in your data transmission method. Select one of the following:

- None (default)
- Odd
- Even

Data Bits—sets the character length (number of data bits per character) for serial data and must match the data bits settings of the M5000 PDT. Select either 7 or 8 (default).

Stop Bits—defines the number of stop bits used during serial communication, choose 1 (default) or 2 stop bits.

Xon/Xoff Flow Control—enables xon/off software flow control during serial transmission. When receiving serial data, the M5000 PDT transmits a xoff character to stop incoming serial data and prevents the serial buffer from overflowing. When the M5000 PDT is ready to accept more data, a xon character is transmitted.

- On (default)
- Off

Keyboard Settings—allows function key and special key translation.

Function Keys—with Function Keys enabled, the M5000 PDT can accept ASCII characters and transmit a corresponding function key to the computer. The ASCII characters and values are listed in the table below:

Function Key	Description
No Function Keys	No function key translation. (default)
Use DC1-SUB (11H-1AH)	ASCII characters 17-26 represent function keys F1-F10. <i>⚠Note: with this option on, it is not possible to represent the normal ASCII characters 17-26.</i>
Use 81H-8AH	Function keys F1-F10 are represented by extended ASCII characters 129-138. <i>⚠Note: with this option on, it is not possible to represent the function keys in a bar code because all bar code symbologies support only the ASCII character set from 0-127.</i>
Use Both	Function keys F1-F10 are represented using both ranges DC1-SUB and 81H-8AH.

Special Keys—with Special Keys enabled, the M5000 PDT can accept a given non-ASCII character and transmit a corresponding special key to the computer. The ASCII characters and values are listed in the table below:

Special Key	Description
No Special Keys	No special key translation. (default)
Use 01H-1FH	Special keys are represented within this range. <i>⚠Note: with this option on, it is not possible to represent the normal ASCII characters 17-26.</i>
Use 8CH-9BH	Special keys are represented within this range. <i>⚠Note: with this option on, it is not possible to represent the special characters in a bar code because all bar code symbologies support only the ASCII character set from 0-127.</i>
Use Both	Special keys are represented using both ranges 01H-1FH and 8CH-9BH.

Daisy Chaining—option *not* applicable with the M5000 PDT.

How to Upload Collected Data Using Softcom

While minimized, Softcom runs in the background monitoring data from the serial port. When data is read from the serial port, the currently active application will receive the data as keyboard input. Assuming that you followed the previous steps in this section, connecting the cable and enabling the Softcom software, you are now ready to upload the collected data.

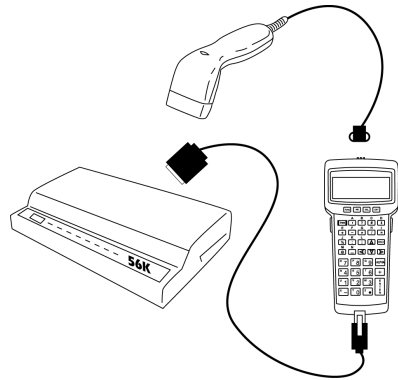
1. Use the M5000 PDT to select Comm. Setup and change Protocol to None; change Flow Ctrl to Xon/xoff. The remaining communications parameters must match Softcom settings.
↳Note: Since Softcom emulates keyboard data, the cursor must be in the active application you wish to upload your data to.
2. On your M5000 PDT select the Main Menu, choose Communications, then select Send, Data Files.
3. Select the appropriate program and the collected data file, your data begins transmitting into your application and appears as keyboard data.
4. Once your file is successfully transmitted and a key is pressed you are given a confirmation message to Erase Uploaded Data Files? (No), if desired, press Y or toggle the arrow key to select yes. When yes is chosen, the M5000 PDT verifies your selection and returns you to the Communications Select menu.
5. Press exit to return to the Main Menu.

Using a Modem

The M5000 Portable Data Terminal supports xmodem protocol and can be connected to a Hayes compatible modem through the RS-232 serial port as shown. (You need to purchase either a 9-pin or 25-pin modem cable to connect to your modem.) Collected data can be uploaded to a host computer over standard telephone lines.

How to connect to your M5000 PDT:

1. Connect the modem cable to the RS-232 serial port on the modem. (9 to 25 pin adapter may also be required.)
2. Connect the opposite end of the communications interface cable to the RJ45 10-pin connector on the bottom of the M5000 PDT.



Transmitting Files Using the M5000 PDT

Data, program, setup, lookup, and clone files as well as status log and hex dump files can be transmitted to and from the M5000 PDT. This section outlines the M5000 PDT Send, Receive, and Communication Setup menus. Pressing any key during file transmission immediately aborts the transfer.

Communications

Files are transmitted to your PC using the Communication Select menu and cannot be edited without the use of the M5000 Programmer. (Refer to the *M5000 Programmer Help File* for additional information.) The Communication Select menu is accessed through the Main Menu, where you select Communications and choose from the following submenus: Send, Receive, or Comm. Setup.

Send

The Send option allows you to transmit data, program, setup, lookup, and clone files as well as status log and hex dump files from your PC. As the M5000 PDT transmits a file, the file status displays percent complete. When the file reaches 100% Complete, Transmit Complete is displayed. You are then prompted to press any key to return to the Communication Select menu.

Data Files—this option allows you to send data files within a program via the keyboard wedge, RS-232 serial, or modem. You can send all data files or individual data files with transmission beginning immediately following the selection of either transmission mode (keyboard wedge, RS-232 serial or modem).

When All Data Files is selected, the M5000 PDT transmits every data file stored in your M5000 PDT. If you want to send data from a specific program, select the program, choose All Data Files for that program, or select a specific data file saved using that program. When either option is selected, the M5000 PDT prompts for one of the communication modes by default.

Programs—this option allows you to upload program files via RS-232 serial or modem. You can send all program files or individual programs with transmission beginning immediately following the selection of either transmission mode.

Setup—this option enables all M5000 PDT setup menu selections to be uploaded via RS-232 serial or modem with transmission beginning immediately following the selection of either transmission mode. (RS-232 serial or modem)

Lookup Files—this option allows you to upload lookup files via RS-232 serial or modem. You can send all lookup files or individual lookup files with transmission beginning immediately following the selection of either transmission mode (RS-232 serial or modem).

Clone Files—this option enables you to send all M5000 system files including setup menu selections, programs, and lookup files (data files are not transmitted via this mode) stored in the source M5000 PDT to a target M5000 PDT or host computer. Transmission begins immediately following the selection of either transmission mode (RS-232 serial or modem).

Status Log—sends the current status log file to the PC.

Hex Dump—sends a hex file stored in the M5000 PDT for data recovery.

Receive

The Receive option allows you to obtain data, program, setup, lookup and clone files, from your PC. You must select RS-232 Serial or Modem mode under Communications Mode. By default Waiting for Connect message appears. The M5000 PDT is now ready to automatically receive the correct file type from your PC. A Receive Complete message appears upon successful file transmission.

Warning! When receiving a new clone file, the M5000 PDT erases all previous Setup Menu selections, programs, lookup files, and data files.

Comm. Setup (Communication Setup)

All communication modes depend on components properly operating, including serial ports, cable assemblies and modems. Serial communication parameters must exactly match M5000 PDT settings and host communications software settings. This option allows you to specify the type of data the M5000 PDT sends and the mode that transmits the data. It also presets features such as dialing, phone number and serial communications parameters.

You can use one of two ways to access Communication Setup. From the Main Menu arrow down to Communications, then choose Comm. Setup. Another method you can use to access Communication Setup (Comm. Setup) from the Main Menu, is simply arrow down to Setup, and choose Comm. Setup.

Protocol—select one of the following options:

None—protocol is not used.

Xmodem—enables the xmodem protocol that is commonly used to ensure data integrity when communicating via telephone lines. The M5000 PDT automatically detects and supports xmodem CRC and xmodem checksum. Default is set the Xmodem.

Flow Control—is used when receiving serial data and prevents the serial buffer from overflowing. Select one of the following options:

None—flow control is not used.

Xon/xoff—enables Xon/xoff software flow control. When receiving serial data, the M5000 PDT transmits a xoff (Ctrl S) character to stop incoming serial data and prevents the serial buffer from overflowing. When the M5000 PDT is ready to accept more data, a xon (Ctrl Q) character is transmitted.

RTS/CTS—enables RTS/CTS hardware flow control. When receiving serial data, the M5000 PDT drops the RTS line to stop incoming serial data and prevents the serial buffer from overflowing. When the M5000 PDT is ready to accept more data, the RTS is again inserted. Default is set to RTS/CTS.

Baud Rate—sets the data transmission speed for the serial port on the M5000 PDT and must match the baud rate of the host computer's serial interface. Select one of the following options:

300	2400	19200
600	4800	38400
1200	9600 (default)	57600

Parity—the M5000 PDT parity setting must match the parity setting of the host computer's serial interface and is used to provide a self-checking feature in your data transmission method. Select one of the following options:

- None (default)
- Odd
- Even

Data Bits—sets the character length (number of data bits per character) for the serial data and must match the data bits setting of the host computer's serial interface. Select either 7 or 8 (default).

Stop Bits—defines the number of stop bits used during serial communication, choose 1 (default) or 2 stop bits.

Char Delay (Character Delay)—specifies the amount of delay inserted between each transmitted character. This option slows the transmission rate to compensate for slow host computers that require time to process each character. Programmable range is 0ms to 99ms. (Default is one.)

Data—select one of the following options. (Default is Menu.)

Menu—allows you to select specific data files for transmission.

Send All—transmits all data files stored and avoids the Upload Selection menu.

Mode—specifies which mode is automatically used when the M5000 PDT transmits data. You are not required to specify the transmission mode each time data is transmitted (unless Menu is enabled). You are required to manually select one of the following transmission modes each time the M5000 PDT transmits data: Kbd Wedge, RS232 port or modem. (Default is Menu.)

Dialing—sets the modem for telephone dial type, either Tone (default) or Pulse.

Phone Number—sets the destination telephone number for modem communications.

Modem Init—sets the modem initialization string for modem communications.

Modem Time Out—when checked, this setting aborts Transmit Receive mode after approximately four minutes, fifteen seconds, if a call is not received. The M5000 PDT must be connected to a modem and operating in Transmit Receive mode in order for this feature to function.

SOT Text (Start of Transmit)—During communications, (Send, Data Files) Start of Transmit text is transmitted before all other data.

↪Note: ASCII character values may be represented by a three character sequence of /nn (/nn being the hex value of the character). Since a slash is the start of a hex value, you must type // to output a slash. PC function keys are defined as /F1 through /F0, function key F10 is defined as /F0.

SOT Delay—defines the amount of time delay inserted between each character of the SOT Text during file transmission. The delay (increments of tenths of a second) is used to slow the data output rate so the M5000 PDT does not generate a data overrun on the host computer during transmission especially when transmitting data by the keyboard wedge. Most systems do not require a SOT Delay.

EOT Text (End of Transmit)—During communications, (Send, Data Files) End of Transmit Text is transmitted after all other data.

↪Note: ASCII character values may be represented by a three character sequence of /nn (/nn being the hex value of the character). Since a slash is the start of a hex value, you must type // to output a slash. PC function keys are defined as /F1 through /F0, function key F10 is defined as /F0.

EOT Delay—defines the amount of time delay inserted between each character of the EOT Text during file transmission. The delay (increments of tenths of a second) is used to slow the data output rate so the M5000 PDT does not generate a data overrun on the host computer during transmission especially when transmitting data by keyboard wedge. Most systems do not require an EOT Delay.

Setup

The following system-wide parameters are configured for the M5000 PDT when you choose Setup, in the M5000 PDT Main Menu: Date/Time, Bar Codes, Comm. Setup, Laser/CCD Options, Other Setup and Reset Setup.

Setup Selection menu

Date/Time—when Date/Time is selected from the Setup Selection menu, the M5000 PDT displays the date and time in the following 24-hour format.

Set Date & Time:	
01/05/1999	16:16
MM/DD/YYYY	HH:MM

All hours past noon must be entered in military time (1300-2300). When you change the time or date, the internal clock resets seconds to zero. In order to access time only without the option to change it, choose Time from the Main Menu.

↳Note: Date/Time and Non-Portable Mode options are selectable only on the M5000 PDT and cannot be modified in the M5000 Programmer.

Bar Codes

Your M5000 PDT can be setup to read the most widely used bar code symbologies. Included are such options as enabling the bar code symbology, expanding symbology options to read special characters, transmitting standard check digits and enabling concatenation mode. Bar code setup options and descriptions for Code 39, UPC, EAN, UPC/EAN Add-ons, Interleaved 2 of 5, Codabar, Code 128, Code 93, MSI/Plessey and Code 11 are listed in this section.

Code 39 Options

Option	Setting	Description
Decoder	*On	Enables/disables reading Code 39 bar codes.
Full ASCII	*Off	Enables/disables reading Full ASCII extension of Code 39.
Check Digit	*Off	Enables/disables mod 43 check digit. (Code 39 bar codes only containing a valid check digit can be read.)
Send Check	*Off	Transmits mod 43 check digit with bar code data.
Concatenate	*Off	Enables/disables concatenate mode (see definition below.)

↳Note: The concatenate mode allows the M5000 PDT to accumulate multiple Code 39 bar codes in the buffer and send them to the computer as though a single bar code. When a Code 39 bar code containing a leading space is read, the M5000 PDT beeps twice and buffers the data without transmission. This process continues until a Code 39 bar code without a leading space is read or 128 characters are buffered. A Code 39 bar code that only contains dashes can clear the buffer.

UPC Options

Option	Setting	Description
Decoder	*On	Enables/disables reading UPC-A & UPC-E bar codes.
Expand UPCE	*Off	Converts UPC-E bar codes to UPC-A before transmission; after conversion (if on), UPC-A programming options are followed.
Expand UPCA	*Off	Converts UPC-A bar codes to EAN-13 format by inserting a leading zero; after conversion (if on), EAN-13 programming options are followed.
*UPCA #System	*On	Transmits UPC-A number system character.
*UPCE #System	*On	Transmits UPC-E number system character.
*UPCA Check Digit	*On	Transmits UPC-A check digit character.
*UPCE Check Digit	*On	Transmits UPC-E check digit character.

EAN Options

Option	Setting	Description
*Decoder	*On	Enables/disables reading EAN-8 & EAN-13 bar codes.
EAN8 Zero Fill	*Off	Adds five leading zeros to EAN-8 bar codes; after conversion, (if on), EAN-13 programming options are followed.
*EAN13 Country Code	*On	Transmits EAN-13 Country Code.
*EAN8 Country Code	*On	Transmits EAN-8 Country Code.
*EAN13 Check Digit	*On	Transmits EAN-13 check digit character.
*EAN8 Check Digit	*On	Transmits EAN-8 check digit character.
ISBN Number Convert	*Off	Converts 13 digit Bookland/EAN (978 prefix) to the corresponding 10-digit ISBN number.

UPC/EAN Add-ons Options

Option	Setting	Description
*Decoder	*Off	Enables/disables reading UPC & EAN supplement bar code unless on is selected.
*2 Digit	*On	Enables/disables reading 2 digit supplements.
*5 Digit	*On	Enables/disables reading 5 digit supplements.
UPC Supplement	*Off	UPC bar codes are not read unless accompanied by a valid supplement.
EAN Supplement	*Off	EAN bar codes are not read unless accompanied by a valid supplement.
Bookland Supplement	*Off	Bookland/EAN bar codes are not read unless accompanied by a valid supplement.
Send Space	*Off	Inserts a space between the standard bar code data and the supplemental data.

*Notes default

Interleaved 2 of 5 Options

Option	Setting	Description
Decoder	*On	Enables/disables reading Interleaved 2 of 5 bar codes.
Check Digit	*None USS OPCC	USS Check Digit and OPCC Check Digit are mutually exclusive (only one option can be selected at a time). You can toggle left or right arrow key to select option on M5000 PDT.
Send Check	*Off	Does not transmit Interleaved 2 of 5 check digit with bar code data.
Fixed Size	*Off	Reads fixed length I 2 of 5 bar code bar codes only matching the lengths specified in the fixed size 1, 2 and 3 options defined below.
Fixed Size 1 (6-60)	*6	Sets the first valid fixed length for I 2 of 5. Valid lengths are 2 to 60 characters, however length must be an even number. Default fixed length is 6 characters and is disabled when set to 0 characters.
Fixed Size 2 (0-60)	*0	Sets the second valid fixed length for I 2 of 5. Default length is set to 0 characters (the second fixed length is disabled).
Fixed Size 3 (0-60)	*0	Sets the third valid fixed length for I 2 of 5. Default length is set to 0 characters (the third fixed length is disabled).

Codabar Options

Option	Setting	Description
Decoder	*On	Enables/disables reading Codabar bar codes.
Start/Stop	*Off	Transmits the Codabar start/stop characters.
CLSI Format	*Off	A blank after the first, fifth and tenth characters of a 14-character Codabar bar code. Bar code length does not include the start/stop characters.
CLSI Chk Digit	*Off	Enables/disables the CLSI check digit. When enabled, all fourteen digit numeric bar codes must contain a valid check digit.

Code 128 Options

Option	Setting	Description
Decoder	*On	Enables/disables reading Code 128 bar codes.
UCC Verify	*Off	Check for a valid mod 10 check digit. Mod 10 is not required on UCC mod 10 bar codes (applies to 20-digit serial shipping container bar codes).
*Send Mod 10	*On	Transmits the mod 10-check digit with the bar code data.

*Notes default

Code 93 Options

Option	Setting	Description
Decoder	*On	Enables/disables reading Code 93 bar codes.
Concatenate	*Off	Enables/disables concatenate mode.

↗Note: The concatenate mode allows the M5000 PDT to accumulate multiple Code 93 bar codes in the buffer and sends them to the computer as though a single bar code. When a Code 93 bar code containing a leading space is read, the M5000 PDT beeps twice and buffers the data without transmission. This process continues until a Code 93 bar code without a leading space is read or 128 characters are buffered. A Code 93 bar code bar code that only contains dashes will clear the buffer.

MSI/Plessey Options

Option	Setting	Description
Decoder	*Off	Enables/disables reading MSI/Plessey bar codes.
2nd Check Digit	*Off	Two valid check digits are required for each bar code. The first check digit can be either mod 10 or 11, the second must always be mod 10.
Mod 11 Check (Digit)	*Off	Determines whether mod 11 or mod 10 is used as the first check digit.
Send Check 1	*Off	Transmits the first check digit.
Send Check 2	*Off	Transmits the second check digit.
ISBN	*Off	Enables/disables reading Modified Plessey ISBN bar codes. (Only eleven-digit ISBN bar codes can be read.)

Code 11 Options

Option	Setting	Description
Decoder	*Off	Enables/disables reading Code 11 bar codes.
2 nd Chk Digit	*Off	Two valid check digits are required for each bar code.
Send Check 1	*Off	Transmits the first check digit.
Send Check 2	*Off	Transmits the second check digit.

*Notes default

Termination Char—The optional Termination Char is transmitted at the end of the bar code data and applicable only during non-portable mode operation (refer to Non-Portable Mode on page 31). Select one of the following options:

None

Tab (ASCII 09; hex /09)

CR (carriage return, ASCII 13; hex /0D)(default)

LF (line feed, ASCII 10; hex /0A)

CR + LF (carriage return and line feed, ASCII 13 and ASCII 10; hex /0D/0A)

User defined termination character (00H-F9H).

User Termination—valid only if the Termination Char option is set to User. Default is set to 00H.

Termination Override—if a control character or special character (Func, arrow, etc.) is embedded in the bar code data, the preamble, postamble and termination character is not transmitted. Default is set to off.

Preamble—is a set of user-defined characters and transmitted at the beginning of the bar code data. To define the preamble, enter ASCII characters. This option is active only during non-portable mode. This field can include 0-32 characters, alpha, numeric and all ASCII characters.

Preamble Send Delay—is an option that specifies the amount of delay occurring after the bar code preamble is transmitted. The delay period is programmable from 0.0 to 9.9 seconds, default is 0.0 seconds.

Postamble—is a set of user defined characters and transmitted at the end of the bar code data. To define the postamble, enter ASCII characters. This option is active only during non-portable mode. This field can include 0-32 characters, alpha, numeric and all ASCII characters

Postamble Send Delay—is an option that specifies the amount of delay occurring after the bar code preamble is transmitted. The delay period is programmable from 0.0 to 9.9 seconds, default is 0.0 seconds.

Bar Code Edit—the editing option *must* be checked for editing options to be operational.

Editing—enables bar code editing.

Space Strip—refers to bar code leading and trailing spaces to be stripped or removed from the data. (Editing must be on.)

Leading Strip—refers to the number of bar code characters (0-30) to be stripped or removed from the beginning of the bar code data.

Trailing Strip—refers to the number of bar code characters (0-30) to be stripped or removed from the end of the bar code data.

↪Note: If the total number of strip characters (leading and trailing) is greater than the number of characters in the bar code, no characters are stripped.

Code—editing can either apply to all or one bar code type. The default is All bar code types.

Bar Code Beeper—when you scan a bar code the M5000 PDT emits a beep. The following settings allow you to set the tone and length of the beep.

Tone—sets the volume of the beep. Select one of the following options:

- None
- Low
- Medium (default)
- High

Length—sets the length of the beep. Select one of the following options:

- Shortest
- Short (default)
- Long
- Longest

Comm. Setup

Refer to Communications Setup in the previous section.

Laser/CCD Options

Mode—select one of the following options by using the left or right arrow:

Trigger—a trigger pull activates the laser that remains on until the trigger is released, a valid decode occurs or a laser/CCD timeout is reached. (default)

Pulse—a trigger pull activates the laser that remains on until a valid decode occurs or a laser/CCD timeout is reached.

Continuous—a trigger pull activates the laser that remains on while the trigger is pressed or a valid decode occurs before the laser/CCD timeout is reached.

Blink—a trigger pull activates the laser that remains on for a period equal to the laser/CCD timeout after a valid decode occurs. The laser blinks 250ms on and 250ms off. Blink mode does not operate properly for lasers that employ thermal shutdown.

Timeout—if the laser or CCD does not read a bar code within the designated time period, the device turns off. Select off or a 1-9 second delay. (If the option is set to off, it overrides this safety feature.) (The default is a three-second timeout.)

Read Delay—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. Select one of the following options:

0.0	(no delay) - 9.9 seconds (incremented in tenths of a second)
1.0	second (default)

Other Options

Bar Code ID—transmits the bar code identifier character at the beginning of the bar code data. A space is included between the ID character and the bar code data. Choose Off or On to activate this option. Default is set to On.

Duplicate Reads—enables reading the same bar code multiple times. (Default is set to on.)

Read Verify #—value from 0 to 9 denoting number of rereads of same bar code before accepting it as valid data. (Default is 0.)

F1—F10 Keys—enables reading of function keys in place of ASCII characters. (Default is set to on.)

Special Keys—enables reading of special keys in place of ASCII characters. (Default is set to on.)

Other Setup

Timeout—sets the amount of time (1-99 minutes) the M5000 PDT remains on after the last activity, however, it is disabled while operating in keyboard wedge mode. Option is set to five minutes by default.

Password—to access the Setup mode, a password must be entered. The fixed password (OK) cannot be changed. Option is off by default.

Auto Input—select Auto Input and the M5000 PDT automatically loads the first program in memory when Input is selected. If a data file or multiple data files exist for the active program, the M5000 PDT uses the first file created for that program. If a data file for the program does not exist, the M5000 PDT creates a filename **FILE#1**. Option is off by default.

Auto Save—automatically saves the data file when you exit Input. Option is unchecked by default.

View Delay—sets the duration of the displayed characters for bar code data and lookup file entries. Default is set to 0.5s.

Overwrite—bar code data automatically overwrites the contents of the current input. Option is on by default.

Halt on Err—halts when an error occurs during operation and disables the bar code reader input. The appropriate error message is displayed until a key is pressed. Option is off by default.

Wedge Keypad—enables or disables keypad output during any non-portable mode operation. Option is off by default.

Keypad Beep—enables or disables Keypad Beep when a key is pressed. Option is on by default.

Left Trigger—sets the M5000 PDT left trigger to the following mode using the left or right arrow:

None—trigger is ignored.

Alpha—trigger function is the same as pressing the alpha key on the keyboard.

Laser—trigger function is the same as pressing the trigger on the laser. (default)

Right Trigger—sets the M5000 PDT right trigger to the following mode using the left or right arrow:

None—trigger is ignored.

Alpha—trigger function is the same as pressing the alpha key on the keyboard.

Laser—trigger function is the same as pressing the trigger on the laser. (default)

Reset Setups—resets Setup options to the default settings. You are prompted to Reset All Setups to Default? (No).

Non-Portable Mode

Once the Non-port mode is selected from the Main Menu, the interface mode is automatically determined based on your cable connection. It may be necessary to reselect non-port mode on the Main Menu if cable changes are made during non-port mode. Two ways in which the M5000 PDT relays bar code data to the host computer are keyboard wedge and RS232 serial.

Keyboard Wedge transmits bar code data to the host computer via a hardware device called the M5100 Keyboard Wedge. This device is connected in-line to the host computer's keyboard and sends data to the host computer as if it were typed from the host keyboard.

RS-232 Serial transmits bar code data to the host computer's serial port. This mode uses the protocol and serial parameters from the Communications Setup option. (Refer to Comm. Setup page 21.)

Upgrade Flash— Previously, if you wanted to update portable bar code reader firmware, you would physically open the scanner and replace the EPROM and in some cases is costly, time consuming and complicated. Today you can use a much easier method. The flash memory can be easily updated using our communications interface cable, IBM compatible computer and a software file.

You can download amended firmware *only* if American Microsystems Technical Support has instructed you to upgrade the firmware on your M5000 PDT.

Warning! When this option is selected the M5000 PDT warns you that you will lose all program files and data files if you proceed. You may wish to validate proper xmodem communication through your serial port.

1. Connect the communications interface cable (RS-232) into an available RS-232 port on your computer.
2. Connect the opposite end of the communications interface cable to the RJ45 10-pin connector on the bottom of the M5000 PDT.
3. On your M5000 PDT from the Main Menu select Upgrade Flash (U). You will be prompted by the confirmation message, All Data & Programs Will Be Lost! Are You Sure? Choose Y or toggle this selection to (yes). The M5000 PDT is now waiting for connection.
4. To access the M5000 Programmer software from WIN95 taskbar, click Start, select Programs, select M5000 Utilities and select M5000 Programmer.
5. Under the Communications menu, select Upgrade Flash. The communications submenu is then brought up on the screen and file selection dialog box will prompt you to select a UPG file (image.upg).
6. Press ok to select UPG file.
7. The Communications dialog will again appear press Send to upload flash upgrade.

Once the file has been transmitted, the flash upgrade is complete. The M5000 PDT automatically returns you to the Main Menu. The options will be reset to factory defaults.

Browse—allows you to select the flash file you want to send.

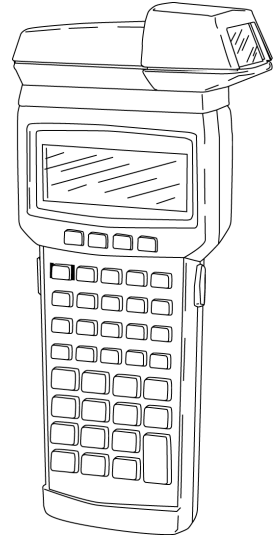
Send/Exit—after you select a file to send, press the Send button. While the M5000 Programmer is sending the file, the button changes to Cancel, allowing you to abort the transmission.

Using the M5005 Integrated Laser Scanner

The M5500 PDT consists of the American Microsystems M5000 Portable Data Terminal integrated with our new M5005 Integrated Laser Scanner. These two units combine to form a powerful and easy-to-use data collection system.

The M5500 provides all the features of the M5000 PDT together with the convenience of one-handed, portable scanning and the speed and accuracy of laser input. The M5500 PDT can be easily adapted for right- or left-hand use. The unit has two triggers that allow you to scan bar code data with your right or left hand. It can be positioned in your hand so that you can manually enter data and/or scan bar code labels as desired. (Refer to *How to Scan & Enter Data on the M5500 PDT*.)

Included with the M5500 PDT is a communications program that makes uploading data from the RS-232 serial port directly into word processors, text editors, point-of-sale programs, inventory programs and other application programs quick and easy. Data can also be uploaded as an ASCII file. The M5500 PDT also comes with an easy-to-use Windows compatible program generator. The M5500 PDT programming software allows you to generate customer programs or use our program templates to configure a program to meet your specific needs.



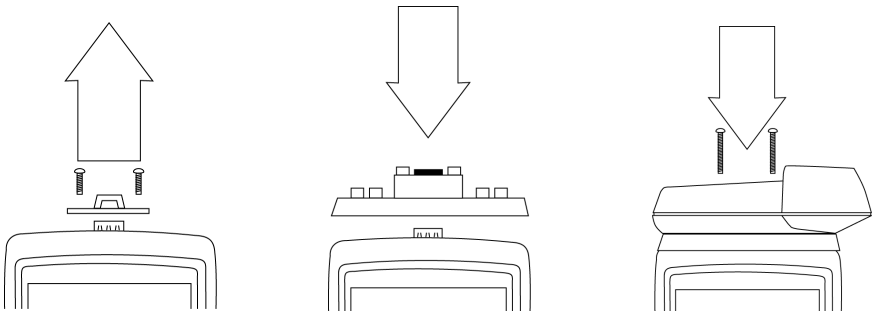
How to Assemble the M5005 Laser Scanner

Step 1: Remove the two small Phillips-head screws that hold the black plastic retainer clip in place located on top of the M5000 PDT; then remove the retainer clip.

Note: These two screws cannot be used later to secure the laser scanner in place.

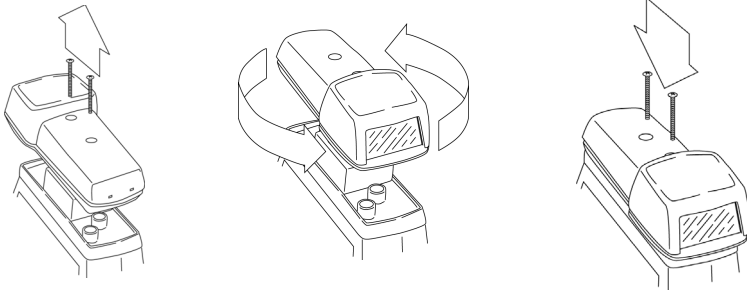
Step 2: Attach the M5005 Laser Scanner base assembly to the top of the M5000 PDT by connecting the two 9-pin connectors. (The base assembly stays mounted to the M5000 PDT and provides easy removal when you want to change from right-hand operation to left.)

Step 3: Select either left-hand or right-hand position, and secure the M5005 Laser Scanner by fastening it to the M5000 PDT with the two long Phillips-head screws provided.



How to Rotate the M5005 Laser Scanner

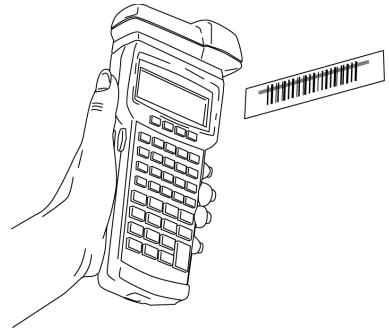
- Step 1: Remove the two small Phillips-head screws that hold the laser scanner in place. Lift straight up to separate the laser scanner from the base assembly.
- Step 2: Rotate the M5005 Laser Scanner 180 degrees so it faces the desired scanning direction.
- Step 3: Attach the M5005 Laser Scanner onto the base assembly and secure it in place with the two Phillips-head screws.



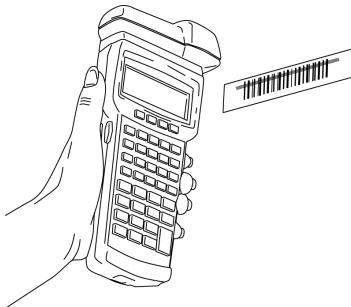
How to Scan & Enter Data on the M5500 PDT

- Step 1: Hold the M5500 PDT in either your left or right hand and aim the laser approximately 3 to 6 inches from the bar code label.

Note: Typical scanning distance varies from 3 to 22 inches. The maximum scanning distance depends on the density of your bar code.



- Step 2: The M5500 PDT should be comfortably positioned in your hand for you to enter data and scan bar code labels as shown.



Specifications

The M5005 Integrated Laser Scanner uses a low-power visible laser diode. Although momentary exposure to a CDRH Class II laser is not known to be harmful, avoid staring directly into the light beam, extended exposure may cause damage to your eyes.

Light Source	630-680 nm laser diode
Laser Output Power	1.0 mW maximum
Scan Rate	35 + 5 scans per second
Laser Class	CDRH Class II

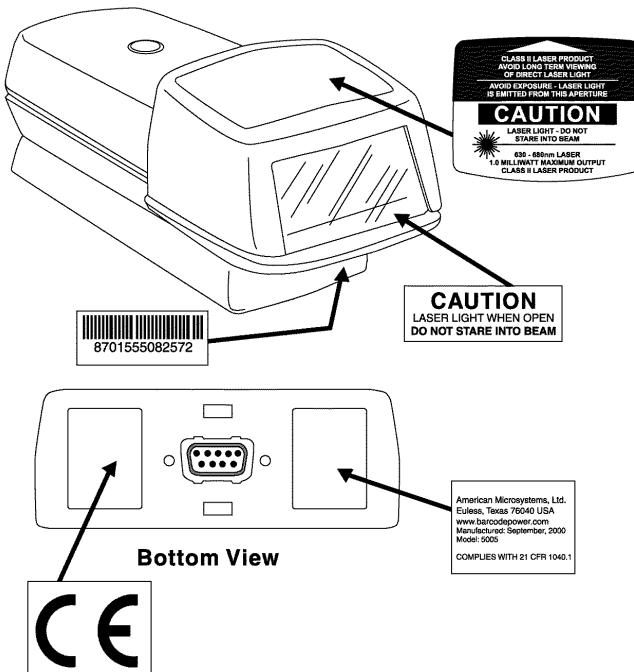
Caution: Changes or modifications not expressly approved by American Microsystems, Ltd. could void the user's authority to operate this equipment.

FCC Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: 1) this device may not cause harmful interference, and 2) this device must accept any interference received, including interference that may cause undesired operation.

Caution: Use of controls, adjustments, or performance of procedures other than those specified herein may result in hazardous visible laser light exposure.

The following Certification/Identification labels are attached to the M5005 Integrated Laser Scanner in compliance with FCC Rules.



System Warnings

Warning Message	Warning Description
Input Has Data Cannot Overwrite	Reading a bar code into a data input field and the Bar Code Overwrite option is off.
Input Is Full Cannot Insert Char	During data input, maximum input size specification has been reached and will not allow additional characters to be inserted.
Input Not Found In Lookup Table	Data entered in a lookup field does not match and a custom error message is not defined.
Input Not Found Accept Anyway (Yes)	Data entered in a lookup field does not match and the option, Accept Mismatches is on.
No Editing Allowed	User cannot edit a No Edit field.
Bar Code Is Too Long/Short For Input	A bar code read into the current input field is too long/short and not allowed by min/max specifications.
Input Is Already On File	A duplicate input has been detected when the option NO Duplicates Allowed is enabled.
No Programs Exist	No programs have been created; either a built-in or custom program must be loaded.
Out Of Memory	Accessing Input mode with less than 256 bytes of free memory or receiving a file that exceeds available memory.
No Data Files Found	Accessing Input mode and selecting a program with the option Receive Data Files only and that program has no data files.
Duplicate Filename	User tries to enter a data file name and that name is already used by another data file.
Complete Record Before Searching	User tries to search from within data input before the current record is satisfied.
Complete Record Before Inserting	User tries to insert a record from within data input before the current record is satisfied.
END OF FILE No More Inputs	End of defined program inputs has been reached.
Cannot Insert Before a Header	User tries to insert a record during data input while accessing a header record.
Input Not Satisfied	User tries to advance to a new record before the current record is satisfied.
Program Already Loaded in RAM	User tries to load a built-in copy of program P1-P6 and it is already loaded in RAM.
Invalid Record Number	Using the Goto Record option, user tries to enter an invalid record number.
Lookup File Is Not In Memory	The lookup file specified in the program has not been loaded into memory.
Almost Out Of Memory	User tries to access data input with less than 1K of memory remaining.
New Record Has Been Inserted	User inserts a new record during data input.

Warning Message	Warning Description
Invalid Bar Code Type	Bar code type does not match current input field specifications.
No Data Files Found	When attempting to upload data, no data files are found.
Transmit/Receive Aborted By User	User presses a key causing an abort.
Receive Error	Indicates the received communication aborted with an error.
Checksum Error	An invalid checksum is detected in a system file.
No Carrier	Communications carrier was lost during modem transfer.
Invalid ASCII File	ASCII file is too long/short or invalid to receive.
Invalid System File	System file is too long/short or invalid to receive.
Invalid Data File File Name Error	Data file name was either blank or more than 8 characters.
Invalid Data File Prog Name Error	Program file name was either blank or more than 8 characters.
Program Not Defined	Program specified in the data file is not found or programs do not exist to SEND.
Invalid Data File File ID Error	Invalid file ID for ASCII file. <i>Note: ID must be (D) data or (L) lookup.</i>
Timeout Error	No response from sender/receiver; timeout occurs.
Transmit Error	Indicates the transmitted communication aborted with an error.
No Lookup Files Found	User tries to Send or Erase lookup files when there are none in memory.
INVALID PASSWORD Press Any Key	User tries using an invalid password when trying to access Setup with the Password option on.
No Match Found	After conducting a Find, no matches are found.
No Programs Exist	User tries to erase a program where none exist.
All Programs Have Data Files	User tries to erase programs and all programs have data files included. Data files must be erased first.
Recall Buffer is Empty	Using the Recall option before data input has been stored.
Recall Data is Too Short/Long for Input	Data recalled into the current input field is too long/short and not allowed by min/max specifications.
Recall Data Not Valid For Input	Recall data does not match the current data input specifications.
Invalid Bar Code Data For Input	Bar code data does not match the current data input specifications.
A Power Fail Has Occurred	Power to the M5000 PDT has failed or a checksum failure caused the M5000 PDT to abort.
Battery Low Change Battery Soon	Low battery detected; replace with AAA batteries.

Troubleshooting Guide

Problem	Solution
When the power button is pressed, the M5000 PDT does not turn on.	Check the batteries; make sure they are installed in the correct position. Check all cable connections, if applicable.
Keyboard locks-up	Check Wedge Programmer settings.
Bar codes will not scan.	Check the bar code setup to verify the bar code to be scanned is enabled in the M5000 PDT or your program.
Losing data during serial communications	Baud rate could be set too fast; adjust to a slower rate or check protocol for correct setting.
Difficulty scanning bar codes while using laser or CCD	Laser or CCD could be too close or too far away from the bar code or the scanning angle is incorrect. Scan within the guidelines specified for your type of scanner.
The M5000 PDT turns off automatically	To conserve battery power, the M5000 PDT has a time-out feature with default 5-minutes. Power the M5000 PDT on and it resumes in the same menu you were in before it timed-out.
When entering data to assign the file or program a name, I cannot enter special characters.	The file name and the program name are programmed to accept only alphanumeric characters and not special characters such as: , ? , # , etc.
The M5000 PDT beeps if I try to enter more than 8 characters for a filename.	When entering a file name, only eight characters are accepted.
Why does the cursor blink with a solid block and sometimes with an underline?	When the cursor blinks with a solid block, alpha mode is in use; when the cursor blinks with an underline, standard mode is in use.
I keep getting a Keyboard Wedge Error.	Keyboard Wedge is not connected correctly – check your connections.
When I upgraded the flash memory, all my data was lost.	When this option is selected, the M5000 PDT warns you that you will lose all program and data files if you proceed.
A modem adapter is connected between the communications interface cable and the modem and I still cannot use my modem.	A 9 to 25 pin adapter may also be required to complete the connection.
When I received a new clone file, all my previous setup menu selections disappeared.	The M5000 PDT erases all previous setup menu selections, programs, lookup files and data files.

Non-ASCII Special Characters

Hex Code	ASCII
/8C	alt on
/8D	alt off
/8E	ctrl on
/8F	ctrl off
/90	shift on
/91	shift off

↳Note: Keys must be used in pairs, for example, a desired ALT must be transmitted as ALT ON, A, ALT OFF.

Hex Code	Function Key	Hex Code	Function Key
/92	page up	/F1	1
/93	page down	/F2	2
/94	home	/F3	3
/95	end	/F4	4
/96	delete	/F5	5
/97	insert	/F6	6
/98	left arrow	/F7	7
/99	right arrow	/F8	8
/9A	up arrow	/F9	9
/9B	down arrow	/F0	10

Non-ASCII Delay Character Values

Hex Code	Delay (sec)
/D1	1
/D2	2
/D3	3
/D4	4
/D5	5
/D6	6
/D7	7
/D8	8
/D9	9

↳Note: The characters above are valid for use in SOF text, EOF text, SOT text, EOT text, preamble (prefix) and postamble (suffix) fields.

Special and Function Keys for Bar Codes

The following characters are transmitted during non-portable (keyboard and RS-232) mode with Special Keys and Function Keys enabled.

DEC	HEX CODE	ASCII	OUTPUT CHARACTER	SPECIAL KEYS ENABLED	FUNCTION 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	/0F	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	

ASCII Character Chart

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