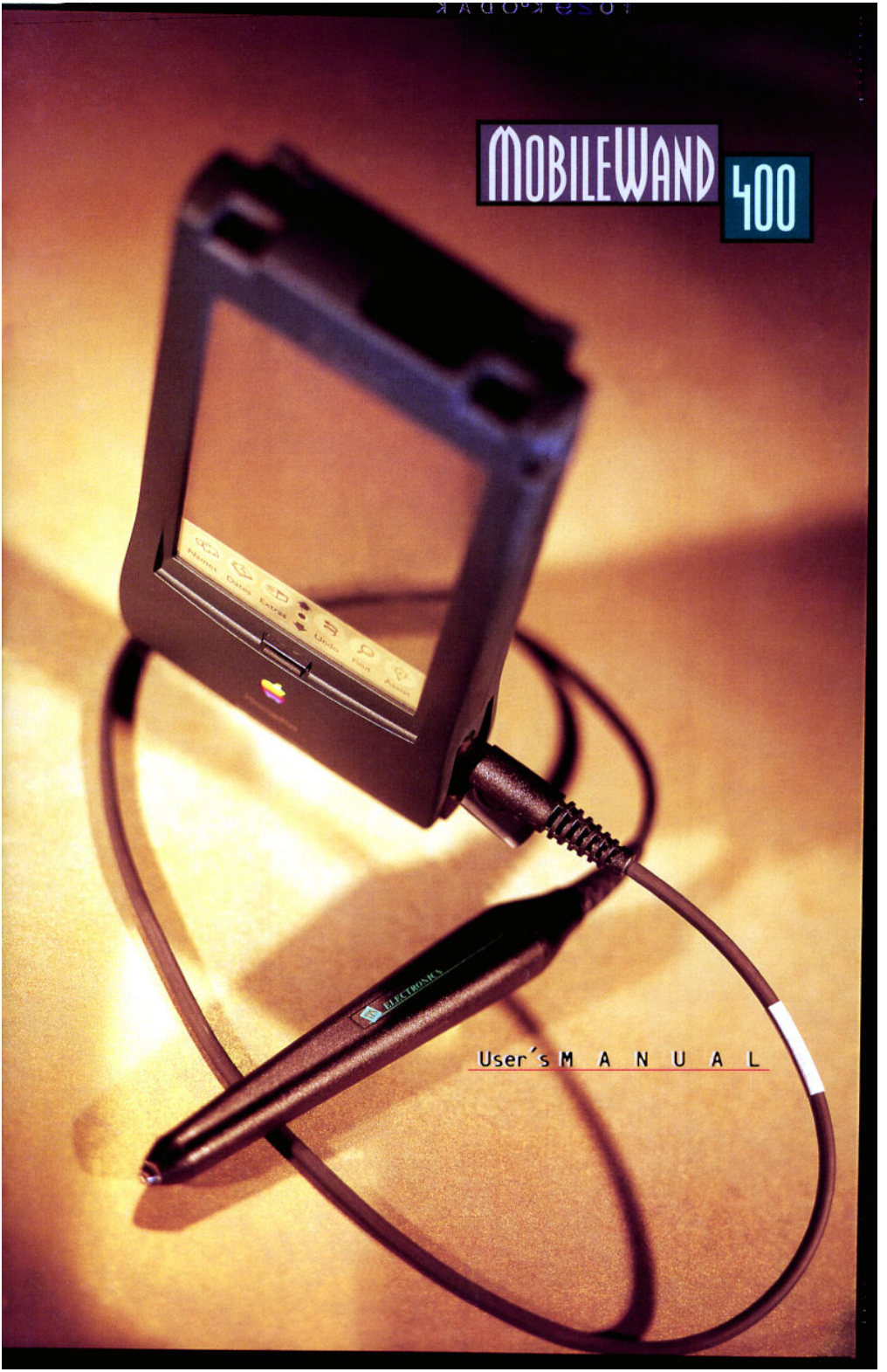

MOBILEWAND 400
User´s MANUAL

TPS Electronics

MOBILEWAND 400

Bar Code Reader

TPS Electronics

NOTICE

The information contained in this document is subject to change without notice.

TPS Electronics makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. TPS Electronics shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

WARRANTY

The MW-400 Bar Code Reader is warranteed for a period of two years after purchase covering defects in material and workmanship. TPS Electronics will repair or, at its option, replace products that prove to be defective in material or workmanship that fail to function properly under proper use during the warranty period.

FCC CERTIFICATION AND INFORMATION TO USER

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the computing device.
- Increase the separation between the equipment and the computing device.
- Consult the dealer or an experienced radio/TV technician for help.

FCC IDENTIFICATION: FCC ID B94KDRZ

FCC DISCLAIMER

This TPS Electronics product has received FCC certification for its standard configuration only. Any customer purchasing the product with stripped and tinned leads or a connector without adequate shielding, or who purchases the standard MW-400 and removes or otherwise modifies the connector or housing has the responsibility to comply with FCC regulations. Moreover, if the MW-400 reader is purchased under the above circumstances, the product becomes defined as a subassembly and the FCC Identification number no longer applies. TPS Electronics assumes no responsibility or liability for users of the TPS Electronics MW-400 readers without connectors that fail to comply with FCC regulations.

Other changes or modifications not expressly approved by TPS Electronics could void the user's authority to operate the equipment.

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.

Table of Contents

The Mobile Wand 400 is a compact, self-contained bar code wand scanner with an integrated decoder that connects directly to the serial port of most popular PDAs. The MW-400 autodiscriminates up to 10 popular bar code types. Communications parameters, bar code formatting, and terminating character are among the many user-programable options. The MW-400 does not require a battery, power supply, interface "box" or adapter. This lightweight, low current scanner is ideal for field computing applications when ease-of-use and power conservation are of critical importance.

Supported Bar Codes

In its default configuration, the MW-400 reader can automatically recognize and decode the following bar codes symbologies:

- Code 39, Standard or Expanded (Full ASCII)
- Interleaved 2 of 5
- UPC/EAN/JAN codes, with or without supplemental
- Code 128
- Codabar
- Code 11
- MSI Code
- Code 93

By altering its configuration, any symbologies can be excluded. There are other configurable parameters affecting the reading and data output format for each symbology. see Chapter 3 for details on enabling and disabling each bar code symbology and other associated options See Chapter 8 for information on the data output format for each code.

It may be desirable to "turn off" unwanted bar codes. This will yield a very slight increase in the speed of bar code decoding.

LED Feedback

The MW-400 has an LED near the tip that flashes after a good read. The LED also flashes during programming, and to signal any self test failures.

Important Note: It is strongly recommended that the user install the MW-400 and its application software and test the bar code reader before scanning any of the set-up bar codes in this manual.

To use the MW-400 you will need the following:

- PDA or other portable computing device supported by MW-400
- PDA Application Software With Support for MW-400 Such as MobileScan™

* Many popular PDA applications include MW-400 support "off-the-shelf". If you need help in locating these products, contact TPS Electronics. Note that communications software may also be required to install the PDA software.

Hardware installation is very straightforward.

1) Open the protective cover (if any) on the communications (serial) port of the PDA.

2) If you have not already done so, install the appropriate adapter (if any) on the end of the MW-400 cable.

3) Align the connector on the MW-400 with the serial connector on the PDA.

4) Push the MW-400 connector firmly into place until it seats.

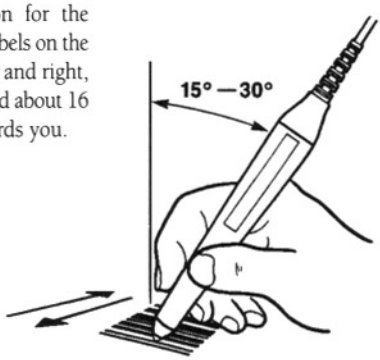
The MW-400 should now be ready for use.

General Scanning Tips

How you hold the MW-400 reader is important You can optimize performance by using the correct wand position with respect to the bar code label

Best Orientation

When the bars of a bar code are vertical like a picket fence, the best orientation for the wand is when the labels on the wand are facing left and right, and the wand is tilted about 16 to 30 degrees towards you.



Best Orientation

Here are some helpful hints to improve bar code scanning:

1. Hold the wand in the best orientation and place the tip onto the white space on either side of the bar code label.
2. Move the wand smoothly and lightly over the bar code from start to finish. The best type of motion to use is that of "drawing a line through the bar code with a pencil."
3. Press down lightly while scanning.
4. The speed should be brisk, but comfortable. Faster speeds usually work better than slower speeds
5. When the MW-400 reader reads a label, it should flash the LED. If it does not, try again. Here are some suggested variations that may improve the read rate:
   a. Try a different path through the label, taking advantage of the vertical redundancy inherent in bar codes.
   b. Try tilting the wand at a different angle.
   c. Try scanning at a different speed.

If you have no positive results after several tries, check the following items:

1. Is the MW-400 reader powered? The MW-400 should have a small red light visible on the sapphire tip.
2. Is the wand firmly connected to the PDA?
3. Does the wand light wavelength match the bar code symbol printing?
4. Is the bar code symbol excessively damaged, dingy, or worn?
5. Is a suitable bar code scanning application installed and running on the PDA?
6. If the wand still does not read, refer to Appendix A, Troubleshooting.

Configuration options for the MW-400 can be selected either by scanning bar code menus or sending escape sequences to the wand from the PDA's serial port . The MW-400 User Manual (this document) describes a limited set of features and only describes the bar code menu programming method. The options described in this manual are sufficient for most applications.

To access a wider set of configuration options and to implement escape sequence programming, you must obtain the more detailed MW-400 Technical Manual.

Supported Symbologies

As shipped, The MW-400 has all available bar code types enabled. These are:

- Code 39, Standard or Expanded (Full ASCII)
- Interleaved 2 of 5
- UPC/EAN/JAN codes, with or without supplemental
- Code 128
- Codabar
- Code 11
- MSI Code
- Code 93

The configuration of the MW-400 reader can be changed at any time by scanning the appropriate bar code label(s) in this manual. The four types of options that can be configured are:

1) Enable and Disable Bar Code Symbologies
2) Formatting of Specific Symbologies
3) Terminating Character
4) Communications Settings

Most labels perform a complete configuration operation, and the MW-400 reader flashes the LED three times to signify that the configuration is complete. Some Bar Code Menu options require scanning of one or more additional bar codes for completion. When doing configurations requiring additional data, the first scan produces two LED flashes, indicating another scan is expected. After the last menu label in a sequence is scanned, the MW-400 reader gives three LED flashes to signify completion.

As long as each configuration is individually completed, configuration operations can be carried out completely independently. There is no constraint against moving from category to category while configuring separate items.

Bar Code Menu labels are encoded in the Code 128 Symbology, using a special opening character sequence that differentiates them from normal data labels. Thus the chances of inadvertently configuring the MW-400 reader in standard scanning situations is minimized.

Syntax Errors

If an incorrect label is scanned while doing Bar Code Menu configuration, a syntax error occurs. Examples of incorrect labels are normal bar code labels, or scanning multiple menu labels out of sequence.

The MW-400 reader responds to a syntax error with four LED flashes. The user may continue the configuration operation by scanning the correct label, or may start the configuration sequence over.

Code 39

Read Code 39 ?

Yes, Standard Code 39 (default)

Yes, Extended Code 39

No

Interleaved 2 of 5

Read Interleaved 2 of 5 ?

Yes (default)

No

UPC/EAN/JAN

Read UPC ?

Yes, UPC/EAN/JAN (default)

Yes, UPC only

No

Transmit Check Character?

(Except UPC E)

Yes, Except UPC E (default)

No

Expand UPC E to UPC A Format ?

Yes

No (default)

Supplemental Digit

When only 2 supplemental digits are selected, then only labels printed with 2 supplemental digits can be read. Similarly, 5 supplemental digits only can be selected. Both 2 and 5 digit supplements can be selected, allowing only labels with either encodation to be read. When any supplemental digits are selected, scans must be in the forward direction. Forward is the direction that causes the supplemental digits to be scanned last. When supplemental digits are not selected, UPC/EAN labels with supplemental digits printed can still be read (bidirectionally), but the supplemental digits are not decoded or transmitted.

Autodiscrimination of supplemental digits can also be enabled. When enabled, any supplemental digits that are also enabled can be read. However, if a scan misses the supplemental digits, or a scan is in the reverse direction, or for some reason such as poor printing the supplement is unreadable, the main UPC label is still decoded and transmitted as a good read.

Number of Supplemental Digits

None (default)

Two

Five

Two or Five

Codabar

Read Codabar ?

Yes (default)

No

Transmit Start and Stop Characters ?

Yes (default)

No

Code 128

Read Code 128 ?

Yes (default)

No

Code 11

Read Code 11 ?

Yes (default)

No

MSI Code

Read MSI Code?

Yes (default)

No

Code 93

Read Code 93 ?

Yes (default)

No

Baud Rate


2400


4800


9600


19200

Parity

0's Parity (none)

1's Parity

Odd Parity

Even Parity

Stop Bits

1 Stop bit

2 Stop bit

Enable Xon/Xoff (DC1/DC3) Character Handshake?

Yes

No (default)

The terminating character (also referred to as the suffix, footer or trailer) is that character, if any that the application software is expecting after the bar code data. The trailing character is usually a horizontal tab or a carriage return. Below are bar codes to set the trailing character to the 4 most popular settings. In some cases, more than one bar code needs to be scanned in order to set the terminating character.

If the terminating character(s) required by your software are not in this manual, you will need to get them from the factory.

Carriage Return (CR)

To set the terminating character to carriage return, scan the following three bar codes in order:

Trailer=

Carriage Return (CR)

End

Carriage Return/Line Feed (CR/LF)

To set the terminating character to carriage return, scan just the following bar code:

Trailer= Carriage Return/Line Feed (CR/LF) (default)

Horizontal Tab (HT)

To set the terminating character to horizontal tab,
scan the following three bar codes in order:

Trailer=

Horizontal Tab (HT)

End

None

To set the terminating character to none, scan the following two bar codes in order:

Trailer=

End

Most problems with the MW-400 reader can be traced to improper configuration or compatibility problems. The following section presents possible problems followed by a troubleshooting procedure.

In some of the troubleshooting procedures, you will be asked to scan bar code labels. The LED should flash when labels are scanned.

PROBLEM: The MW-400 reader has difficulty or does not read your bar code labels at all

1. Check that the power up self tests completed successfully. Immediately after powering up, the Feedback LED should flash once.
2. Check that there is a tiny red light visible when looking directly at the wand tip.
3. Make sure the bar code reader connector is seated firmly in the communications port of the PDA.
4. Check the labels being scanned. The best labels have the following characteristics:
   - **a.** High Contrast - very black bars, very white spaces.
   - **b.** Good margins (white space at left and right of bar code), at least 0.26 inches or 10 times the narrow element width, whichever is greater.
   - **c.** A height that is at least 16% of the label length.
   - **d.** No defects — spots in the spaces, voids in the bars.
   - **e.** Good tolerance on the printing, the narrow bars and spaces equal in width.
5. Try the following scanning technique:
   - **a.** Scan with a smooth motion, constant speed, and light pressure on the label.
   - **b.** Start in the margin; scan through the label; end in the margin. Scan from "white to white".
   - **c.** Tilt the wand 15 to 30 degrees from the vertical. (See page 5 for an illustration.)

PROBLEM: Self Test Failure

The MW-400 reader performs a set of self tests upon power up. During the self tests, the LED is illuminated. When all of the tests pass, it is turned off. The resulting single flash indicates a successful reset.

If any self test fails, the wand enters the self test failure loop. In this mode, the wand will not respond to commands nor read labels. Instead, it flashes the Feedback LED a specific number of times, pauses for a short time, and repeats the same number of flashes again. It repeats the groups of flashes until power is removed. The number of LED flashes depends upon which particular self test failed.

In the event of a self test failure, you will have to contact the factory or your dealer for assistance. In many cases, the unit can be fixed without return to the dealer.

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