

Wasp Technologies WWS800 Cordless Scanner

User's Manual

WARNING

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of 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 harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful 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 or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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1. Introduction

The WWS800 Cordless Barcode Scanner is the first Wasp Technologies scanner utilizing Bluetooth Technology. The scanner has a remote range of over 160 feet and a battery life of over 50,000 scans. The WWS800 uses a CCD long-range linear imager. This manual contains all the information needed to operate and configure the WWS800. It is divided into two parts. The first part of this manual describes the installation, operation and programmable features of the scanner. The second part of this manual contains the setup barcodes used to configure the scanner.

The WWS800 is one of the most versatile and flexible cordless barcode scanners available today. All the features and functions required for up to date barcode reading are included. Owing to the compact design and extremely low power consumption, this scanner provides for easy installation and high product durability. The scanner caters to the requirements of today, while also fulfilling your long-term needs. The main functions and features provided on the WWS800 are listed below.

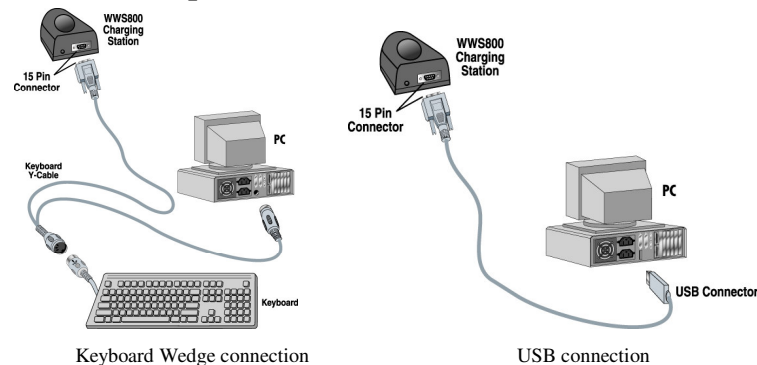
- Barcode Readability: Most popular barcode symbologies are supported including the newest RSS Code.
- Support for negative barcodes.
- Supports eight scan modes.
- Programmable Beeping Tone
- Dual Color Indicator
- Interface Support (base unit): KB Wedge and USB
- Bluetooth Serial Port Profile Support: The scanner can transmit scanned data to Bluetooth enabled computer/PDA via standard Bluetooth Serial Port communication.
- Programmable Code ID: Code ID can be individually configured for each symbology.
- Programmable Length Code
- Programmable Prefix Code
- Programmable Postfix Code
- Character Substitution
- Data Editing: Data can be reorganized according to user programmable formats. Up to three data editing formats are supported.
- Extremely Low Power Consumption

2. Installation

The WWS800 kit contains:
WWS800 Cordless Barcode Scanner
WWS800 Base/Charger dock
Keyboard wedge or USB cable (depending on configuration ordered)
Power Supply for Base/Charger dock
CD containing this manual

Note : For installation and configuration instructions on Bluetooth Serial Port operation, please refer to the section “Bluetooth Serial Port”.

2.1 Power Up the WWS800 Base Station



Connect the interface cable into the 15-pin connector at the back of the base. The cable you connect will depend on the interface you ordered. The configurations shown are the Keyboard Wedge and the USB cable connections.

IMPORTANT: First turn OFF your PC or Laptop that you are connecting the base cable to. Connect the cable to the base and then plug the other end of the cable into the appropriate connection on your PC as shown in the figures above.

Connect 5VDC jack of the power supply cable into the DC 5V port located at the back of the base. Connect the AC plug to an AC outlet and then turn ON your PC.

You are now ready to configure your scanner and base.

2.2 Power Up the WWS800 Cordless Scanner

When you receive your WWS800 Cordless Scanner, it will be in an OFF mode. This is done to conserve power and for transportation purposes. At the base of the scanner you will find a small pin hole. Using a straightened paper clip insert the end of the paper clip into the pin hole and then remove. The scanner will beep and the LED at the top of the scanner will blink to indicated that the unit is in power ON mode. The scanner will also power up once inserted into the base.

Please ensure that you power down the scanner if it will not be used for prolonged periods. This is done by inserting a paper clip into the pin hole at the base of the scanner. The scanner's LED will go off and the scanner will power down.



2.3 Setup RF Connection

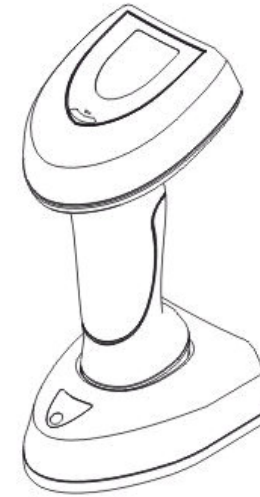
Upon powering up, the scanner will try to establish an RF connection with its base. At this stage, we need to “pair” the scanner and base.

Turn the base upside down and you will find 2 labels.

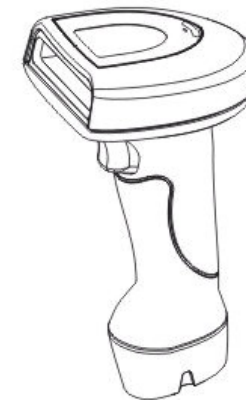
The first label has the words “SET CONNECTION” and a barcode. The second label is the serial number.

To link the scanner to the base, scan the “SET CONNECTION” barcode label. The scanner will beep once. Next, scan the SERIAL number barcode. The scanner will beep twice, low then high beep. When it establishes RF connection with the base, the scanner will emit three short ascending beeps indicating that “pairing” had been established.

2.4 Charging your WWS800 Cordless Scanner



To charge your scanner, simply place it in the base. The LED on the top of the scanner will flash RED while it charges. When the battery is fully charged, approximately 4 hours if the battery is completely discharged, the LED will remain solid RED.



2.5 Interface Setting

Once you have “paired” the scanner and base, you need to specify the interface type to your PC. The interface settings are stored in the base. So ensure that you have RF connection between your scanner and base prior to setting the interface type. For details on selecting interfaces please refer to the relevant section in this manual.

3. General Features

3.1 Buzzer

The buzzer of the scanner beeps differently to indicate various operating conditions.

- **Power On Beep:** The scanner will issue a long beep to indicate a successful power on.
- **Good Read Beep:** There are four volume levels and four beeping tones (frequencies) that the user can select from to signify a good read. The available options are:

Volume: Maximum/Loud/Medium/Minimum

Frequency: 8 / 4 / 2 / 1 kHz

- **Error Beep:** The scanner will issue a long beep with a low tone to indicate errors.
- **Enter / Exit Configuration Beep:** The scanner will issue 6 beeps upon entering / exiting the configuration mode.
- **Setup Beep:** In configuration mode, the scanner will normally beep twice when a setup barcode is read. If the particular setup parameter needs more than one read, the scanner will only issue a short beep to indicate that there are more setup barcodes needed to complete the current parameter setting.

3.2 Indicator

There is a dual color indicator on top of the scanner. Normally it is off, and will turn red when there is a good read. The indicator will be green when the scanner is in configuration mode.

3.3 Scan Modes

There are eight scan modes supported by the scanner. The user can choose the desired scan mode depending on the application requirements. The supported scan modes are described below.

- **Auto Off Mode:** The scanner will start scanning once the switch is triggered. The scanning continues until either a barcode is read or a preset scanning period (*Scanner Time-Out Duration*) is expired.
- **Continuous Mode:** The scanner continuously scans.
- **Auto Power Off Mode:** The scanner will start scanning once the switch is triggered. The scanning continues until a preset scanning period (*Scanner Time-Out Duration*) is expired. Unlike the Auto Off mode, the scanner will continue to scan and the scanning period is restarted each time there is a successful read.

- **Alternate Mode:** The scanner will start scanning once the switch is triggered. The scanner will continue scanning until the switch is triggered again.
- **Momentary Mode:** The scanner will scan as long as the switch is depressed.
- **Repeat Mode:** The scanner is always scanning just like Continuous Mode. But now the switch acts like a “re-transmit button”. If the switch is triggered within 1 second after a good read, the same data will be transmitted again without actually reading the barcode. This “re-transmit button” can be triggered as many times as user desired, as long as the time between each triggering does not exceed 1 second. This scan mode is most useful when the same barcode is read many times.
- **Laser Mode:** This is the scan mode most often used on laser scanners. The scanner will start scanning once the switch is pressed. The scanning continues until a barcode is read, the switch is released or a preset scanning period (*Scanner Time-Out Duration*) is expired.
- **Test Mode:** The scanner is always scanning. The scanner will decode repeatedly even with the same barcode.

By default, the scan mode is Auto Off mode for scanners with trigger switch, and is Continuous mode for switch-less scanners.

3.4 Auto-Sense

Auto-Sense is used in conjunction with the auto-sense stand. It will enable the scanner to start scanning once a barcode is brought within Range of the scanner. This will activate the LED’s and the scanner will start decoding the barcode. The auto-sense mode works only under Auto Off mode or Laser mode only.

3.5 Re-read Delay

If the scanner mode is set to *Continuous*, *Auto Power Off*, *Alternate*, or *Momentary* mode, the scanner will prevent accidentally reading the same barcode twice by using a *Re-read Delay (Blocking Time)*. The barcode must be taken away from the scanning line longer than the *Re-read Delay* to allow second reading of the same barcode. The *Re-read Delay* can be set by the user.

3.6 Scanner Time-out Duration

This parameter is used to limit the maximum scanning period when the scan mode is either *Auto Off Mode* or *Auto Power Off Mode*. This time-out duration is specified in units of second. The default time-out duration is ten seconds.

3.7 Reading Redundancy

This parameter is used to specify the levels of reading (decoding) redundancy. If *No Redundancy* is selected, only one successful decoding is necessary for a valid read. If *Three Times Redundancy* is selected, it will take 3 successful decodes to make the reading valid. It is obvious that the more redundancy the user selects, the higher the reading integrity and thus the slower the reading speed. The user must compromise between decoding integrity and speed.

3.8 Supported Symbolologies

Most of the popular barcode symbolologies are supported. Each symbology can be individually enabled or disabled. The scanner will automatically discriminate and recognize all the symbolologies that are enabled. The supported barcode symbolologies are listed below.

- Code 39 (Standard / Full ASCII)
- Italy Pharmacode
- French Pharmacode
- Industrial 25
- Interleave 2 of 5
- Matrix 25
- Codabar (NW-7)
- UPCA (with or without Addon)
- UPCE (with or without Addon)
- EAN8 (with or without Addon)
- EAN13 (with or without Addon)
- Code 93
- Code 128
- EAN 128
- MSI
- RSS14
- Telepen
- Plessey

3.9 Negative Barcodes

The scanner can be configured to read negative barcodes. Normally, barcodes are printed with the color of the bars darker than that of the spaces. But for negative barcodes, they are printed in the opposite sense just like negative films. The spaces of the negative barcodes are printed with a color darker than that of the bars.

4. Output Interface (WWS800 Base Unit)

The WWS800 is a multi-interface scanner. It can be used as a keyboard wedge scanner or a USB scanner. The output interface can be programmed using the setup bar codes found in the Reference Guide.

Please ensure that you have an RF connection between the scanner and the base prior to selecting the interface type.

4.1 Keyboard Wedge Interface

4.1.1 Keyboard Type

The keyboard wedge interface is enabled by configuring/selecting keyboard type. The supported keyboard types are listed below.

- PCAT - US, French German, Italian, Swedish, Norwegian, UK, Belgium, Spanish, and Portuguese KBD
- PS2-30
- IBM 3477 TYPE (Japanese KBD) – requires special cable
- IBM 34XX, 319X & Memorex Telex (122Keys) – requires special cable

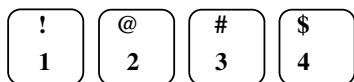
4.1.2 Keyboard Style - Alphabets

Keyboard layout style can be selected. There are three options to this setting: default layout (US or English style), AZERTY layout, and QWERTZ layout. This setting only works when the keyboard type selected is for US keyboard. The scanner will make necessary adjustment when sending the 'A', 'Q', 'W', 'Z', 'Y', and 'M' character according to this setting.

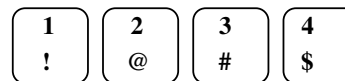
4.1.3 Keyboard Style - Digits

There are two digit layout styles as shown on the following figures. One has its digit keys on top (upper row), the other has them on bottom (lower row).

The digit layout style can be changed by configuring this setting. There are three options to this setting: **Default**, **Lower Row**, and **Upper Row**. The scanner will make necessary adjustments when sending digits according to the setting value of this parameter. This setting is to be used with the Keyboard Style – Alphabets and Character Substitution setting, when support to languages not available on the scanner is needed.



Digits on Lower Row



Digits on Upper Row

4.1.4 Capital Lock Status

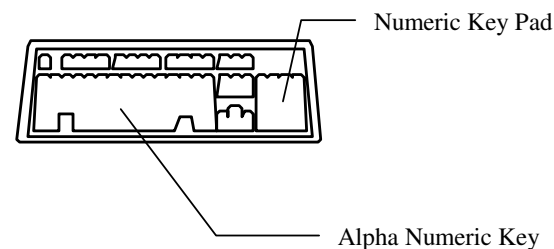
In order to send alphabets with correct case, the scanner needs to know the capital lock status of the keyboard. Incorrect settings may result in reversed case of alphabets being transmitted. There are 3 options to this parameter: *On*, *Off*, or *Auto Detection*. If this parameter is set to *Auto Detection*, the scanner will automatically detect the capital lock status of the keyboard before it transmits data.

4.1.5 Alphabets Transmission

User can choose how alphabets are sent by configuring this parameter. The alphabets can be sent according to their case (the *Case Sensitive* option), or the case is ignored (the *Ignore Case* option) when transmitting.

4.1.6 Digits Transmission

User can choose how the scanner transmits digits by configuring this parameter. The scanner can transmit digits by using the alphanumeric key or by using the numeric keypad. The Num Lock status of the keyboard should be ON if numeric keypad option is selected.



4.1.7 Inter-Character Delay

An inter-character delay of 0 to 255 ms can be configured to match the computer response time of the keyboard interface. The delay time configured is inserted between transmitting every character. The longer the delay time configured, the slower the transmission speed will be. The inter-character delay is zero by default.

4.2 USB Interface

A USB interface is available.

4.3 Memory Parameters

The scanner can work offline and store data in the internal Flash memory for later upload to the host. The stored data can be up to 32Kbytes.

4.3.1 Memory Mode

This setting enables or disables the memory function of the scanner.

4.3.2 Clear Data

The CLEAR label will enable the user to CLEAR or ERASE the data in the scanner's memory. The user must also scan the CONFIRM label immediately after the CLEAR label.

4.3.3 Send Data

This enables the user to transmit the data in the scanner's memory to the host. The interface selected by the user will be used for the transmission. During the transmission, the red LED of the scanner will be flashing.

4.3.4 Memory Data Delay

This will enable the user to set a delay between each data records in memory at time of transmission.

5. Bluetooth Serial Port

The WWS800 can be configured to use a standard Bluetooth Serial Port as the data output interface. This allows the WWS800 to send the scanned bar code data to a Bluetooth enabled computer or mobile device directly without the need of the WWS800 base unit (however, a charging dock is still needed for recharging the scanner's battery).

In this section, a step-by-step procedure for installing and configuring the WWS800 for a Bluetooth Serial Port configuration is illustrated. Bluetooth transceivers/dongles come with their own hardware driver. Bluetooth device drivers for Windows and WinCE/Pocket PC are available from the Bluetooth transceiver/dongle manufacturer. In the following example, a WIDCOMM driver is used.

5.1 Configuring the WWS800

Before starting the configuration, the scanner must be powered up. If you have not done so, please follow the procedures described in section 2.2 "Power Up the WWS800 Cordless Scanner" to power up the scanner.

The first step of the configuration is to put the scanner in configuration mode. To do this, scan the "Enter Setup" bar code in the Reference Guide. After the device is configured, scan the "Update" bar code to save the new settings and put the scanner back to normal operation mode.

5.1.1 Activate Bluetooth Serial Port Interface

Scan the "Activate Bluetooth Serial Port" bar code in the Reference Guide to change the interface type to Bluetooth Serial Port.

5.1.2 Authentication & PIN Code

Connection authentication is available if communication security is desired. Once this setting is enabled, a user configurable PIN code is verified during connection establishment. The scanner will refuse connection if the PIN code is incorrect. Up to six characters can be specified for a PIN code.

5.1.3 Device Name Broadcasting

The scanner can be configured to hide itself by NOT broadcasting itself on the air. This can prevent an unwanted connection to a Bluetooth enabled computer or mobile device. For the initial connection setup, this setting must be enabled.

5.1.4 Update Settings

After all the desired settings are completed, the “Update” bar code must be scanned to make the new settings effective. The scanner will re-start itself after the “Update” bar code is scanned.

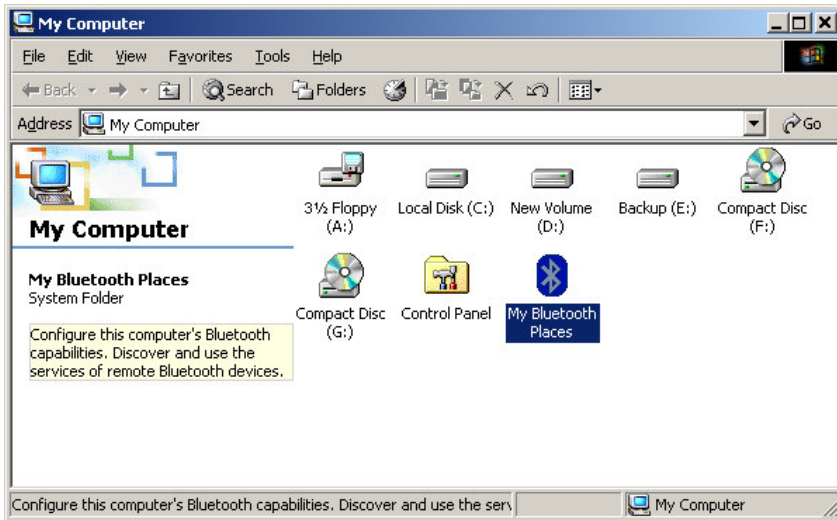
5.1.5 Timeout

The scanner will stay active only for one minute waiting for connection. If there is no connection request during that period, the scanner will go to power down mode to conserve power with three descending tones as indication. To return the scanner to active mode, pull the trigger. **Once there is a successful connection, the scanner will stay active until the connection is closed (for example, when the host application closes the COM port).** After the connection is closed, the scanner will wait for new connection request for one minute before it goes to power down mode.

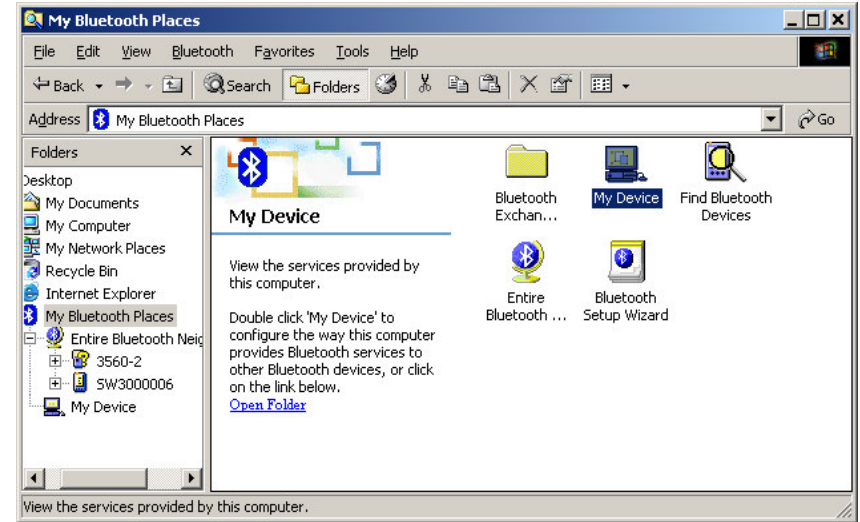
5.2 Configuring Bluetooth Device Driver

Please follow the procedures below to configure the Bluetooth driver on the host system.

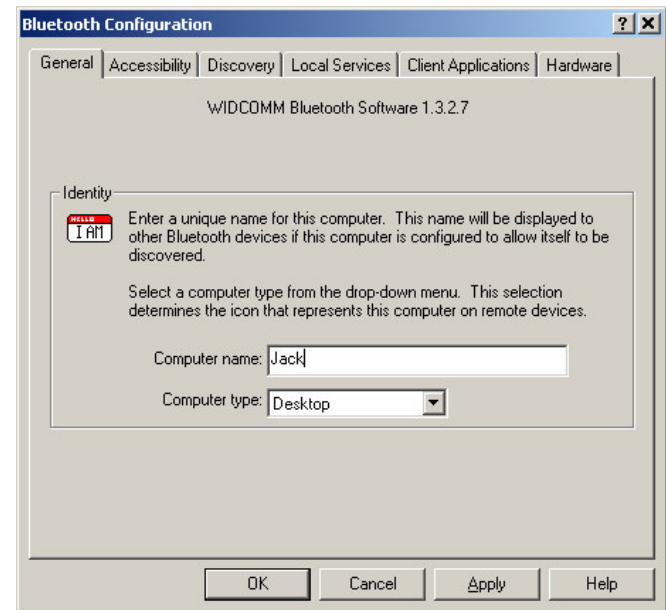
Go to “My Computer”



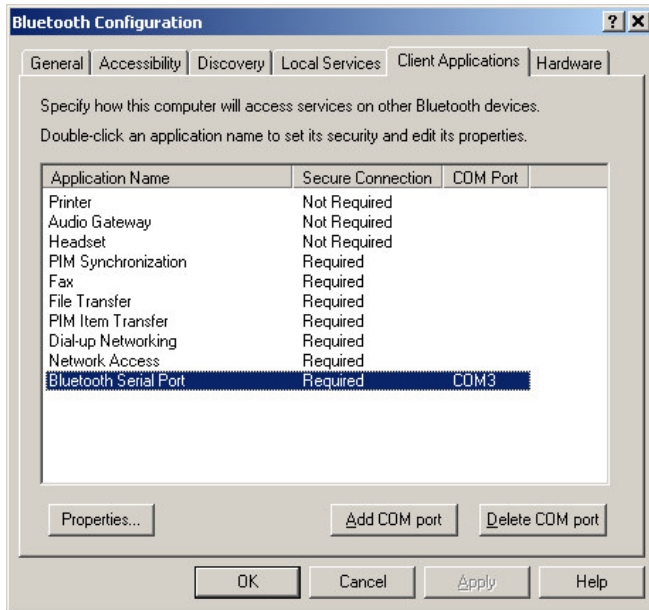
Double click on the “My Bluetooth Places”.



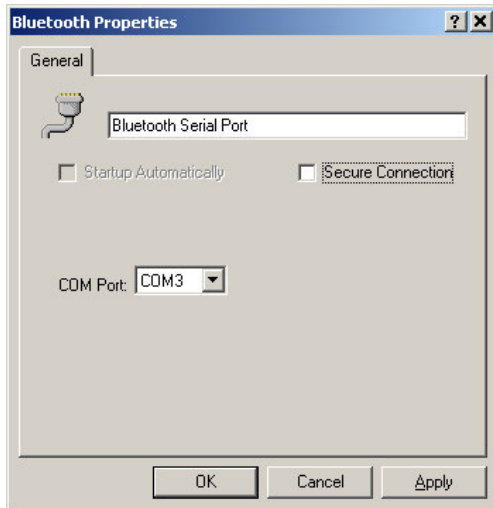
Right click “My Device”. Select “Property”



Select “Client Applications” tab.



Select “Bluetooth Serial Port” from the list.
Click “Property” button.



“Secure Connection”. If you have enabled the Authentication and have configured a PIN Code on the WWS800, leave “Secure Connection” checked. Otherwise,

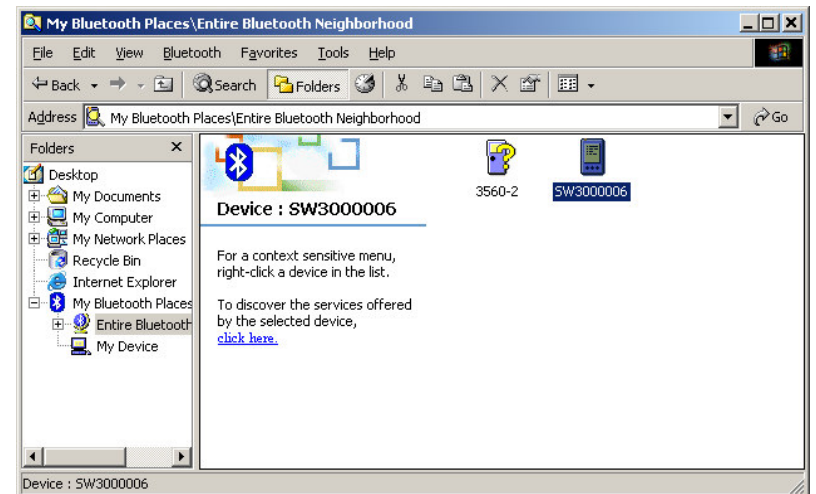
uncheck it.

Click “Apply” and “OK”

Click “OK” to go back to “My Bluetooth Places”

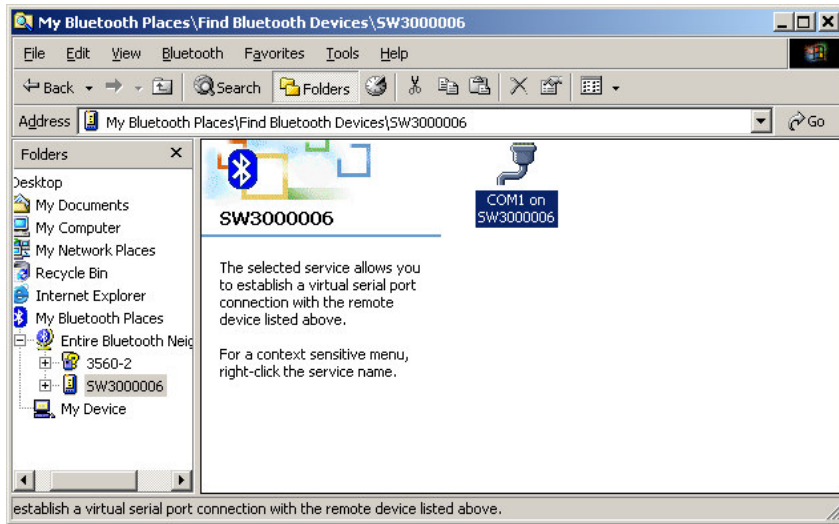


“Wake up” the WWS800 by pulling the trigger.
Double click “Find Bluetooth Devices”.

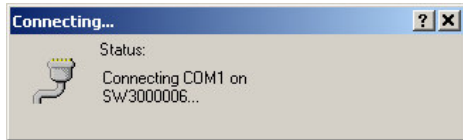


Now the WWS800 should be shown on the screen with the scanner’s serial number as the device name. For this example, the device name is “SW3000006”.

Double click “SW3000006”. This will bring up a screen showing the available services on this device.

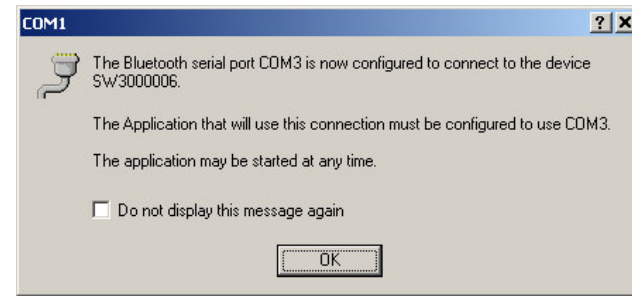


We can see that there is only one service available on “SW3000006”. The service name is “COM1 on SW3000006”, which is the Bluetooth Serial Port service. Double click on the service. This will start the connecting process. If Authentication (Secure Connection) is enabled, a dialog window will pop up asking for PIN code.

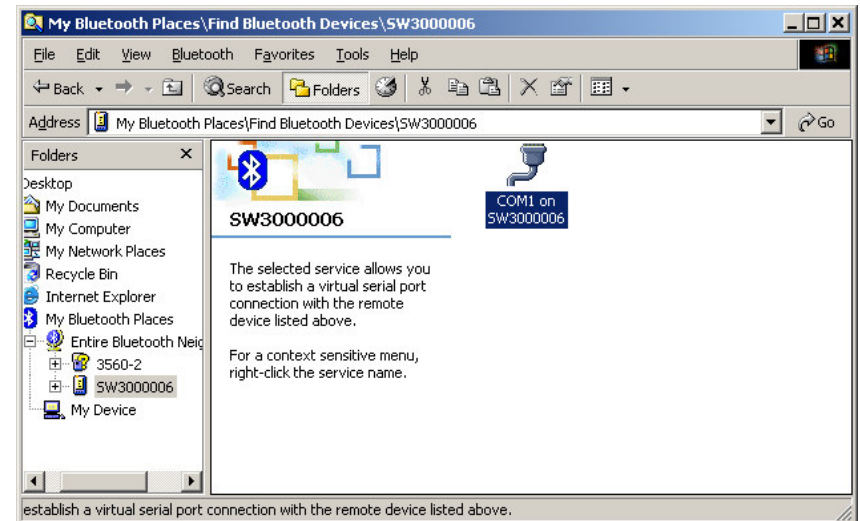


After successful connection, the Bluetooth Device Driver will report the COM port it mapped for this connection. In this case, it is COM3. You will hear three serial ascending tones from the scanner indicating successful connection.

After this initial connection, whenever an application program opens COM3, the Bluetooth driver will automatically try to connect this particular scanner.



Click “OK”



Right click the “COM1 on SW3000006” and select “Disconnect” to close the connection. There will be three serial descending tones from the scanner to indicate this condition.

After the connection is closed, the WWS800 and the Bluetooth driver are properly configured and are ready to go. You can now run the host application or “Hyper Terminal” for testing.

6. Symbology Parameters

This section describes user configurable parameters pertaining to bar code symbologies.

6.1 Code39

- **Standard / Full ASCII Code 39:** User can choose to read either Standard Code 39 or Full ASCII Code 39 by configuring this parameter.
- **Start/Stop Transmission:** This parameter specifies whether the start/stop characters of Code 39 are included in the data being transmitted.
- **Checksum Verification:** This parameter specifies whether the scanner will perform checksum verification when decoding barcodes. If the checksum is incorrect, the barcode will not be read.
- **Checksum Transmission:** This parameter specifies whether the checksum characters are included in the data being transmitted.

6.2 Italy / French Pharmacode

For Italy /French Pharmacode, there is always a checksum character included in the bar code. Checksum verification is always performed when decoding these symbologies. You can choose whether the checksum character is to be transmitted or not. The start / stop transmission of this code shares the same setting of Code 39.

- **Checksum Transmission:** This parameter specifies whether the checksum character is included in the data being transmitted.

6.3 Industrial / Interleave / Matrix 25

- **Start/Stop Selection:** This parameter provides the readability of all 2 of 5 symbology variants. For example, flight tickets actually use an Industrial 25 bar code but with Interleave 25 start / stop. In order to read this barcode, the **start/stop selection** parameter of Industrial 25 should be set to '**Interleave 25**'.
- **Checksum Verification:** This parameter specifies whether the scanner will perform checksum verification when decoding bar codes. If the checksum is incorrect, the bar code will not be read.
- **Checksum Transmission:** This parameter specifies whether the checksum character is included in the data transmitted.
- **Code Length Qualification:** Because of the weak structure of the 2 of 5 codes, a partial scan has a high probability of decoding as a valid but shorter 2 of 5 codes (known as short scan). To prevent this kind of undesired reading, the **Code Length** settings can help to insure that the correct code is read by qualifying the allowable code length. Code length parameters can be

configured in two ways: **Fixed Code Length** or **Max/Min code length**. If the fixed code length is selected, up to 2 fixed lengths can be specified. And if max/min code length is selected, the max length and the min length must be specified, and the scanner will only accept those codes with lengths that fall between the max/min lengths specified.

6.4 Codabar

- **Start/Stop Transmission:** This parameter specifies whether the start/stop characters of Codabar are included in the data being transmitted.
- **Start/Stop Selection:** Four different start/stop pairs can be selected as start/stop characters as listed below.
 - abcd/abcd
 - abcd/tn*e
 - ABCD/ABCD
 - ABCD/TN*E

6.5 UPCE

- **System Number Selection:** The UPCE comes with 2 configurations: **System Number 0** and **System Number 1**. These two differ in the way data is encoded. The system number 1 is the new UPCE extension to the ordinary UPCE (system number 0). You have the choice of enabling both system numbers or just system number 0.

Warning: Because of the way system number 1 is encoded, if both system numbers are enabled, the user might suffer short scanning UPCA or EAN13 into UPCE system number 1 bar codes.

- **Convert to UPCA:** If this parameter is enabled, the UPCE read will be expanded into UPCA, and the following processing will follow the parameters configured for UPCA.
- **System Number Transmission:** If this parameter is enabled, the system number will be included in the data being transmitted.
- **Checksum Transmission:** If this parameter is enabled, the checksum character will be included in the data being transmitted.

6.6 EAN8

- **Convert to EAN13:** If this parameter is enabled, the EAN8 read will be expanded into EAN13, and the following processing will follow the parameters configured for EAN13.
- **Checksum Transmission:** If this parameter is enabled, the checksum character will be included in the data being transmitted.

6.7 UPCA

- **Convert to EAN13:** If this parameter is enabled, the UPCA read will be expanded into EAN13, and the following processing will follow the parameters configured for EAN13.
- **System Number Transmission:** If this parameter is enabled, the system number will be included in the data being transmitted.
- **Checksum Transmission:** If this parameter is enabled, the checksum character will be included in the data being transmitted.

6.8 EAN13

- **ISBN/ISSN Conversion:** If these parameters are enabled, the scanner will convert the code read into ISBN or ISSN code if the formats are correct (EAN13 codes start with 978 or 979 for ISBN, and 977 for ISSN).
- **Checksum Transmission:** If this parameter is enabled, the checksum character will be included in the data being transmitted.

6.9 MSI

- **Checksum Verification:** Three kinds of checksum calculations can be implemented into MSI code: **Single Modulo 10**, **Double Modulo 10**, or **Modulo 11 & 10** checksum. If the checksum character is incorrect, the bar code will not be read.
- **Checksum Transmission:** You can control how the checksum is transmitted by configuring this parameter.
 - 1) Transmitted
 - 2) Last digit not transmitted
 - 3) Last 2 digits not transmitted
- **Code Length Qualification:** Because of the weak structure of the MSI code, a partial scan has a high probability of decoding as a valid but shorter MSI codes (known as short scan). To prevent this kind of undesired readings, the Code Length settings can help to ensure that the correct code is read by qualifying the allowable code length. Code length limitations can be set in 2 ways: **Fixed Code Length** and **Max/Min code length**. If the fixed code length is selected, up to 2 fixed lengths can be specified. And if max / min code length is selected, the max length and the min length must be specified, and the scanner will only accept those codes with lengths fall between max / min length specified.

6.10 Plessey

- **Convert to UK Plessey:** If this parameter is enabled, the scanner will change each occurrence of the character 'A' into character 'X' in the code.

- **Checksum Transmission:** If this parameter is enabled, the checksum characters (two characters) will be transmitted together with data.

6.11 Telepen

- **Telepen Output:** There are two configurations of encoding formats for Telepen. One is the original Telepen format, the other is AIM Telepen format. The user can choose the desired encoding format for Telepen readings.

6.12 RSS

- **Code ID Selection:** User has choice of using RSS Code ID ('j0') or EAN128 Code ID ('jC1').
- **Code ID Transmission:** If this parameter is enabled, the Code ID selected by the preceding setting will be included in the data being transmitted.
- **Application ID Transmission:** If this parameter is enabled, the Application ID will be included in the data being transmitted.
- **Checksum Transmission:** If this parameter is enabled, the checksum character will be transmitted together with data.

7. Data Output Format

Data read by the scanner will be processed in the following sequence (Keyboard Wedge then USB interfaces).

- 1) The character substitution is performed on the bar code data.
- 2) The Code ID and the Length Code are inserted at the beginning of the data as shown below.

[Code ID] [Length Code] [Data]

- 3) The resulting data of step 1 will be processed by the editing formats. For details, please refer to the section 8 “Data Editing”.
- 4) And finally the Prefix Code and the Postfix Code will be added before transmission.

[Prefix Code] [Resulting Data of Step 3] [Postfix Code]

7.1 Character Substitution

There are three character substitution settings on the scanner. These settings are configured on a character by character basis. That is, a specific character is to be substituted by another character. The character substitution is performed on every occurrence of the characters specified in these settings. Be aware, the substitution is performed **only** on the barcode itself (exclude Prefix Code, Postfix Code, Code ID, Length Code or any Additional Field) and is performed before editing mode processing.

If only the character to be replaced is specified, every occurrence of that character in the barcode will be removed.

7.2 Prefix / Postfix Code

Up to four characters of prefix/postfix code can be configured for the scanner.

7.3 Code ID

Up to two characters of Code ID can be configured for each symbology. To minimize the Code ID configuration efforts, the scanner provides five predefined Code ID Sets that user can select from. User can first select one of the Code ID Sets and then make desired modifications. The pre-defined Code ID Sets are shown below.

	Set 1	Set 2	Set 3	Set 4	Set 5
Code 39	A	C	Y	M	A
Italy Pharmacode	A	C	Y	M	A
French Pharmacode	A	C	Y	M	A
Industrial 25	C	H	H	H	S
Interleave 25	D	I	Z	I	S
Matrix 25	E	G	G	G	S
Codabar	F	N	X	N	F
Code 93	I	L	L	L	G
Code 128	H	K	K	K	C
UPCE	S	E	C	E	E
EAN8	P	B	B	FF	E
EAN13	M	A	A	F	E
MSI	V	V	D	P	M
Plessey	W	W	E	Q	P
UPCA	J	A	A	A	E
Telepen	Z				

7.4 Length Code

A two digit Length Code representing the length of data (character count) can be inserted in front of data being transmitted. This Length Code parameter can be individually enabled or disabled for each barcode symbology.

8. Data Editing

The WWS800 scanner provides advanced data editing functions for data formatting. Data editing is performed according to user configured editing formats. Up to three editing formats can be configured.

Data is divided into fields by user specified rules. These fields, together with user configurable additional fields, constitute the data actually sent to the host computer. The detailed descriptions and the configuration procedures of the editing format are described in this section.

8.1 Select Editing Format

To start configuring an editing format, the editing format to be configured must first be selected by scanning the “Format Selection” in the “Editing Format Parameters” section of the Reference Guide. Once it is selected, the parameters pertaining to editing format (applicable condition, total number of fields, field dividing rules, additional fields, and field transmission sequence parameters) can be configured. After all the desired parameters are configured, the “End of Format Programming” label must be scanned to complete the configuration of that editing format.

Note: Before completing the configuration of the editing format, if parameters other than those pertaining to editing format are read, the editing format under configuration will be aborted. User must restart the configuration again by selecting editing format to be configured.

8.2 Restore Default Format

After the editing format to be configured is selected, scan the “Restore Default Format” label to return the editing format back to default setting. The default settings of the editing format are listed below.

- Applicable Code Type: All
- Applicable Length: Both max and min length is zero.
- Matching string: Empty
- Matching String Location: 0
- Total number of fields: 1
- Field Setting: Not Configured
- Additional Fields: Empty
- Field Transmission Sequence: F1

8.3 Applicable Conditions

Three applicable conditions can be configured to qualify determine the data read by the scanner can be processed by the particular editing format. Data editing will not be performed unless all three applicable conditions are met. The configurable applicable conditions are described below.

- **Code Type:** This parameter specifies the code type of the data eligible for data editing. Multiple code types can be specified for this parameter.
- **Data Length:** This parameter specifies the length (character count) of the data eligible for data editing. It is specified in the range format. The length of the data must fall between min and max length limits. If the max length and the min length configured is both zero, the scanner will not perform this length qualification.
- **Matching String and its Location:** User can specify a particular character string (up to four characters) that must appear in the data that is eligible for data editing. User can also specify where (character position, starts from one) this string should appear in the data by configuring the matching string location. If the location specified is zero, the scanner only checks for the existence of the matching string in the data. To disable the matching string qualification, just leave the matching string empty.

8.4 Total Number of Fields

Data can be divided into a maximum of 6 fields. The total number of fields configured must be correctly specified. The fields are numbered from F1 to F6 accordingly, but only F1 to F5 can be configured. The number of configurable fields is always one less than the total number of fields specified. The extra data characters beyond the last field configured will be automatically assigned to the next field. That is, if three fields are configured for the editing format, the data characters after F3 will be assigned to F4 automatically. This feature is quite useful when data of variable lengths are processed by editing formats.

8.5 Dividing Data into Fields

Data eligible for editing format is divided into fields according to user specified rules. The rule for each field can be configured in two ways.

- **Field Terminating String:** The field dividing rule can be configured by specifying the field terminating string. The field terminating string configured can be up to two characters. The scanner will search for the occurrence of this particular string in the data for the field. The field terminating string is always included in the field. The user has the option of discarding this terminating string.
- **Field Length:** The field dividing rule can be configured by simply specifying the field length. The scanner will assign the next specified number of characters into the field.

8.6 Additional Fields

You can create up to five additional fields for each editing format. Each additional field can have at most four characters. The additional fields are numbered AF1 to AF5 accordingly.

8.7 Field Transmission Sequence

After the data fields and the additional fields are configured, you can now program the transmission sequence of these fields that comprise the final data. The “Start” label must be read before assigning the field transmission sequence. And then the desired field transmission sequence can be specified. The scanner will transmit the fields in the order (sequence) the user programmed when sending data. The field transmission sequence can be assigned in any desired order and fields can also be assigned multiple times. The maximum number of fields that can be assigned is twelve. After the sequence has been assigned, the “End” label must be read to complete the setting.

8.8 End of Format Programming

After all the desired parameters are configured, the “End of Format Programming” label must be read to conclude the programming of the editing format. This label is located at the bottom of every even page in the “Editing Format Parameters” section of the configuration manual.

8.9 Activate Data Editing Formats

Before data can be processed by a particular editing format, that format must be enabled. The editing formats can be enabled or disabled individually.

8.10 Exclusive Data Editing

If this parameter is enabled, all data read by the scanner must be processed by the editing format. If the data is not eligible for all enabled editing formats, the scanner will not accept the reading and the data will not be transmitted.

8.11 Programming Examples

Example 1: Extract data from the 10th character to the 19th character.

Total Number of Fields: 3
Field 1: Divide field by field length, set field length to 9
Field 2: Divide field by field length, set field length to 10
Field Transmission Sequence: F2

Example 2: Extract the date code, item number, and quantity information from barcodes. Date code data is encoded in the bar code from the first character to the

6th character. From the 7th character is the item number. Its length is variable and is delimited by a ‘-’ character. After the ‘-’ character is the quantity information.

Data should be transmitted like this: Item number goes first, then a TAB character, and then the date code, and then another TAB character and finally the quantity.

Total Number of Fields: 3

Field 1: Divide field by field length, set the field length to 6.
Field 2: Divide field by field terminating string. Set terminating string to ‘-’, and discard the terminating string.
Additional Field 1: Set to one TAB character.
Field Transmission Sequence:
F2 AF1 F1 AF1 F3

9. Configuring your WWS800

Configuring the WWS800 Scanner is done by reading the setup labels contained in the Reference Guide. This section describes the procedure of configuring the scanner. Some configuration examples are also given in this section for illustration.

9.1 Enter Configuration Mode

To start the configuration, the “**Enter Setup**” label must be read. This will put the scanner in the configuration mode. The scanner will respond with 6 beeps and the indicator will turn green after the label is read. This “Enter Setup” label is located at the bottom of almost every even page of the Configuration Manual.

9.2 Default

All the parameters of the scanner will return to their default values by reading the “Default” label. The scanner will beep twice when the “Default” label is read.

9.3 List Setting

The current setting of all scanner parameters can be sent to the host computer for user inspection. The listing is separated into ten pages. You can select the page of interest by reading one of the following:

Page 1: Interface, Buzzer, and Scanner Parameters

Page 2: Prefix, Postfix, and Length Code Setting

Page 3: Code ID

Page 4: Readable Symbologies

Page 5: Symbology Parameters (1/3)

Page 6: Symbology Parameters (2/3)

Page 7: Symbology Parameters (3/3)

Page 8: Editing Format 1

Page 9: Editing Format 2

Page 10: Editing Format 3

9.4 Setting Parameter Values

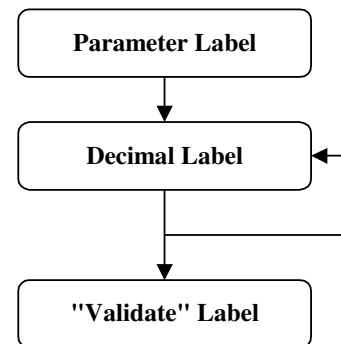
For most of the parameters, only one read is required to set them to new values. The scanner will respond with two beeps when these parameters are configured. But for some special parameters, multiple reads are required to complete the setting. The scanner will respond with a short beep if the configuration of the parameter is still not complete. These parameters usually refer to a numeric value or a string of characters, such as keyboard type, inter-character delay, prefix/postfix code, etc.

For these kinds of parameters, the label of the parameter to be configured must be read first. Then the labels comprising the numeric value or character string are read.

Finally, the “Validate” label must be read to complete the setting. The scanner will respond with two beeps when the “Validate” label is read.

9.4.1 Numeric Parameters

The configuration procedures for numeric parameters are shown below.



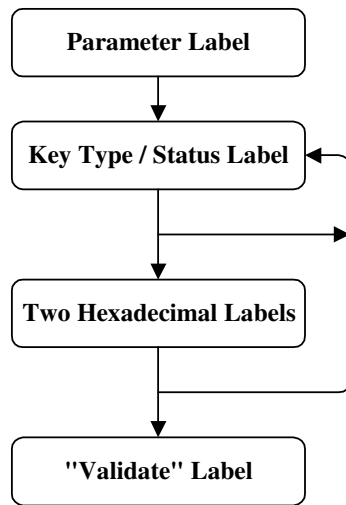
For example, to configure the Inter-Character Delay to be 15 ms, the “Inter-Character Delay” label is first read, and then the decimal digit labels “1” and “5”, and finally, the “Validate” label to complete the setting.

9.4.2 Character String Parameters

Each character programmed for the character string parameters is represented by two hexadecimal digits. The two hexadecimal digits usually comprise a value that is the ASCII code equivalence of the character being programmed.

Beside the two hexadecimal digits, there is an optional key type/status that can be specified for each character of the string parameters. This optional key type/status can only be specified for some particular parameters when the keyboard interface is used. These parameters are: Prefix Code, Postfix Code, Code ID, and Additional Fields of Editing Formats.

The available key type/status settings can be selected will be described briefly. The configuration procedures for character string parameters are shown below.



For example, to configure the Prefix Code to be “AB”, the “Prefix Code” label is first read, and then the hexadecimal digit labels “4”, “1”, “4”, and “2” are read, and finally, the “Validate” label to complete the setting.

9.4.3 Key Type/Status Setting

The key type/status is specified in character basis. Each character programmed is by default of *Normal* key type. A character of normal key type can have associate status settings (add Shift/Control/Alternate).

Whereas a character of *Scan Code* type may not have any associate key status settings.

- **Normal Key Type:** When this label is read, the scanner will assume the following hexadecimal digits are the ASCII code of the character being programmed. And it will also clear all the associate key status settings made to the current character.
- **Scan Code:** When this label is read, the scanner will assume the following hexadecimal digits are the scan code value of the character being programmed.
- **Add Shift:** The Shift key will be sent together with the character programmed.
- **Add Control (L):** The left Control key will be sent together with the character programmed.
- **Add Alternate (L):** The left Alternate key will be sent together with the character programmed.

- **Add Control (R):** The right Control key will be sent together with the character programmed.
- **Add Alternate (R):** The right Alternate key will be sent together with the character programmed.

For example, to program the Prefix Code to be “Ctrl-Shift-B”, “C”, the programming sequence should be:

- 1) “Prefix Code” label
- 2) “Add Control (L)” label
- 3) “Add Shift” label
- 4) “4” of the hexadecimal digit
- 5) “2” of the hexadecimal digit
- 6) “4” of the hexadecimal digit
- 7) “3” of the hexadecimal digit
- 8) “Validate”

Note: In internal representation, characters that are specified with either scan code or associate key status, occupy two normal character spaces each. So, the maximum number of characters can be configured for a string parameter will decrease if these character specifications are used.

9.5 Exit Configuration Mode

Both the “Update”, and the “Exit Setup without Changes” labels will exit the scanner from configuration mode when they are read. These two labels differ in whether to keep the new settings on the scanner or not, as their names suggest. The scanner will respond with 6 beeps and restart itself, if either label is read.