System Manual

P/N 070086-002

9745 Software Rev. 3.31
1552 Software Rev. 3.25

Sabre 1552 Laser Scanner and MicroBar 9745 Base Station

Intermec

A UNOVA Company

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U.S. technical and service support: 1–800–755–5505
U.S. media supplies ordering information: 1–800–227–9947

Canadian technical and service support: 1–800–688–7043
Canadian media supplies ordering information: 1–800–268–6936

Outside U.S. and Canada: Contact your local Intermec service supplier.

C.S.A. Statement
This product must be used with a certified Class 2 power supply or be powered by a certified SELV (Safety Extra Low Voltage) output.

Statement of Agency 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.

FCC Class B Compliance Statement

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 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 or television technician for help.

Caution: Any changes or modifications made to this device that are not expressly approved by Intermec Technologies Corporation may void the user's authority to operate the equipment.

Note: To maintain compliance with FCC Rules and Regulations, cables connected to this device must be *shielded* cables, in which the cable shield wire(s) have been grounded (tied) to the connector shell.

Canadian Notice

This equipment does not exceed the Class B limits for radio noise emissions as described in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la classe B prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

CDRH Laser Safety Statement

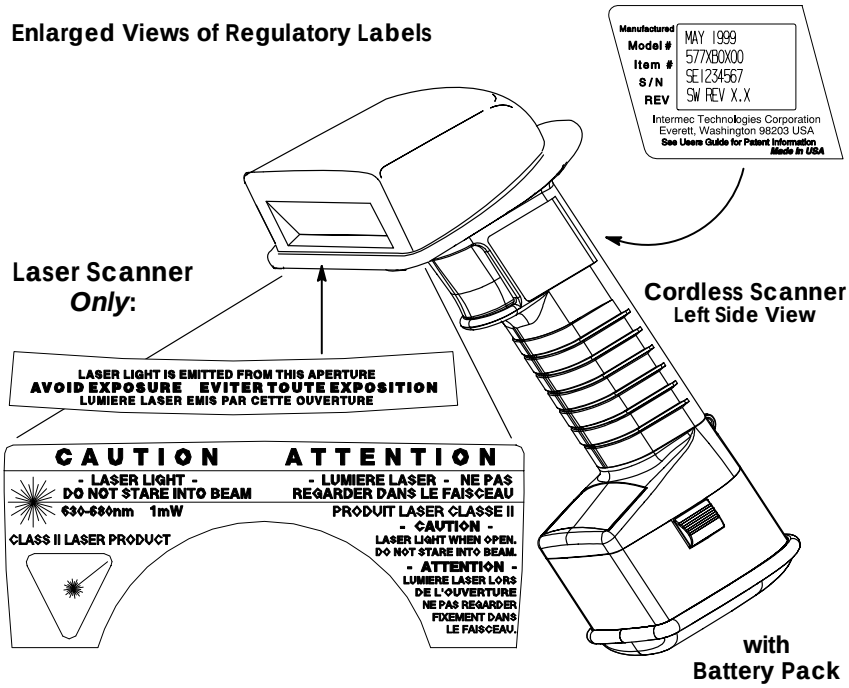
This product complies with US DHHS 21 CFR J Part 1040.10. This product is a CLASS II LASER PRODUCT with a maximum output of 1.0 mW at 670 nanometers and continuous wave.

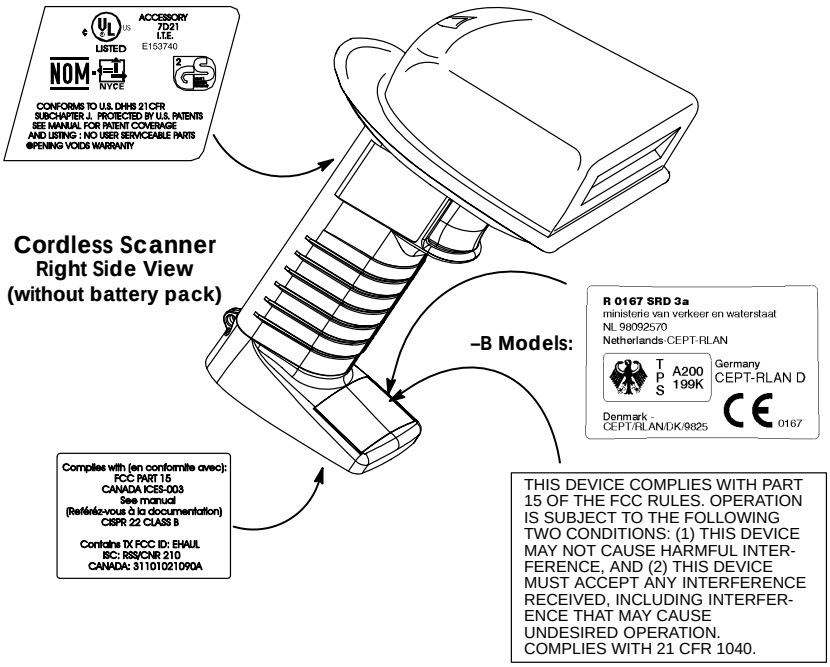
EN 60825–1 Laser Safety Statement

This product is classified as a CLASS 2 LASER PRODUCT with a maximum output of 9.0 mW at 670 nanometers per EN 60825–1:1994, Issue 2, June 1997.

Statement of Agency Compliance

Enlarged Views of Regulatory Labels





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Before You Begin

This section introduces you to standard warranty provisions, safety precautions, warnings and cautions, document formatting conventions, and sources of additional product information.

Warranty Information

To receive a copy of the standard warranty provision for this product, contact your local Intermec support services organization. In the U.S. call 1−800−755−5505, and in Canada call 1−800−688−7043.

Safety Summary

Your safety is extremely important. Read and follow all warnings and cautions in this book before handling and operating Intermec equipment. You can be seriously injured, and equipment and data can be damaged if you do not follow the safety warnings and cautions.

Do not repair or adjust alone Do not repair or adjust energized equipment alone under any circumstances. Someone capable of providing first aid must always be present for your safety.

First Aid Always obtain first aid or medical attention immediately after an injury. Never neglect an injury, no matter how slight it seems.

Resuscitation Begin resuscitation immediately if someone is injured or stops breathing. Any delay could result in death. To work on or near high voltage, you should be familiar with approved industrial first aid methods.

Energized Equipment Never work on energized equipment unless authorized by a responsible authority. Energized electrical equipment is dangerous. Electrical shock from energized equipment can cause death. If you must perform authorized emergency work on energized equipment, be sure that you comply strictly with approved safety regulations.

Before You Begin

Warnings, Cautions, and Notes

The warnings, cautions, and notes in this manual use the following format.

Warning

Warning

A warning alerts you of an operating procedure, practice, condition, or statement that must be strictly observed to avoid death or serious injury to the persons working on the equipment.

Avertissement

Un avertissement vous avertit d'une procédure de fonctionnement, d'une méthode, d'un état ou d'un rapport qui doit être strictement respecté pout éviter l'occurrence de mort ou de blessures graves aux personnes manupulant l'équipment.

Caution

Caution

A caution alerts you to an operating procedure, practice, condition, or statement that must be strictly observed to prevent equipment damage or destruction, or corruption or loss of data.

Conseil

Une précaution vous avertit d'une procédure de fontionnement, d'une méthode, d'un état ou d'un rapport qui doit être strictement respecté pour empêcher l'endommagement ou la destruction de l'équipement, ou l'altération ou la perte de données.

Before You Begin

About This Manual

This manual contains all of the information necessary to install, operate, configure, troubleshoot, and maintain the Cordless System.

What You Will Find in This Manual

This table summarizes the information in each section and appendix of this manual:

For Information On	Refer To
Connecting the System	Section 1 tells you how to connect the Cordless System to your host terminal.
Operating the System	Section 1 also explains how to operate the Cordless System.
Configuring the System	Sections 2 through 5 describe how to configure the scanner.
Troubleshooting the System	Section 8 explains how to troubleshoot and maintain the Cordless System.

Terms

"Scanner" refers to the Cordless laser scanner.
"Reader," "Base," or "Wireless Wedge" refers to a portable or stationary device that receives data sent from the Cordless System.
"Terminal" or "Host" refers to the point-of-sale (POS) terminal, PC, laptop, pen-based terminal, or other device that receives data sent from the scanner.
"Base" refers to the Cordless base station.

Conventions for Bar Codes

You can use your Cordless laser scanner to scan the bar codes listed in this manual to enter data or perform a command. In some cases you will simply scan the code that accompanies an explanation. For example, to change the baud rate from the default of 9600 bps to 19200, you would scan the 19200 bar code in the Baud Rate Selection in Section 3.

Some functions require you to scan a code and then scan a letter or number from the Programming Chart located on the inside of the back cover of this manual. For example, to add a terminal interface, you determine the two character Terminal ID and scan the characters on the Programming Chart after scanning the Program Terminal Interface bar code.

A default setting is indicated by an ✶ symbol next to the bar code.

Introduction

The Cordless Scanning System consists of the 9745 Base unit and at least one 1552 Cordless Laser Scanner. Up to nine scanners may be associated with one base. Each cordless scanner has a removable, rechargeable battery pack and provides real time decoding within a 50 foot (15.24 meter)† radius of the base unit.

The Cordless System is an economical, durable solution for a wide variety of portable data collection applications. The Cordless System features:

- a tough, ergonomic thermoplastic housing for comfort and durability.
- recognition and decoding of the most popular, industry-standard bar code symbologies.
- scanner coverage of up to 7854 square feet (730 square meters) in open air environments.
- a wide range of interfaces that are compatible with many POS, keyboard wedge, and RS-232 terminals.
- visible and audible feedback for confirmation of a successful decode.
- rechargeable batteries designed to operate through a whole work day.

This System Manual contains information to help you set up, operate, and program the Cordless System. Product specifications, connector pinouts, scan maps, a troubleshooting guide, and customer information are also provided.

The Cordless System can be programmed for many communications parameters and input/output protocols compatible to the host, as well as advanced data editing and formatting. Programming is accomplished by using the single programming bar codes in this manual (Sections 2 through 4).

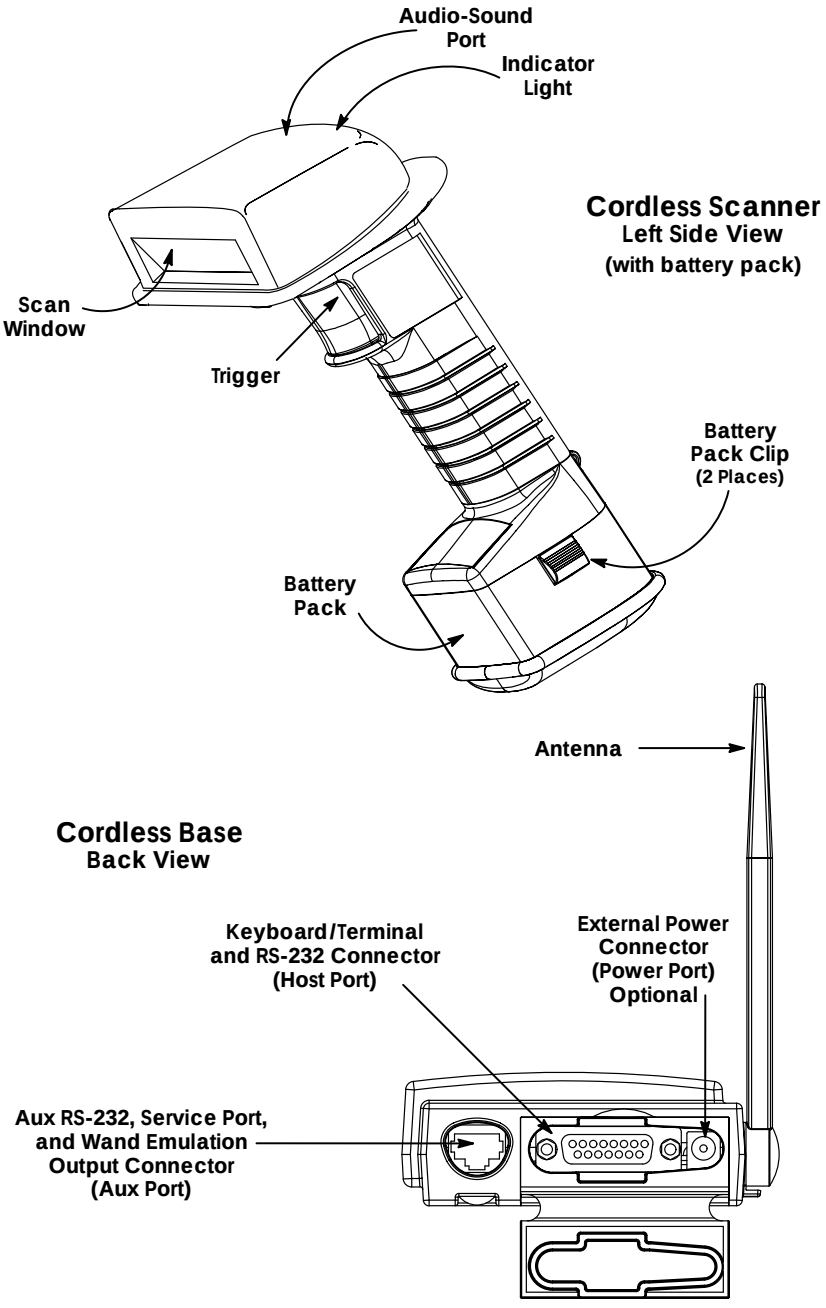
This section contains the following “Getting Started” information:

- Cordless System Main Components
- Battery Pack and Charging Information
- Cordless System Set Up and Connection
- Beeper and LED Sequences and Meaning
- Basic Operation of the Cordless System
- Communication Between the Cordless System and the Host
- Accessories for the Cordless System

† A 50 foot radius is obtained under optimal, “open air” conditions. Signals between the base and its scanners need a clear path to communicate, free from RF interference.

Getting Started

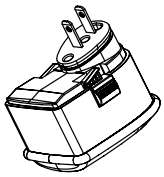
Cordless System: Main Components



Getting Started

About the Battery Pack

Power is supplied to the Cordless Scanner by a rechargeable battery pack that snaps onto the bottom of the scanner. Battery packs are based on Nickel Metal Hydride (NiMH) cells. *(See Battery Specifications, page 7–3, for storage information.)*



North American Charging Information

The battery pack is designed to plug into any two prong North American AC power outlet (110/120 Volt) for direct charging. You need no additional equipment, and you can recharge the pack virtually anywhere. If you want surge protection, a charge strip (described below) affords extra protection.

Worldwide Charging Information: Charge Strips

Since the battery pack is rated for both 110/120 volt 60 Hz and 230/240 volt 50 Hz applications, it may be recharged worldwide. For international charging and to accommodate the wide variety of electrical outlets, a custom charge strip is required to charge the batteries. The charge strip supports both versions of battery packs and is offered for two or six battery pack configurations.

Contact your local sales office for more information or to order charge strips.

Battery Pack Recommendations

- Charge the battery for 24 hours the first two or more times to fully charge the battery.
- Charge the battery pack immediately before use or at least within a couple of days of use.
- Remove the battery pack from the power outlet after charging is completed. Avoid extended overcharging; do not leave the battery charging for more than two days.
- Periodically fully discharge the battery pack.
- Avoid using the battery pack in extreme temperatures.
- Do not disassemble the battery pack. There are no user-serviceable parts in the battery pack.

Proper Disposal of the Battery Pack

When the battery pack has reached the end of its useful life, the batteries should be disposed of by a qualified recycler or hazardous materials handler. Do not incinerate the battery pack or dispose of the battery pack with general waste materials. Contact the technical and service support (see inside front cover) for recycling or disposal information.

Getting Started

Charging Your Battery Pack

Charge the Battery Pack by following the steps shown below:

❶ Plug the battery pack directly into any common 120 Volt AC outlet.†

To charge more than one battery pack (or to charge the pack for all other countries), use the Charge Strip.

Cordless Scanner

Rechargeable Battery Pack

❷ The LED on the bottom of the battery pack will light red when the unit is charging; it shows green when it is fully charged and ready to use.

Note: It is important to charge the battery for 24 hours prior to first use. No damage occurs if this is not done, but the battery capacity will not be at 100%.

Charge Time:
4 hours

❸ After the battery pack is fully charged, attach it to the Cordless Scanner by pressing the pack firmly (align the prongs on the pack with the mating receptacles) in the base of the scanner until the release buttons click, holding the pack firmly in place. *(When you attach a charged battery pack to the Cordless Scanner, you will hear a single beep.)*

❹ If you haven't set up your Cordless System, turn to the next page for instructions.

When the battery pack needs recharging, the yellow LED on top of the scanner pulses in short, continuous blinks and the scanner won't beep when you pull the trigger. If the LED stops flashing when the temperature lowers or you do not use the battery pack for some time, you still need to charge the battery pack.

† Plug the battery pack into a wall socket in North America ***only***. Failure to comply could result in equipment failure.

Getting Started

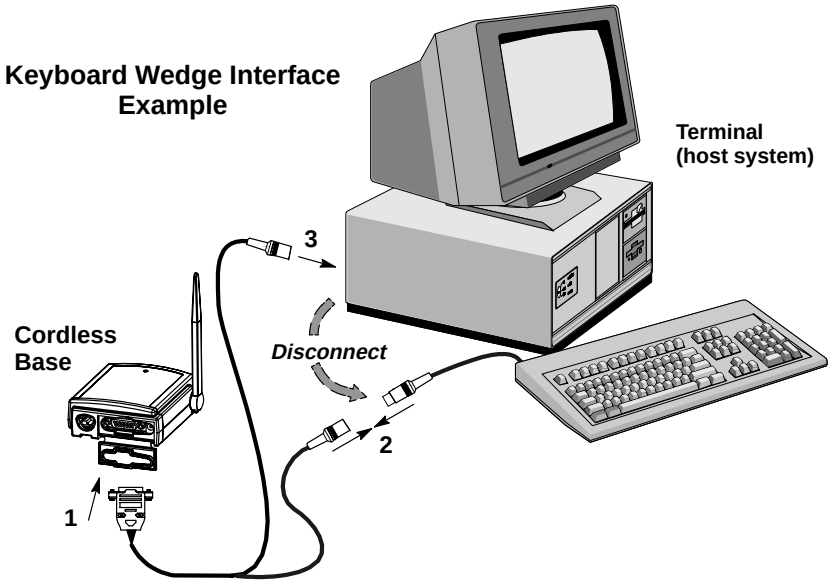
Setting Up and Connecting the Cordless System

Install the base and Cordless Scanner by following the steps shown below:

Important: *Make sure the Cordless Scanner's battery pack has been fully charged. See page 1–4 for charging instructions.*

❶ Turn off the power to the host system.

❷ Connect the interface cable to the base and to the terminal/computer (steps 1–3, shown in the illustration below). Depending on your application, the interface cable you need may be different than the one shown below.



(Cable, Keyboard, and Terminal may vary.)

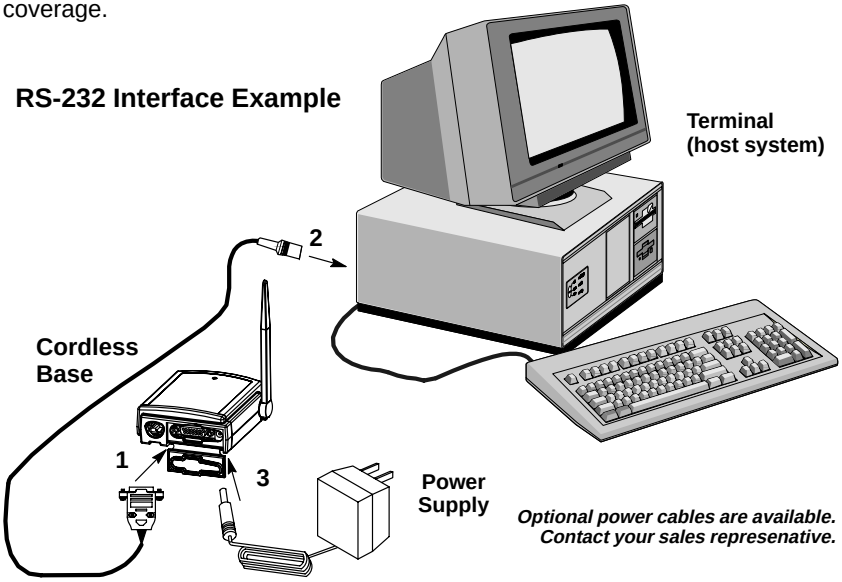
Note: *For optimal coverage, place the base and its antenna as far away from other sources of RF interference, with a clear transmitting path to the scanner(s). Applications may run faster in RS-232 due to data rate restriction on some wedges. Extension cables from the base unit to the host may be added to either wedge applications (up to 15 feet) or RS-232 applications (up to 50 feet).*

The base can be mounted on a wall or a ceiling. Try to place the base so that the antenna is in a vertical (straight up and down) position whenever possible. An extra Base Association Bar Code is provided in case the base is mounted where the label might be difficult to scan (step 4 on the next page describes the Association process).

Setting Up and Connecting the Cordless System, continued

In an RS-232 configuration (below), connect your interface cable between the base unit (step 1 in the illustration) and the host system (2). You also need to use an external power supply (3). Contact your Intermec sales representative for more information on ordering power supplies or RS-232 cables, including "Y" extension and mouse power pickup cables to mount the base for best RF coverage.

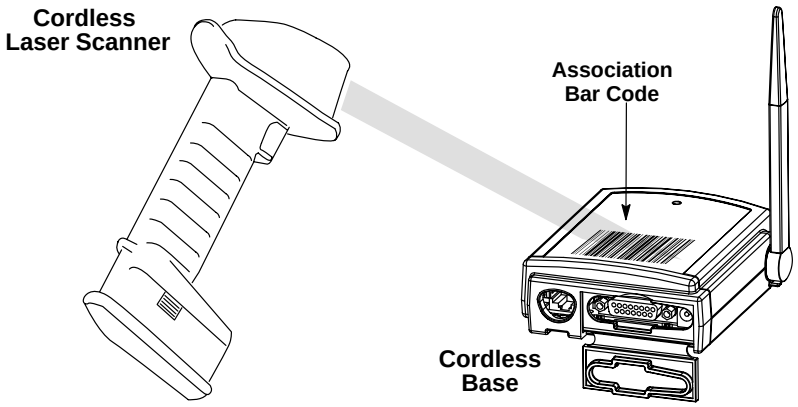
RS-232 Interface Example



(Cable, Keyboard, and Terminal may vary.)

❸ Turn on the power to the host system. Verify that the base is on; the green LED on top of the unit should blink. (The base does not have a beeper.)

❹ Using the Cordless Scanner, scan the Association Bar Code (the bar code label on the top of the base) to link that scanner to the base (see the illustration shown below).



Setting Up and Connecting the Cordless System, continued

Two quick beeps followed by clicking and a single beep indicates a "good" association. The scanner is now in communication with the base.

Note: *After association, if the battery pack is removed from the scanner and replaced, the scanner automatically reassociates to the base if the base has remained powered up. In this case, the scanner beeps when a charged battery pack is installed and beeps a second time after full association, about five to ten seconds later.*

After your Cordless Scanner has been associated with its base unit:

❺ Program your Cordless System to work with your terminal or computer by scanning the Terminal Setup Codes. Use the Supported Terminal list (Pages 2–5 to 2–6) to scan your Terminal ID.

With Plug and Play programming, you scan *only* one bar code to program the Cordless System to work with a designated interface, including any required prefixes and suffixes.

❻ To determine if your Cordless System is set up correctly, scan one of the sample bar codes on the back cover of this manual.

Connecting More Scanners to the System

Up to nine Cordless Scanners may be associated with one base unit †. Add more Cordless Scanners to a base unit by following the steps shown below:

❶ Make sure the Cordless Scanner's battery pack has been fully charged.

❷ Scan the Association Bar Code (the bar code label on the top of the base) to link each scanner to the base.

The base stores a unique I.D. for each scanner (up to nine) to identify the scanner during data communication. Two beeps followed by clicking and a single beep from the scanner indicates a "good" association. The base rejects a tenth Cordless Scanner trying to link to its network, sending the scanner an error command. (A rejected scanner beeps three times, indicating an unsuccessful association.)

Note: *When you associate more scanners with the base, you don't have to program your Cordless System to communicate with your terminal or computer if you've already completed step 5, above.*

† within a 50 foot (15.24 meter) radius of the base, in an open air environment

Getting Started

Beeper and LED Sequences and Meaning

The base contains a green LED that indicates the status of the unit and verification of its communication with the host system. The Cordless Scanner contains a beeper and two LEDs on the top of the unit (green and yellow) to indicate its power up, communication, and battery pack status. The tables below list the indication and meaning of the beeps and LED illumination for the base and Cordless Scanner.

Base LED Indication

Sequence	Meaning
LED on continuously	Power on, system idle
LED blinks, long duration	Power on, diagnostic error
LED blinks, short duration	Receiving data from scanner, host, or aux port
LED blinks, four long pulses	Communication error detected

Scanner LED Indication

Sequence	Meaning
Green LED on	Trigger pulled, out of range
Green LED on, 2 seconds	Successful decode and communication
Green LED blinks, 2 seconds	Successful decode with unsuccessful communication, or unsuccessful clear to scanner
Green LED on, 5 seconds	Enter/exit programming mode, successful parameter change in programming mode
Green LED blinks, 5 seconds	Unsuccessful parameter change in programming mode
Yellow LED on	Scanning, trigger pulled (in or out of range)
Yellow LED blinks	Low battery (trigger pulled)

Scanner Beep Indication

Sequence	Meaning
No beep	No scanning, scanning, or low battery (trigger pulled)
1 beep	Successful decode and communication
Clicking, then 1 beep	Successful reassociation
Clicking only	Unsuccessful reassociation
2 beeps, clicks, then1 beep	Successful association to base
3 beeps – same tone	Unsuccessful association to base (10th scanner), out of range, or no network
3 beeps – 2 high and 1 low tone	Enter/exit programming mode or successful association to base. Successful or unsuccessful parameter change in programming mode.
4 beeps – low, high, low, high tones	Communication error: successful decode with possible unsuccessful communication to base. Check host to determine if data arrived properly.

Getting Started

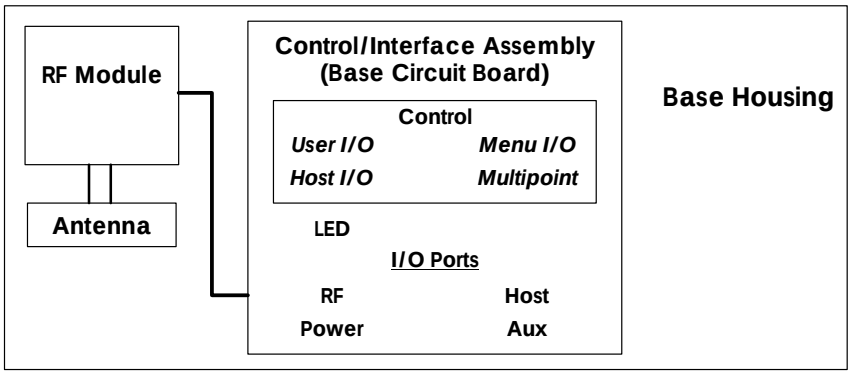
Basic Operation of the Cordless System

The following system block diagrams (on this and the following page) illustrate the basic operating components of the Cordless System.

Cordless Base

The Cordless base provides the link between the Cordless Scanner and the host system. The base contains a control/interface assembly and an RF communication module. The RF communication module performs the data exchange between the Cordless Scanner and the control/interface assembly. The control assembly coordinates the central interface activities including transmitting/receiving commands and data to/from the host system, performing software activities (parameter menuing, visual indicator support, power-on diagnostics), and data translation required for the host system.

Cordless Base



RF (Radio Frequency) Module Operation

The Cordless System uses a state of the art radio to transmit and receive data between the scanner and the base. Designed for point-to-point and multipoint to single point applications, the radio transmits data at a rate of 1 megabit per second (MBPS) in a half duplex (2 way) communications mode. The radio operates using a license free, low power, 2.4 GHz spread spectrum (frequency hopping) technique. This transmission technique, which sends relatively small data packets at a fast data rate over a radio signal with randomly changing frequencies, makes the Cordless System highly responsive to a wide variety of data collection applications and resistant to noisy RF environments.

The RF radio used in the Cordless System has been tested and approved as complying with the two leading standards-setting organizations that serve as regulatory models for compliance in most countries. In North America, the radio is approved under the standards in FCC B Part 15.249 regulations and, in Europe, under the standards in ETS 300 328 regulations. *(See page 7–4 for a chart of regulatory and safety agency approvals.)*

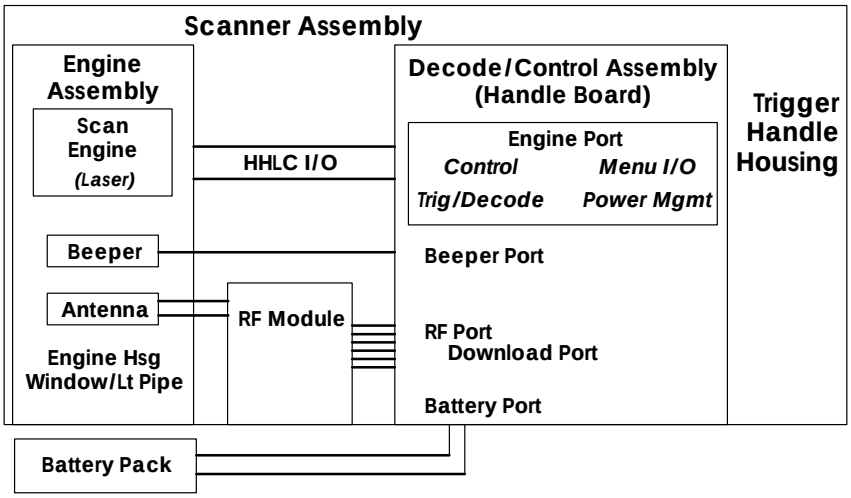
Getting Started

Cordless Scanner

The Cordless Scanner enables bar code scanning by using laser scan engines, real time decoding, and host connectivity within a 50 foot (15.24 meter)† radius of the base unit. It provides the initial bar code data acquisition function and communicates to the base. The scanner comprises of a laser scan engine, a decode/control assembly, and an RF communication module.

The scan engine performs the bar code image illumination and detection. The decode/control assembly coordinates the central communication activities including capturing and decoding the bar code image data, performing software activities (parameter menuing, visual indicator support, low battery indication), and data translation required for the host system. The RF communication module performs the data exchange between the scanner and the base.

Cordless Scanner



† A 50 foot (minimum) radius is maintained in most environments. For optimal performance, signals between the base and its scanners need a clear path to communicate, free from RF interference.

Getting Started

System Conditions

The components of the Cordless System interact in specific ways as you associate one or more scanners to a base, as you move a scanner out of range, bring a scanner back in range, replace a scanner battery pack, or swap scanners between two Cordless Systems. The following information explains the Cordless System operating conditions.

Association Process

After you scan the association label, the base synchronizes radio parameters and the work group parameter table in the scanner. The work group table is uploaded during the clicking sequence. Two beeps, clicking, then a single beep indicates the process is complete. The base blinks while it is sending the table to the scanner. Until the table is uploaded, scanning and data transmission is interrupted. If the base is off or not working properly, the scanner emits an error (triple) beep after trying for 30 seconds to associate to the base.

The work group table is also uploaded any time the base believes a previously associated scanner wishes to join the network. A scanner always tries to join the last base it was associated to, even if the scanner has been without power for several days. The base allows a scanner to associate as long as there are fewer than nine scanners actively associated to the base.

Scanner is Out of Range

The Cordless Scanner is always in communication with its base, even when it is not transmitting bar code data. Whenever the scanner can't communicate with the base for a three second interval, it is out of range. If the trigger is pulled while the scanner is out of range, the green and yellow LEDs illuminate. When you scan a bar code, the scanner issues 3 beeps and does not try to send data to the base.

Note: *While the scanner is out of range, it consumes more power searching for the base continuously. To conserve battery power, store the scanner with the battery pack removed, or program it for Battery Conservation mode (see page 2–12).*

Scanner is Moved Back Into Range

The scanner will silently rejoin (no beep after connecting and synchronizing with the base) if the scanner has not been reset (battery pack disconnected and reconnected), no menu codes have been scanned by other scanners in the work group, or the base has not been reset (see Base Reset Conditions, next page). Any one of these three conditions can cause the scanner to go through a reassociation process (definition on the next page) when it is moved back in range. If the scanner reassociates, you will hear a single beep when the reassociation process (uploading of the parameter table) is complete.

If you believe you are in range and are still hearing a triple (error) beep, you may have been removed from off the base's network. Try scanning the association label or reset scanner by removing and reinserting the battery.

Replacing Battery Pack While Associated

When you insert the battery pack, the scanner beeps followed by clicking. During this period, the work group parameter table is uploaded to the scanner from the base. Scanning and data transmission is interrupted. When the scanner emits a second beep, you may scan again. If you don't receive a second beep, the table was not transferred successfully either because the scanner was out of range or all of the data was not received. Scan the association label again.

Moving Scanners From One Base to Another

You may transfer a scanner between base networks by scanning a new base association label. Scanners can only be associated to one base at a time. Once a scanner has been associated to a base, it tries to stay associated to that base until a new base association label has been scanned. The new base adds a scanner to its association list as long as fewer than nine scanners are in its network. If a base has nine scanners in its network, you need to disassociate one scanner before adding another (see next section).

Swapping Scanners Between Two Systems with Nine Scanners on Each

You may use the Remove Scanner Selection (page 4–3) to disassociate any scanner and then add a new scanner by scanning the association label with the new scanner. If you cannot scan the disassociation label because the scanner you are trying to disassociate was damaged, remove power from that scanner and it automatically disassociates in approximately three seconds.

Glossary

Base Reset Conditions

The base reset when base power is lost or when a diagnostic problem is sensed. In either case, the scanners automatically reassociate, if they are within range.

Reassociation

The process of uploading the work group parameter table from the base is called "reassociation." During reassociation, the scanner clicks, then beeps once. Reassociation is done automatically, without having to scan an association label.

Association List

The base keeps an association list of up to nine entries. This list maintains the associated scanners' radio serial numbers and dynamic addresses. New dynamic addresses are assigned to the scanners each time a base Reset occurs. This helps the Cordless System track the status of the different scanners in its network during the association and reassociation process.

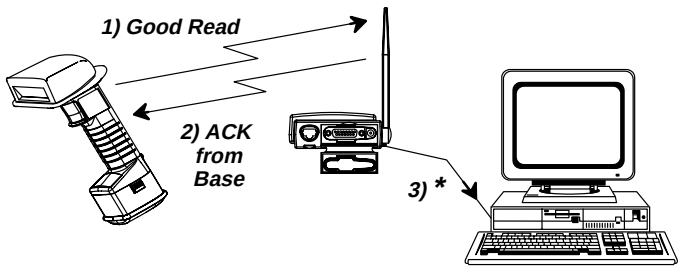
Communication Between the Cordless System and the Host

The Cordless Scanner provides immediate feedback in the form of a "good read" indication (a green LED on the scanner and an audible beep) after a bar code is scanned correctly and the base has acknowledged receiving the data. The Cordless System also provides two way communication between the Scanner and the base or host system.

When data is scanned, the data is sent to the host system via the base unit. Confirmation from the host system or the base indicates that the data sent was received by the host. The Cordless Scanner recognizes two forms of host confirmation: data acknowledgement (ACK) from the base unit or an "ACK" from the host system. If it can't be determined that the data has been properly sent to the host system, the scanner issues 4 beeps (low, high, low, high tones). You must then check to see if the scanned data was received by the host system.

Acknowledgement from the Base

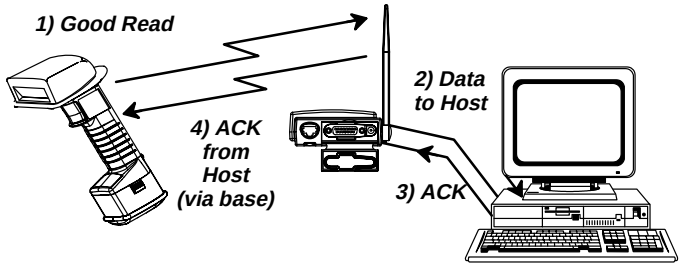
If the Cordless System is configured for a keyboard wedge host interface, a signal (ACK) is sent from the base confirming that the data was received and is being sent on to the host system. (Since keyboard wedge interfaces cannot provide bi-directional communications, they do not permit host confirmation.)



**** Base sends data to Host after ACK is sent to Scanner***

Acknowledgement from the Host System

Host system confirmation may be implemented with a bi-directional interface like Host RS-232. In this configuration, when the base unit receives the scanned data from the scanner and forwards it to the host, the Cordless System waits for a signal from the host that it received the data. (For information on enabling this feature and using Host Escape commands, see Host Ack Selection, page 3–5).



Accessories

Accessories for the Cordless System

Several accessories are available for the Cordless System. Contact your distributor for more information or to order accessories.

Battery Packs

The permanently sealed battery packs contain four rechargeable "AA" cells, plus circuitry to allow recharging via standard AC power outlets (eliminating cumbersome and expensive custom charging stations). Each scanner is shipped with one battery pack. Order back up batteries or replacement batteries separately.

Charge Strips

To recharge more than one Battery Pack at one time, Charge Strips are available. The charge strips are offered in two or six outlet configurations, and may be conveniently wall mounted or set on flat surfaces. The charge strip uses a standard PC (IEC 320) grounded power cord between the charge strip and the electrical AC outlet.

Note: *The power cords must be ordered separately. Contact your Intermec sales representative for more information.*

Belt Holster

The belt holster holds the Cordless Scanner when not in use. The belt holster consists of a foam covered wire frame clasped to an adjustable nylon web belt designed to be worn around the waist.

Wall Mount Kit (Standard)

The standard wall mount holder stores the Cordless Scanner on a vertical surface for convenient access. The scanner easily slides between two rubberized fingers that hold the scanner when it is not in use.

Wall Mount Kit (Industrial)

Similar to the standard wall mount holder, the rubberized fingers on the industrial wall mount holder are smaller to maintain a firm grasp on the scanner under jolting and jarring conditions, such as those expected in fork lift applications.

Head Cover

The head cover features a "D" ring to attach to a tool balancer to suspend the scanner rather than putting it down.

Visual Menu™

Visual Menu is a software configuration tool that provides the ability to configure the Cordless System by connecting the base unit to the COM port of a PC. Visual Menu allows you to download firmware upgrades, change programmed parameters, and create and print programming bar codes.

Introduction

Use this section to program the Cordless System to work with your terminal or computer (host system).

This programming section contains the following menu selections:

- Plug and Play
- Terminal Interface
- Country Code
- Keyboard
- Output Delays
- Wand Emulation
- Power Settings
- Reset Factory Settings and Status Check

All operating parameters are stored in non-volatile memory resident in the Cordless System, where they are permanently retained in the event of a power interruption. When you receive your Cordless System, certain operating parameters have already been set. These are the factory defaults, indicated by the symbol "✶" on the programming pages (beneath the default programming bar code). Default charts that list all the factory settings may be found near the end of this system manual.

A programming chart (found on the inside back cover of this manual) contains alphanumeric bar codes for setting additional programming options, such as the digits representing Symbology Message Length. The chart explains how and when to use the alphanumeric bar codes.

Note: *After scanning the following menu selections, there will be a pause (up to 20 seconds) while the Base unit processes and uploads the new menuing information to its parameter tables:*

Plug and Play Selections (on the next two pages)
Factory Default Settings: ALL Application Groups (last page, Section 2)
Application Work Group Selections (Section 4)

A sample bar codes page (located on the back cover of this manual) provides bar code symbols you may scan to verify that your Cordless System has been programmed correctly and is communicating with your host system.

Plug and Play Selections

Industrial Interface: IBM PC

IBM PC AT and Compatibles Interface
(also PS/2 30-286, 50, 55SX, 60, 70, 70-061, 70-121, 80)

(Factory Default)

*The bar code above **also** programs a carriage return (CR) suffix.*

Industrial Interface, Aux Port: RS-232

RS-232 Interface

*The bar code above **also** programs the following parameters:*

Programmable Option	**Setting**
Baud Rate	38,400 bits per second
Parity	None
Data Format	8 data bits, 1 stop bit
Prefix	None
Suffix	Carriage Return (CR)

Note: *Plug and Play menu codes will default all settings before programming the interface.*

Plug and Play Selections

IBM 468X/9X Ports 5B, 9B, and 17 Interface

Scan one of the following “Plug and Play” codes to program the interface for IBM 4683 Port 5B, 9B, or 17.

Note:When using any of the IBM 4683 interfaces, the maximum allowable data rate into the base aux port is 9600 baud.

IBM 468X/9X Port 5B Interface

IBM 468X/9X Port 9B
HHBCR-1 Interface

IBM 468X/9X Port 9B
HHBCR-2 Interface

IBM 468X/9X Port 17 Interface

Plug and Play Selections

Industrial Interface (1700, 5900 terminals), Aux Port: Wand Emulation Black High

Wand Emulation (Code 39 Format) Interface

Wand Emulation (Same Code Format) Interface †

*These bar codes **also** program the following parameters:*

Programmable Option	**Setting**
Transmission Rate	25 inches per second
Output Polarity	Black High

Industrial Interface (J20xx, T24xx, 94–95–97xx terminals), Aux Port: Wand Emulation White High

Wand Emulation (Code 39 Format) Interface

Wand Emulation (Same Code Format) Interface †

*These bar codes **also** program the following parameters:*

Programmable Option	**Setting**
Transmission Rate	25 inches per second
Output Polarity	White High

† Supports Code 39, UPC, EAN, Code 128, Interleaved 2 of 5, and Codabar. All other codes output as Code 39.

Terminal Interface Selections

If your terminal is not one of the Plug and Play options, you must program one of the terminals listed below. To program the terminal interface, scan 1.) the Program Terminal Interface bar code below, 2.) scan the appropriate Terminal I.D. code from the inside back cover, then 3.) scan the **Save** bar code on page 2–6.

Program Terminal Interface

(Factory Default = ID 003)

Supported Terminals

Terminal	Model(s)	Terminal I.D.
Bull	BDS–7 Honeywell (HDS–7)	035
DEC	PC433 SE (Portable PC)	003 †
DEC	VT–220, 320, 330, 340, 420	004
DELL	Latitude (Portable PC)	003 †
DTK	486 SLC (Portable PC)	003 †
Fujitsu	Stylistic (Portable PC)	003 †
IBM	PC XT	001
IBM	PS/2 25, 30, 77DX2	002
IBM	AT, PS/2 30–286, 50, 55SX, 60, 70, 70–061, 70–121, 80	003
IBM	AT Compatibles Keyboard Emulation (Non-wedge)	003
IBM	Thinkpad 365, 755 CV (Portable PC)	003 †
IBM 102 Key	3151, 3161, 3162, 3163, 3179, 3191, 3192, 3194, 3196, 3197, 3471, 3472, 3476, 3477, 3482, 3486, 3488	006
IBM 122 Key	3179–1, 3191, 3192, 3471, 3472, 3194	007
IBM 122 Key	3196, 3197, 3476, 3477, 3482, 3486, 3488	008
Lee Data	IIS	007
Link ANSI	MC–3+, MC–5	015
Link ASCII	MC–3+, MC–5	014
Link Enhanced PC	MC–3+, MC–5	018
Midwest	Micro Elite TS 30 PS (Portable PC)	003 †

Terminal Interface Selections

Supported Terminals

(Factory Default = ID 003)

Terminal	Model(s)	Terminal I.D.
Mitak	4022 (Portable PC)	003 †
Olivetti	M19, M24, M28, M200	001
Olivetti	M240, M250, M290, M380, P500	003
Relisys	TR 175	003
RS-232 Host Port		050
RS-232 Aux Port		000
Serial Wedge		050
Televideo	990, 995, 9060	002
Texas Instruments	Extensa 560CD (Portable PC)	003 †
Toshiba	2600 (Portable PC)	003 †
Toshiba	Satelite T1960, T2130, CS (Portable PC)	003 †
Wand Emulation Code 39 output (via Aux Port)		‡
Wand Emulation Same Code output (via Aux Port)		‡
WYSE	WY–30	013
WYSE	WY–85/185	016
WYSE ANSI	WY 60, 120, 150, 160, 325, 370, 99GT	015
WYSE ASCII	WY 60, 120, 150, 160, 325, 370, 99GT	014
WYSE Enhanced PC	WY 60, 120, 150, 160	018
Zenith	Z–note (Portable PC)	003 †

Save

† ***Emulate External Keyboard*** *and* ***Automatic Direct Connect Mode*** *may also need to be turned on (see pages 2–8 and 2–9).*

‡ *Use Plug and Play Selections on page 2–4.*

Country Code Selections

Keyboard Country Selection

This programming selection allows you to re-map the keyboard layout for the selected country. As a general rule, the following characters are not supported by the Cordless System for countries other than the United States:

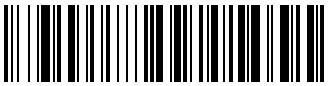
@ | $ # { } [ ] = / ‘ \ < > ~

✶ United States

Belgium

Denmark, Finland, Norway, Sweden

France



Germany, Austria

United Kingdom

Switzerland

Italy

Denmark (*Wyse only*)

Keyboard Selections

Keyboard Style Selections

Keyboard Style Selections

This programming selection allows you to program special keyboard features, such as Caps Lock and Shift Lock.

Regular is used when you normally have the Caps Lock key off.

Caps Lock is used when you normally have the Caps Lock key on.

Shift Lock is used when you normally have the Shift Lock key on. (Not common to U.S. keyboards.)

Automatic Caps Lock is used if you change the Caps Lock key on and off. The software tracks and reflects if you have Caps Lock on or off (AT and PS/2 only). This selection can only be used with systems that have an LED that notes the Caps Lock status.

Emulate External Keyboard should be scanned if you do not have an external keyboard (IBM AT or equivalent).

✶ Regular

Caps Lock

Shift Lock

Automatic Caps Lock

Emulate External Keyboard
(Laptops)

Keyboard Selections

Keyboard Style Modifiers

Keyboard Style Modifiers

This programming selection allows you to program special keyboard features, such as CTRL+ codes and Turbo Mode.

Control + ASCII Mode On – If you scan this selection, the Cordless System sends key combinations for ASCII control characters for values 00–1F. Refer to page 6–1 for CTRL+ Values.

Turbo Mode – Selecting Turbo Mode On (for the IBM AT only) programs the Cordless System to send characters to the terminal faster.

Numeric Keypad Mode – Selecting Numeric Keypad Mode On sends numeric characters as if entered from a numeric keypad.

Automatic Direct Connect – When Emulate External Keyboard has been selected (above), Automatic Direct Connect Mode keeps the integrated keyboard from becoming permanently disabled. (This selection disables the keyboard for the duration of the bar code transmission.)

Control + ASCII Mode On

✶ Control + ASCII Mode Off

Turbo Mode On

✶ Turbo Mode Off

Numeric Keypad Mode On

✶ Numeric Keypad Mode Off

Automatic Direct Connect Mode On

✶ Automatic Direct Connect Mode Off

Keyboard & Delays Selections

Output Delays Selection

This selection provides control of the time delays between data output by the Cordless System to the host terminal. The actual delay is 5 milliseconds multiplied by the programmed value (00 – 99). *Default = 00.*

Intercharacter Delay is the time delay between data characters output by the Cordless System to the host terminal.

Interfunction Delay is the time delay between function (key) codes output by the Cordless System to the host terminal.

Intermessage Delay is the time delay between data messages or records output by the Cordless System to the host terminal.

Example: You need a 45 millisecond delay. Scan the ***Intercharacter Delay*** bar code. Scan "0," "9," and Save on the Programming Chart (09 x 5ms = 45ms).

Intercharacter Delay (x5mS) ‡

Interfunction Delay (x5mS) ‡

Intermessage Delay (x5mS) ‡

‡ A two-digit number and Save are required after scanning this programming bar code. Refer to the Programming Chart (inside back cover).

Wand Emulation Selections

Transmission Rate Selection

This programming selection sets the transmission rate from 10 ips (inches per second) to 300 ips if the Cordless System is in Wand Emulation mode. Programming the transmission rate causes the data to be sent at the specified rate. The programmed transmission rate must be compatible with the device receiving the bar code data.

10

✶ 25

40

80

120

150

200

300

Output Polarity Selection

This selection allows you to set the output logic convention for the digital output. The choices are White High (“Laser” output) and Black High.

White High

✶ Black High

Power Settings

Base Low Power Mode

You may want the base unit to draw less power when it is being powered by a portable data terminal or laptop. Use Base Low Power mode to tell the base to draw less power.

✶ Off

On

Note:Using Base Low Power Mode slows decode time.

Battery Conservation Mode

In order to preserve scanner battery power, you can set the scanner to "go to sleep" after the scanner or its base has been idle for a certain length of time. A cordless scanner "checks in" with its base unit on a periodic basis. If the base unit has been turned off, you can set the scanner to turn itself off as well (sleep mode). If you prefer, you can set the scanner to turn itself off regardless of the base unit state (nap mode). Once a scanner is off, or asleep, a single trigger pull wakes it up and begins the reassociation process, see page 1–12. A second trigger pull is required to scan a code.

If you want the scanner to turn off after a period of inactivity, regardless of the state of the base, scan Don't Check for Network Base Before Timeout (nap mode), then scan the desired timeout length code (page 2–13). When the scanner has been idle for the timeout length, it turns itself off. If the scanner has shown no activity for 1 hour, it will automatically shut off by default.

Don't Check for Network Base Before Timeout

Power Settings

Battery Conservation Mode (continued)

If you want the scanner to turn off when the base is powered down, scan Check for Network Before Timeout (sleep mode), then scan the desired timeout length code (page 2–13). If the scanner gets no response from the base after the timeout length, the scanner powers down

Check for Network Base Before Timeout

No Timeout indicates the scanner always remains on, which drains the battery faster than the other settings.

✶ No Timeout

Timeout Selections

Timeout after 15 minutes

Timeout after 30 minutes

Timeout after 45 minutes

✶ Timeout after 1 hour

Timeout after 2 hours

Reset & Status Check Selections

Reset Factory Settings

Scanning the ***Factory Default Settings*** bar code resets the Cordless System to the original factory settings, clearing any programming changes you may have made. You may reset the factory default settings for the current application group or for all application groups.

The Current Application Group Default defaults only the settings described in Section 4 of this manual.

Factory Default Settings: Current Application Group

The ALL Application Groups Default sets the terminal ID to 003, then changes all settings to factory default values. (See the Defaults section in the back of this manual for a listing of all the factory defaults.)

Factory Default Settings: ALL Application Groups

Status Check

Scan the ***Show Base Software Revision*** bar code to transmit the Cordless Base software revision level to the host terminal. The Base software revision will be printed out as "`Base software revision: X.XX, Radio: K.KK`." (The "X's" and "K's" will vary according to the firmware revision.)

Show Base Software Revision

Scan the ***Show Scanner Software Revision*** bar code to transmit the Cordless Scanner software revision level to the host terminal. The scanner software revision will be printed out as "`Scanner software revision: Y.YY, Radio: K.KK`." (The "Y's" and "K's" will vary according to the firmware revision.)

Show Scanner Software Revision

Section 3

Communications Menu

Introduction

Use this section to program the communications parameters for the Cordless System.

This programming section contains the following menu selections:

- Host Port Communications (RS-232)
- Auxiliary Port Communications (RS-232)

Host Port Communications

✶ *Default All Host Port Communications* ✶

Baud Rate Selection

This selection sets the baud rate from 300 bits per second to 38,400 bits per second. Programming baud rate causes the data to be sent at the specified rate. The host terminal must be set up for the same baud rate as the Cordless System to ensure reliable communication.

300

600

1200

2400

4800

9600

19200

✶ 38400

Host Port Communications

Parity Selection

This selection provides a means of checking character bit patterns for validity. The Cordless System can be configured to operate under Even, Odd, Mark, None, or Space parity options. The host terminal must be set up for the same parity as the Cordless System to ensure reliable communication.

✶ None

Space

Mark

Even

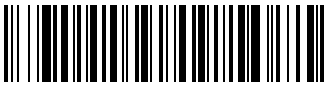
Odd

Word Length Data Bits Selection

This selection sets the Word Length at ***seven or eight bits of data*** per character. If an application requires only ASCII Hex characters 0 through 7F decimal (text, digits, and punctuation), select 7 data bits. For applications requiring use of the full ASCII set, select 8 data bits per character.

7 Data Bits

✶ 8 Data Bits



Host Port Communications

Word Length Stop Bits Selection

This selection sets the Word Length at ***one or two stop bits***.

✶ 1 Stop Bit

2 Stop Bits

Serial Wedge Output Selection

This selection selects the serial output direction required by your application. P1 and P2 are serial wedge designations printed on the serial wedge cable. Usually, one goes to the host and one goes to the terminal, depending on your specific application and the serial wedge cable.

To P1

To P1 and P2

To P2

✶ None (Host Port RS-232)

Hardware Flow Control Selection

This selection turns on hardware flow control that checks for a CTS signal before sending data. This option is useful when your application supports the CTS signal. ***Note:*** *This selection cannot be used with Serial Wedge Output Selection.*

On

✶ Off

Host Port Communications

Host ACK Selection

This selection programs the Cordless System to wait for a confirmation signal (ACK) from the host after bar code data has been sent. When Host ACK is turned on, the host system must be programmed to generate Escape Commands (see section below) for user feedback. Page 1–13 in the Getting Started Section explains how Host ACK works and provides an illustration of the feature.

Host ACK mode is designed to respond to a specific Application Work Group (see Section 4 for more information on Work Groups); the host system issues an Escape sequence to ***all*** scanners in the Work Group. Up to twenty Escape commands may be strung together to create custom beep/blink sequences.

An example of an Escape string to create a "low, medium, high" beep sequence for scanners in Application Work Group 2 would be: "***2esc4esc5esc6,***". The first character indicates the Work Group and the comma is used as the delimiter. If it can't be determined that the data has been properly sent to the host system, the scanner issues 4 beeps (low, high, low, high tones). You must then check to see if the scanned data was received by the host system.

Note: *Host ACK mode will only work with a host system that supports RTS/CTS flow control. If your host system does not support RTS/CTS handshaking, turning on Host ACK selection will cause some or all of your data to be lost.*

On

✶ Off

Escape Commands

The Cordless System will respond to beep and blink commands from the host system. The format for these commands is:

y Esc x , where "y" is the Application Work Group number and "x" is one of the Escape commands listed below. A comma must be used to terminate the command. The table below lists the Escape commands that must be generated from the host system and the resulting action(s).

Command	Action
Esc a	Beep (two high tones), illuminate green LED for two seconds
Esc b	Beep (three low tones), illuminate green LED nine times
Esc 1	Illuminate green LED for 135 milliseconds
Esc 2	Illuminate green LED for two seconds
Esc 3	Illuminate green LED for five seconds
Esc 4	One beep at low volume
Esc 5	One beep at medium volume
Esc 6	One beep at high volume
Esc 7	Beep (one medium tone), illuminate green LED two seconds
Esc 8	Beep (three low tones), illuminate green LED nine times

Note: *Host ACK may be used with Decode Beep Selection (see page 4–4).*

Auxiliary Port Communications

✶ *Default All Auxiliary Port Communications* ✶

Baud Rate Selection

This selection sets the baud rate from 300 bits per second to 38,400 bits per second. Programming baud rate causes the data to be sent at the specified rate. The device connected to the Auxiliary Port must be set up for the same baud rate as the Aux Port to ensure reliable communication.

300

600

1200

2400

4800

9600

19200

✶ 38400

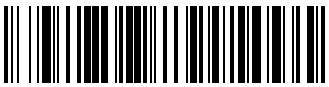
Auxiliary Port Communications

Parity Selection

This selection provides a means of checking character bit patterns for validity. The Auxiliary Port can be configured to operate under Even, Odd, Mark, None, or Space parity options. The device connected to the Auxiliary Port must be set up for the same parity as the Aux Port to ensure reliable communication.

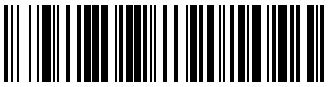
✶ None

Space



Mark

Even



Odd

Word Length Data Bits Selection

This selection sets the Word Length at ***seven or eight bits of data*** per character. If an application requires only ASCII Hex characters 0 through 7F decimal (text, digits, and punctuation), select 7 data bits. For applications requiring use of the full ASCII set, select 8 data bits per character.

7 Data Bits

✶ 8 Data Bits

Auxiliary Port Communications

Word Length Stop Bits Selection

This selection sets the Word Length at ***one or two stop bits***.

✶ 1 Stop Bit

2 Stop Bits

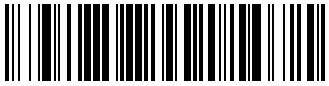
Protocol Selection

This selection programs the Auxiliary Port for the protocol required by the input device to the Auxiliary Port. The protocol is a set of rules concerning the exchange of data between serially communicating devices. The Auxiliary Port supports Record, Burst, and Ack / Nak protocols when receiving data from an RS-232 device.

✶ Record

Burst

Record Ack / Nak



Block Ack / Nak

Aux Port I.D. Transmit Selection

This will attach the Aux Port identifier (which is the letter “r”) to the incoming data at the Auxiliary Port and will send it along with the data to the host device.

On

✶ Off

Auxiliary Port Communications

IBM 4683 Async Address Selections

If you are going to program the interface for IBM 4683 Async Addresses, you must first program the Terminal ID as 51 (see page 2–5). Then, scan one of the programming codes below for your 4683 Async Address selection.

When using any of the IBM 4683 interfaces, the maximum allowable data rate into the base aux port is 9600 baud.

Address $68
(Socket 23: 2A Left)

Address $69
(Socket 23: 2B Right)

Address $64
(Socket 25: 2A Left)

Address $65
(Socket 25: 2B Right)

Aux Port Disable

Auxiliary Port Communications

Hardware Flow Control Selection

This selection turns on hardware flow control that checks for a CTS signal before sending data. This option is useful when your application supports the CTS signal.

On

✶ Off

Note: *The Auxiliary Port receive function will only work properly if RTS/CTS or ACK/NAK flow control is used. If your host system does not support RTS/CTS or ACK/NAK handshaking, some or all of your data will be lost.*

Data Character Selection

This selection selects the serial output data characters that may be sent from the RS-232 device connected to the Auxiliary Port.
Default SOR Character = none (NUL: 00).
Default EOR Character = Carriage Return (CR: 0D).
Default SOB Character = none (NUL: 00).
Default EOB Character = End of Text (EOT: 04).

SOR (Start of Record) ‡

EOR (End of Record) ‡

SOB (Start of Block) ‡

EOB (End of Block) ‡

‡ A two-digit number and Save are required after scanning this programming bar code. Refer to the Programming Chart (inside back cover).

Aux Prefix / Suffix Selections

Aux Prefix and Suffix

Aux Prefix and Suffix characters are data characters you may assign to incoming Auxiliary Port data.

Data frame –>	Prefix	Message	Suffix

Characters for the Prefix and Suffix are selected by their hexadecimal ASCII value, up to 12 characters each. Prefix and Suffix characters may be assigned to all incoming data.
Default Prefix (incoming data) = none.
Default Suffix (incoming data) = none.
Default Prefix (outgoing data) = none.
Default Suffix (outgoing data) = Carriage Return (CR).

Programming Steps to Add an Aux Prefix / Suffix to Incoming Data:

❶ To add a Prefix, scan the ***Add Aux Prefix*** programming bar code.
To add a Suffix, scan the ***Add Aux Suffix*** programming bar code.

❷ Scan two bar codes for the Hex Value "72" ("r," which represents the identifier for the Aux Port). Scan the two digits on the Programming Chart (on the inside back cover of this manual).

❸ Refer to the Hex ASCII Chart (page 3–12) to find the Hex value that represents the ASCII characters you wish to attach to the data. Use the Programming Chart (inside back cover) to scan the alphanumeric combination that represents the ASCII characters.

❹ To complete Aux Prefix / Suffix programming, scan either:

- ***Save*** – This exits, saving the Prefix / Suffix selections you just assigned.
- ***Discard*** – This exits without changing the Prefix / Suffix.

Other Programming Selections: Scanning the ***Default Prefix*** or ***Default Suffix*** bar code sets the default Prefix or Suffix (shown above).

Scanning the ***Clear All Prefixes*** or ***Clear All Suffixes*** bar code deletes all Prefix or Suffix selections.

If you want to turn off the prefix or suffix formatting for a period of time, scan ***Disable Aux Prefix/Suffix***. To turn back on, scan ***Enable Aux Prefix/Suffix***.

Note: *Aux Prefix / Suffix programming examples may be found on page 3–12.*

Aux Prefix / Suffix Selections

Aux Prefix and Suffix Examples

Example 1: Add a Prefix

To add an HT (tab) Prefix to incoming data.

- Scan the ***Add Aux Prefix*** Prefix Selection bar code.
- Scan **7** and **2** on the Programming Chart (inside back cover).
- An "HT" is equivalent to "09" (see the Hex ASCII Chart). Scan **0** and **9** on the Programming Chart.
- Scan ***Save***.

Example 2: Add a Suffix

To add a CR (carriage return) Suffix to incoming data.

- Scan the ***Add Aux Suffix*** Suffix Selection bar code.
- Scan **7** and **2** on the Programming Chart (inside back cover).
- A "CR" is equivalent to "0D" (see the Hex ASCII Chart). Scan **0** and **D** on the Programming Chart.
- Scan ***Save***.

Hex to ASCII Conversion Chart

ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex
NUL	00	DLE	10	SP	20	0	30	@	40	P	50	‘	60	p	70
SOH	01	DC1	11	!	21	1	31	A	41	Q	51	a	61	q	71
STX	02	DC2	12	”	22	2	32	B	42	R	52	b	62	r	72
ETX	03	DC3	13	#	23	3	33	C	43	S	53	c	63	s	73
EOT	04	DC4	14	$	24	4	34	D	44	T	54	d	64	t	74
ENQ	05	NAK	15	%	25	5	35	E	45	U	55	e	65	u	75
ACK	06	SYN	16	&	26	6	36	F	46	V	56	f	66	v	76
BEL	07	ETB	17	’	27	7	37	G	47	W	57	g	67	w	77
BS	08	CAN	18	(	28	8	38	H	48	X	58	h	68	x	78
HT	09	EM	19	)	29	9	39	I	49	Y	59	i	69	y	79
LF	0A	SUB	1A	*	2A	:	3A	J	4A	Z	5A	j	6A	z	7A
VT	0B	ESC	1B	+	2B	;	3B	K	4B	[	5B	k	6B	{	7B
FF	0C	FS	1C	,	2C	<	3C	L	4C	\	5C	l	6C	|	7C
CR	0D	GS	1D	–	2D	=	3D	M	4D	]	5D	m	6D	}	7D
SO	0E	RS	1E	.	2E	>	3E	N	4E	^	5E	n	6E	~	7E
SI	0F	US	1F	/	2F	?	3F	O	4F	_	5F	o	6F	DEL	7F

Aux Prefix / Suffix Selections

Aux Prefix Selection

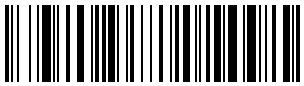
Add Aux Prefix ‡

Default Aux Prefix *(none)*

Clear All Aux Prefixes

Aux Suffix Selection

Add Aux Suffix ‡



Default Aux Suffix *(CR)*

Clear All Aux Suffixes

Exit Selection for Aux Prefix / Suffix

Save

Discard

‡ One or more two-digit numbers and Save are required after scanning this programming bar code. Refer to the Programming Chart (inside back cover).

Aux Prefix / Suffix Selections

Aux Prefix Enable/Disable

The following selections allow you to Enable and Disable Aux Prefix and Suffix formatting. These codes are used when you want to toggle between turning on and off the prefix and/or suffix formatting.

Enable Aux Prefix

Disable Aux Prefix

Aux Suffix Enable/Disable

Enable Aux Suffix

Disable Aux Suffix

Aux Data Formatter Selections

Aux Data Format Editor

The Aux Data Format Editor selections are used to edit incoming data to the aux port. For example, you can use the Aux Data Format Editor to insert characters at certain points in bar code data as it is scanned.

It is not necessary to use the Aux Data Format Editor. A set of defaults for the aux data format is already programmed in the base. The selections in the following pages are used only if you wish to alter the default settings. *Default Aux Data Format setting = none.*

If you have changed aux data format settings, and wish to clear all formats and return to the defaults, scan the **Default Aux Data Format** code.

To Add an Aux Data Format

STEP 1. Scan the **Enter Aux Data Format** symbol (pg. 3–19).

STEP 2. **Primary/Alternate Format**
Determine if this will be your primary aux data format, or one of 3 alternate formats. (Alternate formats allow you "single shot" capability to scan one bar code using a different aux data format. After the one bar code has been read, the scanner reverts to the primary aux data format. See page 3–21.) If you are programming the primary format, scan **0**. If you are programming an alternate format, scan **1**, **2**, or **3**, depending on the alternate format you are programming.

STEP 3. **Terminal Type**
Refer to the Supported Terminals Chart (page 2–5) and locate the Terminal ID number for your PC. Scan three numeric bar codes on the inside back cover to program the scanner for your terminal ID (you must enter **3** digits). For example, scan **0 0 3** for an IBM AT.

*Note: To apply a format to <u>all</u> terminal types, a universal code of **099** is used.*

STEP 4. **Code I.D.**
Scan **7** then **2** from the Programming Chart. (This is the hex value for "r," the aux port I.D.)

STEP 5. **Length**
Specify what length (up to 9999 characters) of data will be acceptable for this symbology. Scan the four digit data length from the Programming Chart. (Note: 50 characters is entered as 0050. 9999 is a universal number, indicating all lengths.)

STEP 6. **Editor Commands**
Refer to the Format Editor Commands (page 3–17). Scan the symbols that represent the command you want to enter. 94 alphanumeric characters may be entered for each symbology data format.

STEP 7. Scan **Save** to save your entries.

Aux Data Formatter Selections

Other Programming Selections

- **Clear One Aux Data Format**
  This deletes one aux data format for one symbology. If you are clearing the primary aux format, scan **0**. If you are clearing an alternate format, scan **1**, **2**, or **3**, depending on the alternate format you are clearing. Scan the Terminal Type (refer to the Supported Terminals Chart on page 2–5), then **7**, **2** (for the aux port I.D.), and the length of the format you want to delete. That length aux data format for that symbology is deleted and all other formats are unaffected.
- **Save**
  This exits, saving any Aux Data Format changes.
- **Discard**
  This exits without saving any Aux Data Format changes.

Aux Data Formatter Example

Five digit data is sent to the Auxiliary Port, however the host system can only accept eight digit data. Three zeroes must be added to the beginning of the Aux Port data.

Received	Must send
12345	00012345

Refer to the Aux Format Editor Commands on page 3–17 to format the following example. The programming bar codes on page 3–19 and the alphanumeric bar codes on the inside back cover are used to program the aux data formatter.

- Scan the **Enter Aux Data Format** bar code (page 3–19).
- Scan **0 9 9** (all terminal types).
- Scan **7 2** (the hex value for the aux port).
- Scan **0 0 0 5** (the data length).

The Aux Data Editor Commands are:

- Scan **F 4** (see page 3–17 for a description).
- Scan **3 0** (hex value for 0).
- Scan **0 3** (indicating the 0 should be sent 3 times).
- Scan **F 1** to send the data, then **0 0** (the hex value for NUL).
- Scan **Save** to end the Aux Data Formatting.

Aux Data Formatter Selections

Aux Format Editor Commands

Send Commands

F1 Send all characters followed by "xx" key or function code, starting from current cursor position. ***Syntax = F1xx*** (xx stands for the hex value for an ASCII code, see Hex to ASCII Conversion chart, page 3–12.)

F2 Send "nn" characters followed by "xx" key or function code, starting from current cursor position. ***Syntax = F2nnxx*** (nn stands for the numeric value (00-99) for the number of characters and xx stands for the hex value for an ASCII code. See Hex to ASCII Conversion chart, page 3–12.)

F3 Send up to but not including "ss" character (Search and Send) starting from current cursor position, leaving cursor pointing to "ss" character followed by "xx" key or function code. ***Syntax = F3ssxx*** (ss and xx both stand for the hex values for ASCII codes, see Hex to ASCII Conversion chart, page 3–12.)

F4 Send "xx" character "nn" times (Insert) leaving cursor in current cursor position. ***Syntax = F4xxnn*** (xx stands for the hex value for an ASCII code, see Hex to ASCII Conversion chart, page 3–12, and nn is the numeric value (00-99) for the number of times it should be sent.)

E9 Send all but the last "nn" characters, starting from the current cursor position. ***Syntax = E9nn*** (nn is the numeric value (00-99) for the number of characters that will not be sent at the end of the message.)

Move Commands

F5 Move the cursor ahead "nn" characters from current cursor position. ***Syntax = F5nn*** (nn stands for the numeric value (00-99) for the number of characters the cursor should be moved ahead.)

F6 Move the cursor back "nn" characters from current cursor position. ***Syntax = F6nn*** (nn stands for the numeric value (00-99) for the number of characters the cursor should be moved back.)

F7 Move the cursor to the beginning of the data string. ***Syntax = F7.***

EA Move the cursor to the end of the data string. ***Syntax = EA***

Aux Data Formatter Selections

Search Commands

F8 Search ahead for "xx" character from current cursor position, leaving cursor pointing to "xx" character. ***Syntax = F8xx*** (xx stands for the hex value for an ASCII code, see Hex to ASCII Conversion chart, page 3–12.)

F9 Search back for "xx" character from current cursor position, leaving cursor pointing to "xx" character. ***Syntax = F9xx*** (xx stands for the hex value for an ASCII code, see Hex to ASCII Conversion chart, page 3–12.)

E6 Search ahead for the last instance of "xx" character from the current cursor position, then increment cursor. ***Syntax = E6xx*** (xx stands for the hex value for an ASCII code, see Hex to ASCII Conversion chart, page 3–12.)

E7 Search back for the last instance of "xx" character from the current cursor position, then increment cursor. ***Syntax = E7xx*** (xx stands for the hex value for an ASCII code, see Hex to ASCII Conversion chart, page 3–12.)

Miscellaneous Commands

FB Suppress all occurrences of up to 15 different characters, starting at the current cursor position, as the cursor is advanced by other commands. When the FC command is encountered, the suppress function is terminated. The cursor is not moved by the FB command. **Syntax = FBnnxxyy . .zz** where nn is a count of the number suppress characters in the list and xxyy .. zz is the list of characters to be suppressed. (xx stands for the hex value for an ASCII code, see Hex to ASCII Conversion chart, page 3–12.)

FC Disable suppress filter and clear all suppressed characters. ***Syntax = FC***.

EB Toggles the auxiliary port on and off. This command is used when data is normally transmitted out the main port, and needs to be temporarily sent out the aux port. The first EB in a format string opens the aux port, temporarily re-directing data transmission out the aux port. Send commands (F1, F2, F3, F4) are then used to transmit data. A second EB command closes the aux port and resumes normal data transmission through the main port. ***Syntax = EB***.

E4 Replaces up to 15 characters in the data string with user specified characters. Replacement continues until the E5 command is encountered. ***Syntax = E4nnxx$_1$xx$_2$yy$_1$yy$_2$...zz$_1$zz$_2$*** where nn is the total count of both characters to be replaced plus replacement characters; xx$_1$ defines characters to be replaced and xx$_2$ defines replacement characters, continuing through zz$_1$ and zz$_2$.

E5 Terminates character replacement. ***Syntax = E5***.

FE Compare character in current cursor position to the character "xx." If characters are equal, increment cursor. If characters are not equal, no format match. ***Syntax = FExx*** (xx stands for the hex value for an ASCII code, see Hex to ASCII Conversion chart, page 3–12.)

EC Check to make sure there is a numeric character at the current cursor position. If character is not numeric, format is aborted. ***Syntax = EC***.

ED Check to make sure there is a non-numeric character at the current cursor position. If character is numeric, format is aborted. ***Syntax = ED***.

EF Inserts a delay of up to 49,995 milliseconds (in multiples of 5). ***Syntax = EFnn*** where nn is a count of the number 5 ms delays, up to 9,999.

Aux Data Formatter Selections

Aux Data Format Editor

See pages 3–15 through 3–18 for a description of Aux Data Format selections and commands.

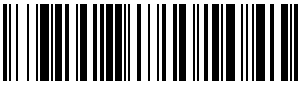
Enter Aux Data Format

Default Aux Data Format

Clear One Aux Data Format

Clear All Aux Data Formats

Save



Discard

Aux Data Formatter Selections

Aux Data Formatter

When Aux Data Formatter is turned off, the data coming in to the aux port is output to the host as received (including prefixes and suffixes).

✶ Aux Data Formatter On

Aux Data Formatter Off

Require Aux Data Format

When Aux Data Formatter is required, all incoming data must conform to an edited format or the base does not transmit the input data to the host device. If this occurs, the data is discarded. *Default = Not Required.*

Aux Data Format Required

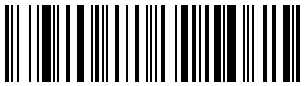
✶ Aux Data Format
Not Required

Aux Data Formatter Selections

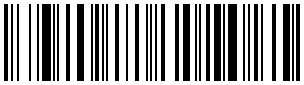
Alternate Aux Data Formats

Alternate formats allow you “single shot” capability to edit incoming data using a different aux data format than your primary aux format. When aux data formats are programmed (see page 3–20), you must input whether you are programming the primary aux format, or an alternate format numbered 1, 2, or 3.

An alternate aux format is initiated by scanning one of the 3 alternate aux format bar codes below. The base will edit the incoming data, formatting the data with the selected alternate aux format, then revert immediately to the primary aux format.



Alternate Aux Data Format 1



Alternate Aux Data Format 2

Alternate Aux Data Format 3

Introduction

Use this section to program parameters for application work groups for the Cordless System.

This programming section contains the following menu selections:

- Output Selections (User Feedback)
- Prefix and Suffix
- Data Formatter

When you set up and connect the Cordless System to your host system, you associate the Cordless Scanner to its Base unit. If you are using more than one Cordless Scanner, you may also set up application work groups. (Instructions for associating more scanners – up to nine – to the Base are on page 1–7.)

Application work groups may be set up in different configurations using the programming selections found in this section of the manual. For example, one group may need the beeper turned off, will only scan Code 39 bar codes, and needs a carriage return suffix added to the data being sent to the host system via the Base. Another group may require that scanner voting be turned on, will scan UPC A, and needs a space added to the transmitted data, between the main UPC bar code data and the five digit addenda.

The Application Work Groups Selection (on the next page) sets up the application work group(s). After you've scanned the association bar code on the Base, scan one of the work group numbers to assign the Cordless Scanner to a specific group. You may then program whatever parameters your application requires from the Output (User Feedback), Prefix and Suffix, and Data Formatter Selections menu pages.

To add a new Cordless Scanner to an established group, associate the scanner to the Base and scan the application work group number. The scanner will operate and send data to the host system according to that group's programmed selections. Any programming selections you change or make with one Cordless Scanner will affect all the scanners in a work group.

Note: *To program a group's parameters, you must first scan the group number and then the programming selections (prefix, suffix, data formatter, etc.). The parameters can't be programmed first and then "made" a group by scanning an application work group number.*

To remove a scanner associated with a Base unit, use the Remove Scanner Selection on page 4–3. For instance, if nine scanners are associated with a Base (the maximum number) and you want to add a new scanner, you will need to remove one scanner from the established work groups. After removing one scanner by using the Remove Scanner programming bar code, add the new scanner by scanning the association bar code on the Base unit.

Output Selections

Application Work Group Selection

This programming selection sets up application work groups sharing specific programming settings (such as Beeper Volume, Scanner Voting, Prefix / Suffix, and Data Formatter). Scan the group number and then program the selections your application requires. (Refer to the introduction, page 4–1, for more information on application work groups.)

✶ Group 0

Group 1

Group 2

Group 3

Group 4

Group 5

Group 6

Group 7

Group 8

Output Selections

Remove Scanner Selection

This programming selection removes a scanner from an associated Base unit.

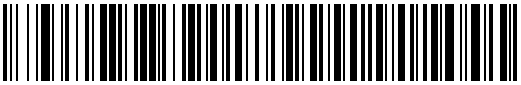
Remove Scanner

Beeper Volume Selection

Off

Low

Medium



✶ High

Note: *Scanning High Volume changes the beeper tone. If the factory default tone is desired, scan the Factory Default Settings bar code on page 2–14.*

Output Selections

Beeper Pitch

You may wish to set your beeper to a higher or lower pitch. This feature is helpful if there are several scanners being used in close proximity. Different pitches make it easier to distinguish which scanner is beeping.

Low

✶ Medium

Medium High

High

Decode Beep Selection

Note: *Decode Beep mode is active only when the programming selections Host ACK (page 3–5) or Data Format Required (page 4–16) are turned on.*

When Host Ack Selection is on, the scanner will only beep/blink in response to the Escape commands generated by the host. Should you also want the scanner to beep when a bar code has been successfully decoded, turn on the Decode Beep Selection.

When Data Format Required is on, the scanner will only beep if the input data conforms to the edited format or triple beep if it does not meet the format requirements. Should you also want the scanner to beep when a bar code has been successfully read and sent to the host from the base, turn on the Decode Beep Selection.

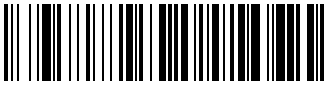
On

✶ Off

Output Selections

Scanner Voting Selection

When Scanner Voting is turned on, the Cordless System requires three (3) identical, consecutive scans before the bar code data will be accepted and transmitted to the terminal. When this selection is turned off, the bar code data will be transmitted following one (1) valid scan. See page 10–7 for the Voting Table.



On

✶ Off

Laser Marker Beam

When this selection is turned on (short or long duration), the Cordless Scanner shows a marker or locator beam before the red scan line opens across a bar code and the scanning process begins. The marker beam, emitted by centering the optical scan mirror, appears as a bright spot of illumination that serves as an aiming guide when bar code targets are at a distance from the scanner.

Note: *Laser Marker Beam works best for long range and high visibility units. If this selection is turned on in standard products, the scan rate is diminished.*

✶ Off

Short Duration (.5 seconds)

Long Duration (1.2 seconds)

Output Selections

AIM I.D. Prefix

This selection allows you to turn on or off the transmission of an AIM I.D. before the decoded symbology. (See the Symbology Chart below for the single AIM character code that identifies each symbology.) When you scan the **On** code, all current prefixes are cleared, then an AIM I.D. for all symbologies is programmed.

On

✶ Off

Code I.D. Prefix

This selection allows you to turn on or off the transmission of a Code I.D. before the decoded symbology. (See the Symbology Chart below for the single character code that identifies each symbology.) When you scan the **On** code, all current prefixes are cleared, then a Code I.D. for all symbologies is programmed.

On

✶ Off

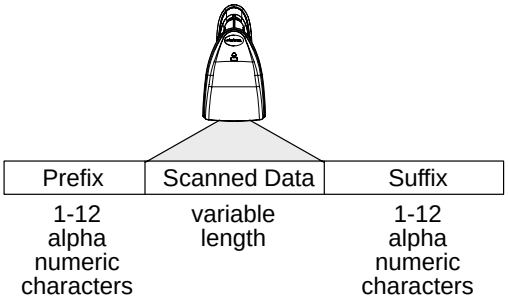
Symbology Chart

Symbology	AIM ID	Code ID	Symbology	AIM ID	Code ID
Codabar	]F0	a	Code 2 of 5	]S0	f
Code 39	]A0	b	Code 11	]H0	h
UPC	]E0	c	Code 93	]G0	i
EAN	]E0	d	Code 128	]C0	j
Interleaved 2 of 5	]I0	e	Matrix 2 of 5	]X0	m
			Telepen	]B0	t

Prefix / Suffix Selections

When a bar code is scanned, additional information is sent to the host computer along with the bar code data. This group of bar code data and additional, user-defined data is called a “message string.” The selections in this section are used to build the user-defined data into the message string.

Prefix and Suffix characters are data characters that can be sent before and after scanned data. You can specify if they should be sent with all symbologies, or only with specific symbologies. The following illustration shows the breakdown of a message string:



Points to Keep In Mind

- It is not necessary to build a message string. The selections in this chapter are only used if you wish to alter the default settings. *Default prefix = None. Default suffix = Carriage Return.*
- A prefix or suffix may be added or cleared from one symbology or all symbologies.
- You can add any prefix or suffix from the ASCII chart (pg. 4–11), plus Code I.D. and Aim I.D.
- You can string together several entries for several symbologies at one time.
- Enter prefixes and suffixes in the order in which you want them to appear on the output.

Prefix / Suffix Selections

To Add a Prefix or Suffix:

STEP 1. Scan the **Add Prefix** (pg. 4–10) or **Add Suffix** symbol (pg. 4–10).

STEP 2. Determine the 2 digit Hex value from the Symbology Chart (pg. 4–11) for the symbology to which you want to apply the prefix or suffix.

STEP 3. Scan the 2 hex digits from the Programming Chart inside the back cover or scan **9**, **9** for all symbologies.

STEP 4. Determine the hex value from the Hex to ASCII Conversion Chart (pg. 4–11) for the prefix or suffix you wish to enter.

STEP 5. Scan the 2 digit hex value from the Programming Chart inside the back cover.

Note: Repeat Steps 4 and 5 for every prefix or suffix character.

STEP 6. Scan **Save** to exit and save, or scan **Discard** to exit without saving.

Repeat Steps 1–6 to add a prefix or suffix for another symbology.

To Clear One or All Prefixes or Suffixes:

You can clear a single prefix or suffix, or clear all prefixes/suffixes for a symbology. When you Clear One Prefix (Suffix), the specific character you select is deleted from the symbology you want. When you Clear All Prefixes (Suffixes), all the prefixes or suffixes for a symbology are deleted.

STEP 1. Scan the **Clear One Prefix** or **Clear One Suffix** symbol.

STEP 2. Determine the 2 digit Hex value from the Symbology Chart (pg. 4–11) for the symbology from which you want to clear the prefix or suffix.

STEP 3. Scan the 2 digit hex value from the Programming Chart inside the back cover or scan **9**, **9** for all symbologies.

STEP 4. Scan **Save** to exit and save, or scan **Discard** to exit without saving.

Prefix / Suffix Selections

Prefix and Suffix Examples

Example 1: Add Suffix for Specific Symbology

To send a CR (carriage return) Suffix for UPC only.

- Scan ***Add Suffix***.
- The Symbology Chart indicates that the Hex value of UPC is “63.” Scan **6** and **3** on the Programming Chart (inside back cover).
- A “CR” is equivalent to “0D” (see the Hex ASCII Chart). Scan **0** and **D** on the Programming Chart.
- Scan ***Save***.

Example 2: Add Suffix for *ALL* Symbologies

To send a CR (carriage return) Suffix for all symbologies.

- Scan ***Add Suffix***.
- The Symbology Chart indicates that the Hex value for All Symbologies is “99”. Scan **9** and **9** on the Programming Chart.
- A “CR” is equivalent to “0D”. Scan **0** and **D** on the Programming Chart.
- Scan ***Save***.

Example 3: Add Prefix for Specific Symbology / Suffix for *ALL* Symbologies

To send an HT (tab) Prefix for UPC only and a CR / LF (carriage return / line feed) Suffix for all symbologies.

- Scan ***Add Prefix***.
- The Symbology Chart indicates that the Hex value of UPC is “63”. Scan **6** and **3** on the Programming Chart.
- An “HT” is equivalent to “09”. Scan **0** and **9** on the Programming Chart.
- Scan ***Add Suffix***.
- The Symbology Chart indicates that the Hex value for All Symbologies is “99”. Scan **9** and **9** on the Programming Chart.
- A “CR” is equivalent to “0D” and an “LF” is “0A”. Scan **0**, **D**, **0**, and **A** on the Programming Chart.
- Scan ***Save***.

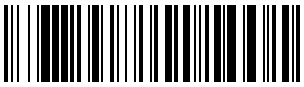
Example 4: To Clear a Specific Prefix Entry

The Cordless System is programmed to send a CR / LF (carriage return / line feed) Prefix for all symbologies (Hex value, 99). This is one Prefix entry. You’ve also programmed a “#” Prefix for UPC (Hex, 63). To clear the UPC entry, but not the Prefix entry for all symbologies.

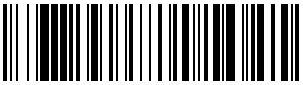
- Scan the ***Clear Specific Prefix*** Prefix Selection bar code.
- The Symbology Chart indicates that the Hex value for UPC is “63”. Scan **6** and **3** on the Programming Chart.
- Scan the ***Save Current Changes*** Exit Selection bar code.

Prefix / Suffix Selections

Prefix Selection



Add Prefix ‡

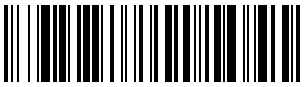


Default Prefix *(none)*

Clear One Prefix ‡

Clear All Prefixes

Suffix Selection



Add Suffix ‡

Default Suffix *(CR)*

Clear One Suffix ‡

Clear All Suffixes

Exit Selection for Prefix / Suffix

Save

Discard

‡ One or more two-digit numbers and Save are required after scanning this programming bar code. Refer to the Programming Chart (inside back cover).

Prefix / Suffix Selections

Symbology Chart

Symbology	AIM ID	Code ID	Hex Value	Symbology	AIM ID	Code ID	Hex Value
Codabar	]F0	a	61	Code 11	]H0	h	68
Code 39	]A0	b	62	Code 93	]G0	i	69
UPC	]E0	c	63	Code 128	]C0	j	6A
EAN	]E0	d	64	Matrix 2 of 5	]X0	m	6D
Interleaved 2 of 5	]I0	e	65	Telepen	]B0	t	74
Code 2 of 5	]S0	f	66	*All Symbologies (Prefix/Suffix Programming **only**.)*			*99*

Hex to ASCII Conversion Chart

ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex
NUL	00	DLE	10	SP	20	0	30	@	40	P	50	‘	60	p	70
SOH	01	DC1	11	!	21	1	31	A	41	Q	51	a	61	q	71
STX	02	DC2	12	”	22	2	32	B	42	R	52	b	62	r	72
ETX	03	DC3	13	#	23	3	33	C	43	S	53	c	63	s	73
EOT	04	DC4	14	$	24	4	34	D	44	T	54	d	64	t	74
ENQ	05	NAK	15	%	25	5	35	E	45	U	55	e	65	u	75
ACK	06	SYN	16	&	26	6	36	F	46	V	56	f	66	v	76
BEL	07	ETB	17	’	27	7	37	G	47	W	57	g	67	w	77
BS	08	CAN	18	(	28	8	38	H	48	X	58	h	68	x	78
HT	09	EM	19	)	29	9	39	I	49	Y	59	i	69	y	79
LF	0A	SUB	1A	*	2A	:	3A	J	4A	Z	5A	j	6A	z	7A
VT	0B	ESC	1B	+	2B	;	3B	K	4B	[	5B	k	6B	{	7B
FF	0C	FS	1C	,	2C	<	3C	L	4C	\	5C	l	6C	|	7C
CR	0D	GS	1D	–	2D	=	3D	M	4D	]	5D	m	6D	}	7D
SO	0E	RS	1E	.	2E	>	3E	N	4E	^	5E	n	6E	~	7E
SI	0F	US	1F	/	2F	?	3F	O	4F	_	5F	o	6F	DEL	7F

Note: *Prefix / Suffix entries for specific symbologies override the universal (All Symbologies, 99) entry.*

Note: *Refer to the Interface Keys in Section 6 for information about keyboard interface keys.*

Data Formatter Selections

Data Format Editor

The Data Format Editor selections are used to edit scanned data. For example, you can use the Data Format Editor to insert characters at certain points in bar code data as it is scanned.

It is not necessary to use the Data Format Editor. A set of defaults for the data format is already programmed in the scanner. The selections in the following pages are used only if you wish to alter the default settings. *Default Data Format setting = none.*

If you have changed data format settings, and wish to clear all formats and return to the defaults, scan the **Default Data Format** code.

To Add a Data Format

STEP 1. Scan the **Enter Data Format** symbol (pg. 4–15).

STEP 2. **Primary/Alternate Format**
Determine if this will be your primary data format, or one of 3 alternate formats. (Alternate formats allow you "single shot" capability to scan one bar code using a different data format. After the one bar code has been read, the scanner reverts to the primary data format. See page 4–17.) If you are programming the primary format, scan **0**. If you are programming an alternate format, scan **1**, **2**, or **3**, depending on the alternate format you are programming.

STEP 3. **Terminal Type**
Refer to the Supported Terminals Chart (page 2–5) and locate the Terminal ID number for your PC. Scan three numeric bar codes on the inside back cover to program the scanner for your terminal ID (you must enter **3** digits). For example, scan **0 0 3** for an AT wedge.

*Note: To apply a format to <u>all</u> terminal types, a universal code of **099** is used.*

STEP 4. **Code I.D.**
On pg. 4–11, find the symbology to which you want to apply the data format. Locate the Hex value for that symbology and scan the 2 digit hex value from the Programming Chart.

STEP 5. **Length**
Specify what length (up to 9999 characters) of data will be acceptable for this symbology. Scan the four digit data length from the Programming Chart. (Note: 50 characters is entered as 0050. 9999 is a universal number, indicating all lengths.)

STEP 6. **Editor Commands**
Refer to the Format Editor Commands (page 4–13). Scan the symbols that represent the command you want to enter. 94 alphanumeric characters may be entered for each symbology data format.

STEP 7. Scan **Save** to save your entries.

Data Formatter Selections

Other Programming Selections

- **Clear One Data Format**
  This deletes one data format for one symbology. If you are clearing the primary format, scan **0**. If you are clearing an alternate format, scan **1**, **2**, or **3**, depending on the alternate format you are clearing. Scan the Terminal Type (refer to the Supported Terminals Chart on page 2–5), Code I.D. and the length of the format you want to delete. That length data format for that symbology is deleted and all other formats are unaffected.
- **Save**
  This exits, saving any Data Format changes.
- **Discard**
  This exits without saving any Data Format changes.

Format Editor Commands

Send Commands

F1 Send all characters followed by "xx" key or function code, starting from current cursor position. ***Syntax = F1xx*** (xx stands for the hex value for an ASCII code, see Hex to ASCII Conversion chart, page 4–11.)

F2 Send "nn" characters followed by "xx" key or function code, starting from current cursor position. ***Syntax = F2nnxx*** (nn stands for the numeric value (00-99) for the number of characters and xx stands for the hex value for an ASCII code. See Hex to ASCII Conversion chart, page 4–11.)

F3 Send up to but not including "ss" character (Search and Send) starting from current cursor position, leaving cursor pointing to "ss" character followed by "xx" key or function code. ***Syntax = F3ssxx*** (ss and xx both stand for the hex values for ASCII codes, see Hex to ASCII Conversion chart, page 4–11.)

F4 Send "xx" character "nn" times (Insert) leaving cursor in current cursor position. ***Syntax = F4xxnn*** (xx stands for the hex value for an ASCII code, see Hex to ASCII Conversion chart, page 4–11, and nn is the numeric value (00-99) for the number of times it should be sent.)

E9 Send all but the last "nn" characters, starting from the current cursor position. ***Syntax = E9nn*** (nn is the numeric value (00-99) for the number of characters that will not be sent at the end of the message.)

Move Commands

F5 Move the cursor ahead "nn" characters from current cursor position. ***Syntax = F5nn*** (nn stands for the numeric value (00-99) for the number of characters the cursor should be moved ahead.)

F6 Move the cursor back "nn" characters from current cursor position. ***Syntax = F6nn*** (nn stands for the numeric value (00-99) for the number of characters the cursor should be moved back.)

F7 Move the cursor to the beginning of the data string. ***Syntax = F7.***

EA Move the cursor to the end of the data string. ***Syntax = EA***

Data Formatter Selections

Search Commands

F8 Search ahead for "xx" character from current cursor position, leaving cursor pointing to "xx" character. ***Syntax = F8xx*** (xx stands for the hex value for an ASCII code, see Hex to ASCII Conversion chart, page 4–11.)

F9 Search back for "xx" character from current cursor position, leaving cursor pointing to "xx" character. ***Syntax = F9xx*** (xx stands for the hex value for an ASCII code, see Hex to ASCII Conversion chart, page 4–11.)

E6 Search ahead for the last instance of "xx" character from the current cursor position, then increment cursor. ***Syntax = E6xx*** (xx stands for the hex value for an ASCII code, see Hex to ASCII Conversion chart, page 4–11.)

E7 Search back for the last instance of "xx" character from the current cursor position, then increment cursor. ***Syntax = E7xx*** (xx stands for the hex value for an ASCII code, see Hex to ASCII Conversion chart, page 4–11.)

Miscellaneous Commands

FB Suppress all occurrences of up to 15 different characters, starting at the current cursor position, as the cursor is advanced by other commands. When the FC command is encountered, the suppress function is terminated. The cursor is not moved by the FB command. **Syntax = FBnnxxyy . .zz** where nn is a count of the number suppress characters in the list and xxyy .. zz is the list of characters to be suppressed. (xx stands for the hex value for an ASCII code, see Hex to ASCII Conversion chart, page 4–11.)

FC Disable suppress filter and clear all suppressed characters. ***Syntax = FC***.

EB Toggles the auxiliary port on and off. This command is used when data is normally transmitted out the main port, and needs to be temporarily sent out the aux port. The first EB in a format string opens the aux port, temporarily re-directing data transmission out the aux port. Send commands (F1, F2, F3, F4) are then used to transmit data. A second EB command closes the aux port and resumes normal data transmission through the main port. ***Syntax = EB***.

E4 Replaces up to 15 characters in the data string with user specified characters. Replacement continues until the E5 command is encountered. ***Syntax = E4nnxx$_1$xx$_2$yy$_1$yy$_2$...zz$_1$zz$_2$*** where nn is the total count of both characters to be replaced plus replacement characters; xx$_1$ defines characters to be replaced and xx$_2$ defines replacement characters, continuing through zz$_1$ and zz$_2$.

E5 Terminates character replacement. ***Syntax = E5***.

FE Compare character in current cursor position to the character "xx." If characters are equal, increment cursor. If characters are not equal, no format match. ***Syntax = FExx*** (xx stands for the hex value for an ASCII code, see Hex to ASCII Conversion chart, page 4–11.)

EC Check to make sure there is a numeric character at the current cursor position. If character is not numeric, format is aborted. ***Syntax = EC***.

ED Check to make sure there is a non-numeric character at the current cursor position. If character is numeric, format is aborted. ***Syntax = ED***.

EF Inserts a delay of up to 49,995 milliseconds (in multiples of 5). ***Syntax = EFnn*** where nn is a count of the number 5 ms delays, up to 9,999.

Data Formatter Selections

Data Format Editor

See pages 4–12 through 4–14 for a description of Data Format selections and commands.

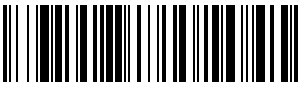
Enter Data Format

Default Data Format

Clear One Data Format

Clear All Data Formats

Save



Discard

Data Formatter Selections

Data Formatter

When Data Formatter is turned off, the bar code data is output to the host as read (including prefixes and suffixes).

✶ Data Formatter On

Data Formatter Off

Require Data Format

When Data Formatter is required, all input data must conform to an edited format or the scanner does not transmit the input data to the host device. If this occurs, the scanner triple beeps and the data is discarded.

Data Format Required

✶ Data Format Not Required

Show Data Formats

Read the Show Data Formats bar code to transmit the existing data formats. One format per line is printed out.

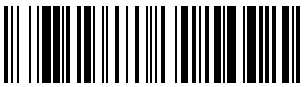
Show Data Formats

Data Formatter Selections

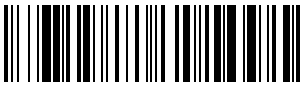
Alternate Data Formats

Alternate formats allow you “single shot” capability to scan one bar code using a different data format than your primary format. When data formats are programmed (see page 4–12), you must input whether you are programming the primary format, or an alternate format numbered 1, 2, or 3.

An alternate format is initiated by scanning one of the 3 alternate format bar codes below. The scanner will scan the next bar code, formatting the data with the selected alternate format, then revert immediately to the primary format.



Alternate Data Format 1



Alternate Data Format 2

Alternate Data Format 3

Introduction

Use this section to program the Cordless System for Industrial and Retail Symbology selections.

This programming section contains the following menu selections:

- Codabar
- Code 39
- Code 93
- Interleaved 2 of 5
- Code 2 of 5
- Matrix 2 of 5
- Code 11
- Code128
- Telepen
- EAN
- UPC

Programming Tip: If a symbology will not be used, we recommend turning it off to maximize the Cordless System's decoding speed.

Industrial Symbology Selections

✶ *Default All Codabar Settings* ✶

Codabar Selection

✶ On

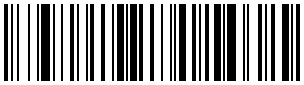
Codabar

Off

Transmit

Start / Stop Characters

✶ Don't Transmit



Minimum ‡

Message Length

Maximum ‡

‡ A two-digit number and Save are required after scanning this programming bar code. Refer to the Programming Chart (inside back cover).

Industrial Symbology Selections

Codabar Selection, *continued*

Validate *Check Character* ✶ Don't Validate

Transmit *Check Character* ✶ Don't Transmit

Concatenation

Codabar supports symbol concatenation. When you turn concatenation on, the reader will look for a Codabar symbol having a "D" start character, adjacent to a symbol having a "D" stop character. In this case the two messages are concatenated into one with the "D" characters omitted.

Select ***Require*** to prevent the reader from decoding a lone Codabar symbol.

✶ On *Concatenation* Off

Require *Concatenation* ✶ Don't Require

Industrial Symbology Selections

✶ *Default All Code 39 Settings* ✶

Code 39 Selection

✶ On

Code 39

Off

Transmit

Start / Stop Characters

✶ Don't Transmit

Minimum ‡

Message Length

Maximum ‡

Validate

Check Character

✶ Don't Validate

Transmit

Check Character

✶ Don't Transmit

‡ A two-digit number and Save are required after scanning this programming bar code. Refer to the Programming Chart (inside back cover).

Industrial Symbology Selections

Code 39 Selection, *continued*

✶ On

Full ASCII

Off

On

Append

✶ Off

FULL ASCII CHART †

NUL	%U	DLE	$P	SP	SPACE	0	0	@	%V	P	P	‘	%W	p	+P
SOH	$A	DC1	$Q	!	/A	1	1	A	A	Q	Q	a	+A	q	+Q
STX	$B	DC2	$R	”	/B	2	2	B	B	R	R	b	+B	r	+R
ETX	$C	DC3	$S	#	/C	3	3	C	C	S	S	c	+C	s	+S
EOT	$D	DC4	$T	$	/D	4	4	D	D	T	T	d	+D	t	+T
ENQ	$E	NAK	$U	%	/E	5	5	E	E	U	U	e	+E	u	+U
ACK	$F	SYN	$V	&	/F	6	6	F	F	V	V	f	+F	v	+V
BEL	$G	ETB	$W	’	/G	7	7	G	G	W	W	g	+G	w	+W
BS	$H	CAN	$X	(	/H	8	8	H	H	X	X	h	+H	x	+X
HT	$I	EM	$Y	)	/I	9	9	I	I	Y	Y	i	+I	y	+Y
LF	$J	SUB	$Z	*	/J	:	/Z	J	J	Z	Z	j	+J	z	+Z
VT	$K	ESC	%A	+	/K	;	%F	K	K	[	%K	k	+K	{	%P
FF	$L	FS	%B	,	/L	<	%G	L	L	\	%L	l	+L	|	%Q
CR	$M	GS	%C	–	–	=	%H	M	M	]	%M	m	+M	}	%R
SO	$N	RS	%D	.	.	>	%I	N	N	^	%N	n	+N	~	%S
SI	$O	US	%E	/	/O	?	%J	O	O	_	%O	o	+O	DEL	%T

† This chart is used for encoding the above characters in Full ASCII when using Code 39 bar codes. For example, to get a “<”, encode %G into the bar code symbol.

Industrial Symbology Selections

✶ *Default All Code 93 Settings* ✶

Code 93 Selection

✶ On

Code 93

Off

Minimum ‡

Message Length

Maximum ‡

‡ A two-digit number and Save are required after scanning this programming bar code. Refer to the Programming Chart (inside back cover).

Industrial Symbology Selections

✶ *Default All Interleaved 2 of 5 Settings* ✶

Interleaved 2 of 5 Selection

✶ On

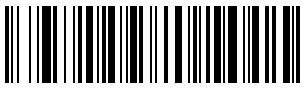
Interleaved 2 of 5

Off

Minimum ‡

Message Length

Maximum ‡



Validate

Check Digit

✶ Don't Validate

Transmit

Check Digit

✶ Don't Transmit

On

Lengths of 6, 14 or 16

✶ Off

‡ A two-digit number and Save are required after scanning this programming bar code. Refer to the Programming Chart (inside back cover).

Industrial Symbology Selections

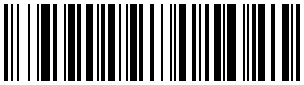
✶ *Default All Code 2 of 5 /Matrix Settings* ✶

Code 2 of 5 Selection

✶ On

Code 2 of 5

Off



Minimum ‡

Message Length

Maximum ‡

Matrix 2 of 5 Selection

✶ On

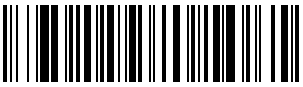
Matrix 2 of 5

Off

Minimum ‡

Message Length

Maximum ‡



‡ A two-digit number and Save are required after scanning this programming bar code. Refer to the Programming Chart (inside back cover).

Industrial Symbology Selections

✶ *Default All Code 11 / Code 128 Settings* ✶

Code 11 Selection

✶ On

Code 11

Off

✶ 2 Check Digits

Check Digits Required

1 Check Digit

Minimum ‡

Message Length

Maximum ‡

‡ A two-digit number and Save are required after scanning this programming bar code. Refer to the Programming Chart (inside back cover).

Industrial Symbology Selections

Code 128 Selection

✶ On

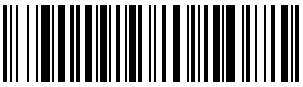
Code 128

Off

Minimum ‡

Message Length

Maximum ‡



Code 128 with the FNC1 character in the first position. Currently called UCC/EAN–128, it is also known as EAN–128 but may change to EAN.UCC–128 at some time in the future.

On

UCC/ EAN–128

✶ Off

Industrial Symbology Selections

✶ *Default All Telepen Settings* ✶

Telepen Selection

✶ On

Telepen

Off

Minimum ‡

Message Length

Maximum ‡

Telepen has two modes of output: Alphanumeric or Numeric Only. Alphanumeric output complies with AIM guidelines, while Numeric Only is the older, non–compliant version of Telepen symbology.

Alphanumeric

Telepen Output

✶ Numeric Only

‡ A two-digit number and Save are required after scanning this programming bar code. Refer to the Programming Chart (inside back cover).

Retail Symbology Selections

✶ *Default All EAN / JAN 8 Settings* ✶

✶ *Default All EAN / JAN 13 Settings* ✶

EAN / JAN 8 / 13 Selection

✶ On

EAN / JAN 8

Off

✶ On

EAN / JAN 13

Off

✶ Transmit

Check Digit

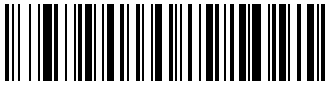
Don't Transmit

This symbology allows the scanner to read ISBN codes on books.

On

ISBN

✶ Off



Retail Symbology Selections

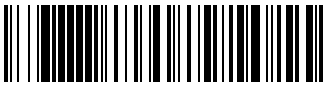
✶ *Default All UPC A Settings* ✶

UPC A Selection

✶ On

UPC A

Off



✶ Transmit

Check Digit

Don't Transmit

✶ Transmit

Number System

Don't Transmit

Retail Symbology Selections

✶ *Default All UPC E0 Settings* ✶

UPC E0 Selection

✶ On

UPC E0

Off

✶ Transmit

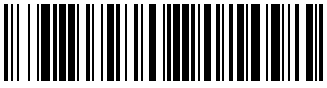
Check Digit

Don't Transmit

✶ Transmit

Number System

Don't Transmit



Expand

Version E Expand

✶ Don't Expand

UPC E1 Selection

On

UPC E1

✶ Off

Retail Symbology Selections

EAN / UPC Addenda Selection

Require

EAN/UPC Addenda

✶ Don't Require

EAN Addenda Selection

On

Two Digit Addenda

✶ Off

On

Five Digit Addenda

✶ Off

UPC Addenda Selection

On

Two Digit Addenda

✶ Off

On

Five Digit Addenda

✶ Off

Keyboard Function Relationships

The following Keyboard Function Code, Hex/ASCII Value, and Full ASCII "CTRL"+ relationships apply to all terminals that can be used with the Cordless System.

Function Code	HEX/ASCII Value	Full ASCII "CTRL" +
NUL	00	2
SOH	01	A
STX	02	B
ETX	03	C
EOT	04	D
ENQ	05	E
ACK	06	F
BEL	07	G
BS	08	H
HT	09	I
LF	0A	J
VT	0B	K
FF	0C	L
CR	0D	M
SO	0E	N
SI	0F	O
DLE	10	P
DC1	11	Q
DC2	12	R
DC3	13	S
DC4	14	T
NAK	15	U
SYN	16	V
ETB	17	W
CAN	18	X
EM	19	Y
SUB	1A	Z
ESC	1B	[
FS	1C	\
GS	1D	]
RS	1E	6
US	1F	-

The last five characters in the Full ASCII "CTRL"+ column ([\ ] 6 -), apply to US only. The following chart indicates the equivalents of these five characters for different countries.

Country	Codes				
United States	[	\	]	6	-
Belgium	[	<	]	6	-
Scandinavia	8	<	9	6	-
France	^	8	$	6	=
Germany		Ã	+	6	-
Italy		\	+	6	-
Swiss		<	¨	6	-
United Kingdom	[	´	]	6	-
Denmark	8	\	9	6	-
Norway	8	\	9	6	-
Spain	[	\	]	6	-

Interface Keys

Supported Interface Keys

Supported Interface Keys		IBM, Telex (102)*	Telex (88)**	WYSE 85/185 DEC VT
NUL	00	Reserved	Reserved	Reserved
SOH	01	Enter	Enter	Enter
STX	02	F11	PF10	PF1
ETX	03	F12	PF11	PF2
EOT	04	F13	PF12	PF3
ENQ	05	F14	Reserved	PF11
ACK	06	F15	Reserved	PF12
BEL	07	New Line	New Line	New Line
BS	08	F16	Field Forward	PF4
HT	09	F17	Field Forward	TAB
LF	0A	F18	Reserved	F13
VT	0B	Tab/Field Forward	Field Forward	F14
FF	0C	Delete	Delete	Remove
CR	0D	Field Exit	New Line	New Line
SO	0E	Insert	Insert	Insert Here
SI	0F	Clear	Erase	Cursor Up
DLE	10	Error Reset	Error Reset	Cursor Left
DC1	11	Home	Reserved	Cursor Down
DC2	12	Print	Print	Cursor Right
DC3	13	Back Space	Back Space	Delete
DC4	14	Back Tab	Back Field	Print
NAK	15	F19	Reserved	F15
SYN	16	F1	PF1	F1
ETB	17	F2	PF2	F2
CAN	18	F3	PF3	F3
EM	19	F4	PF4	F4
SUB	1A	F5	PF5	F5
ESC	1B	F6	PF6	F6
FS	1C	F7	PF7	F7
GS	1D	F8	PF8	F8
RS	1E	F9	PF9	F9
US	1F	F10	Home	F10

* Terminal IDs 06, 07, and 08, Telex (all models) with 102 key keyboards

** Memorex Telex with 88 key keyboards

*** DEC VT 220/320/340/420

Interface Keys

Supported Interface Keys

Supported Interface Keys		IBM, Telex (102)*	Telex (88)**	WYSE 85/185 DEC VT*
NUL	00	Reserved	Reserved	Reserved
SOH	01	Enter	Enter	Enter
STX	02	F11	PF10	PF1
ETX	03	F12	PF11	PF2
EOT	04	F13	PF12	PF3
ENQ	05	F14	Reserved	PF11
ACK	06	F15	Reserved	PF12
BEL	07	New Line	New Line	New Line
BS	08	F16	Field Forward	PF4
HT	09	F17	Field Forward	TAB
LF	0A	F18	Reserved	F13
VT	0B	Tab/Field Forward	Field Forward	F14
FF	0C	Delete	Delete	Remove
CR	0D	Field Exit	New Line	New Line
SO	0E	Insert	Insert	Insert Here
SI	0F	Clear	Erase	Cursor Up
DLE	10	Error Reset	Error Reset	Cursor Left
DC1	11	Home	Reserved	Cursor Down
DC2	12	Print	Print	Cursor Right
DC3	13	Back Space	Back Space	Delete
DC4	14	Back Tab	Back Field	Print
NAK	15	F19	Reserved	F15
SYN	16	F1	PF1	F1
ETB	17	F2	PF2	F2
CAN	18	F3	PF3	F3
EM	19	F4	PF4	F4
SUB	1A	F5	PF5	F5
ESC	1B	F6	PF6	F6
FS	1C	F7	PF7	F7
GS	1D	F8	PF8	F8
RS	1E	F9	PF9	F9
US	1F	F10	Home	F10

* Terminal IDs 06, 07, 08, and Telex (all models) with 102 key keyboards

** Memorex Telex with 88 key keyboards

*** DEC VT 220/320/340/420

Interface Keys

Supported Interface Keys

Supported Interface Keys		Esprit 200, 400 ANSI	Esprit 200, 400 ASCII	Esprit 200, 400 PC
NUL	00	Reserved	Reserved	Reserved
SOH	01	New Line	New Line	New Line
STX	02	N/A	N/A	N/A
ETX	03	N/A	N/A	N/A
EOT	04	N/A	N/A	N/A
ENQ	05	N/A	N/A	N/A
ACK	06	N/A	N/A	N/A
BEL	07	New Line	New Line	New Line
BS	08	N/A	N/A	N/A
HT	09	Tab	Tab	Tab
LF	0A	N/A	N/A	N/A
VT	0B	Tab	Tab	Tab
FF	0C	N/A	N/A	Delete
CR	0D	New Line	New Line	New Line
SO	0E	N/A	N/A	Insert
SI	0F	Escape	Escape	Escape
DLE	10	F11	F11	F11
DC1	11	Insert	Insert	Home
DC2	12	F13	F13	Print
DC3	13	Back Space	Back Space	Back Space
DC4	14	Back Tab	Back Tab	Back Tab
NAK	15	F12	F12	F12
SYN	16	F1	F1	F1
ETB	17	F2	F2	F2
CAN	18	F3	F3	F3
EM	19	F4	F4	F4
SUB	1A	F5	F5	F5
ESC	1B	F6	F6	F6
FS	1C	F7	F7	F7
GS	1D	F8	F8	F8
RS	1E	F9	F9	F9
US	1F	F10	F10	F10

Interface Keys

Supported Interface Keys

Supported Interface Keys		Bull BDS–7 (Honeywell HDS–7)	WYSE WY–60/150	WYSE WY–30
NUL	00	Reserved	Reserved	Reserved
SOH	01	Transmit	New Line	Enter
STX	02	Reserved	Insert/PF1	Reserved
ETX	03	Reserved	Delete/PF2	Reserved
EOT	04	Reserved	Clear/PF3	Reserved
ENQ	05	Backtab	F11	Reserved
ACK	06	Reserved	F12	Reserved
BEL	07	Carriage Return	New Line	Return
BS	08	Back Space	Replace/PF4	Reserved
HT	09	Tab	Tab Forward	Tab
LF	0A	F11	F13	Line Feed
VT	0B	F12	F14	Reserved
FF	0C	Delete Character	F15	Reserved
CR	0D	Carriage Return	New Line	Carriage Return
SO	0E	Insert	Insert	Reserved
SI	0F	Clear	Cursor Up	Cursor Up
DLE	10	Error Reset	Cursor Left	Cursor Left
DC1	11	Home	Cursor Down	Cursor Down
DC2	12	Delete Line	Cursor Right	Cursor Right
DC3	13	Erase EOP	Backspace	Backspace
DC4	14	Erase EOF	Print	Reserved
NAK	15	Insert Line	F16	Reserved
SYN	16	F1	F1	F1
ETB	17	F2	F2	F2
CAN	18	F3	F3	F3
EM	19	F4	F4	F4
SUB	1A	F5	F5	F5 (CRTL F1)
ESC	1B	F6	F6	F6 (CRTL F2)
FS	1C	F7	F7	F7 (CRTL F3)
GS	1D	F8	F8	F8 (CRTL F4)
RS	1E	F9	F9	F9 (SHIFT F2)
US	1F	F10	F10	F10 (SHIFT F3)

9745 Cordless Base Product Specifications

Parameter	*Specification*
Dimensions Height Width Length	 1.4 inches (3.6 cm) 4.0 inches (10.2 cm) 4.5 inches (11.5 cm)
Weight	7.25 ounces (206 g) without cable
LED Indicators	One
Beeper	None
Operating Voltage	+4.0 to 14.0 VDC
Power Consumption Standard Mode Low Power Mode	 285 mA (typical) @ 5 VDC 140 mA (typical) @ 5 VDC
Noise Immunity	100 mV peak to peak
Temperature Ranges	Operating: –4° F to +122° F (–20° C to +50° C) Storage: –40° F to +158° F (–40° C to +70° C)
Humidity	0 to 95% relative humidity (non-condensing)
Housing Material	GE Cycloloy C2800 or C2950 Standard Flow
Sealing	IP 53 (Water and Dust Resistant)
Mechanical Shock	26 drops from 4 feet (1.2 m) to concrete
ESD Sensitivity	15 kV to any external surface
Reliability	MTBF = 50,000 hours (ground benign)

Radio Specifications

Parameter	*Specification*
Frequency	2.400 to 2.4835 Ghz (ISM Band) Frequency Hopping Carrier
Data Rates	1 Mbps
Response Time Standard Mode Low Power Mode	 10 mS typical 65 mS typical

Specifications

1552 Cordless Laser Scanner Product Specifications

Parameter	*Specification*
Dimensions Height Width Length	 8.3 inches (21 cm) (with battery) 3.1 inches (7.8 cm) 4.7 inches (11.9 cm)
Weight	18 ounces (510 g) with battery pack
Light Source	630 to 660 nm Visible Red Light Emitting Diodes (LED)
Print Contrast	Minimum Reflective Difference = 37.5%
Scan Rate	113 scans per second (CCD scan engine)
LED Indicators	Two
Beeper	Volume and tone programmable
Skew Angle	±30 degrees from perpendicular
Pitch Angle	±7 degrees left/right from perpendicular
Operating Voltage	+4.3 to 6.0 VDC
Power Consumption	Operating: 400 mA (maximum) @ 4.8 VDC 210 mA (typical) while scanning Standby: 12 mA Battery Conservation Mode: 4 mA
Ambient Light	Total darkness to 100,000 Lux (sunlight)
Noise Immunity	100 mV peak to peak
Temperature Ranges	Operating: +32° F to +122° F (–0° C to +50° C) Storage: –22° F to +158° F (–30° C to +70° C)
Humidity	5 to 95% relative humidity (non-condensing)
Altitude	Sea level to 9,900 feet (3000 meters)
Housing Material	GE Cycloloy C2800 or C2950 Standard Flow
Sealing	IP 54 (Water and Dust Resistant)
Mechanical Shock	26 drops from 6 feet (1.8 m) to concrete
ESD Sensitivity	15 kV to any external surface

Specifications

Battery Specifications

The battery packs are designed with integrated charging circuitry to allow them to be plugged directly into any common 120 Volt outlet †. Battery packs have an LED indicator to signal charging and fully-charged conditions. In order to break in the new battery, we suggest that you fully charge and discharge the packs approximately two to four times so they can reach their full-rated capacity.

Parameter	***Specification***	
NiMH (Nickel Metal Hydride)	**120 Volt/60 hz**	**240 Volt**
Capacity	1200 mAh	1200 mAh
Number of Scans (between charges)	14,000	14,000
Expected Hours of Operation ‡	20 Hours	20 Hours
Charge Time for 800 mA/h	4 Hours	4 Hours
Battery Charging (Input) Voltage	85 to 264 VAC @ 47 to 63 hz	

† North America ***only***. All other countries require a Charge Strip (available as an accessory).

‡ Usage Model = one (1) scan every five (5) seconds (fully charged).

Battery Pack: Recommended Storage [1]

Storage Time	***Storage Temperature***
Up to a month	–20° C to 55° C (–4° F to 131° F)
Up to 3 months	–20° C to 45° C (–4° F to 113° F)
Up to a year	–20° C to 35° C (–4° F to 95° F)
Longer than a year	+10° C to 25° C (50° F to 77° F)

[1] When storing a battery pack for longer than 6 months, recharge at least once a year (once every 6 months if possible) to prevent self-discharge from causing a drop in battery performance, or electrolyte leakage.

Specifications

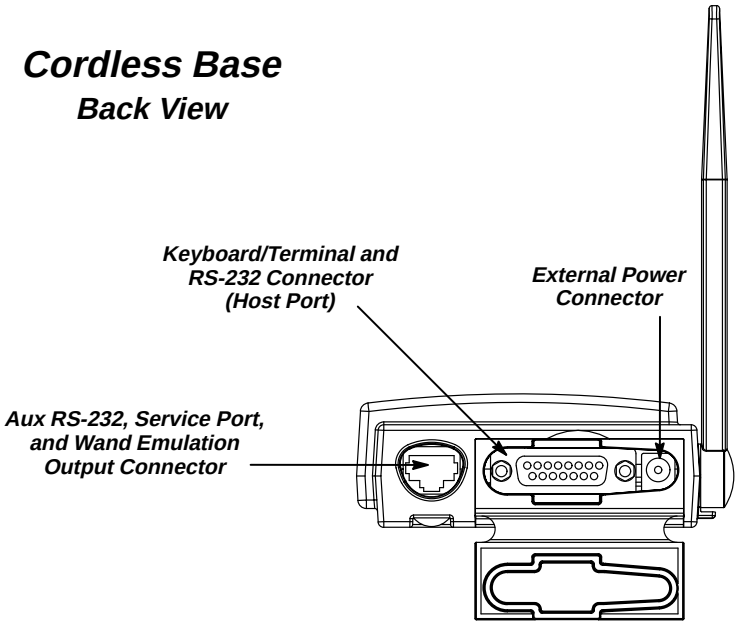
Regulatory and Safety Agency Approvals

Parameter	*Specification*
Electromagnetic Emissions/Immunity	
U.S.A.	FCC Part 15, Class B – Verified
Canada	SOR 88/475, Class B – Verified
Europe	EN 55022 (CISPR22) Class B EN 61000–3–2 & –3 ETS 300 826 Type Certified
Others:	EMC 89/336/EEC EN 50082–1:1992 IEC 801–2:1991 IEC 801–3:1984 IEC 801–4:1988
Safety	
U.S.A.	UL Listed, C22.2 No. 950 / UL 1950
Australia	conforms to AS/NZS N344
Canada	3548cUL Listed
Europe	TÜV Rheinland GS Licensed, EN 60950 (IEC 950) (Scanner and Base only – not on battery)
Mexico	NYCE Certified, NOM 19
RF Approvals	
U.S.A.	FCC Part 15.249 Certified
Australia	C–TIC
Canada	RSS 210 Certified
Europe	ETS 300 328 Certified
Mexico	NOM–EM–121–SCT1–1994 Certified
Singapore	Type Approval for Spread Spectrum System

Connectors & Pinouts

Cordless Base

Back View

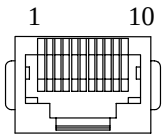


Auxiliary RS-232 / Wand Emulation Connector

The auxiliary RS-232 / scanner connector supports wand emulation or the attachment of an RS-232 input device. The Aux port is compatible with all Intermec contact and non-contact bar code scanners, including bar code contact wands, lasers, and CCDs which operate in RS-232 (both TTL and True).

Aux RS-232 Connector: 10 Pin Modular Receptacle

Pin	Signal Name	Description
1	GND	Power/Signal Ground
2	TXD	Transmit Data (output)
3	RXD	Receive Data (input)
4	RTS	Request to Send (output)
5	CTS	Clear to Send (input)
6	VCC	5 Volt DC Power Out
7	WANDEM	TTL Wand Data (output)
8	VIN AUX	Power into Aux
9	VIN FLASH	12V Flash Radio (input)
10	N/C	No connection



Communication Parameters
For Aux RS-232 Port

Start Bit	1
Data Bits	7 or 8
Stop Bits	1 or 2
Parity	None, Mark, Space, Odd, or Even
Baud Rate	300, 600, 1200, 2400, 4800, 9600, 19200, 38400

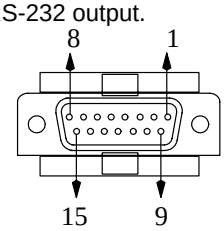
Wand Emulation Mode

When the Base is configured for wand emulation, the Aux port will output wandem data on Pin 7 at the selected rates/polarity described on page 2–11 or in the Plug and Play section on page 2–2.

Connectors & Pinouts

Keyboard / Terminal and RS-232 (Host Port) Connector

The cordless Base can output data to keyboard wedge terminals, CRT terminals, and personal computers. The Base also provides direct RS-232 output.



Terminal selection may be programmed using Section 1, the “Plug and Play” or Terminal Interface Selections. Output data can be configured for your application by using the System Manual, Sections 2 through 4 (Output Parameters, General Operating, and Symbology Menus).

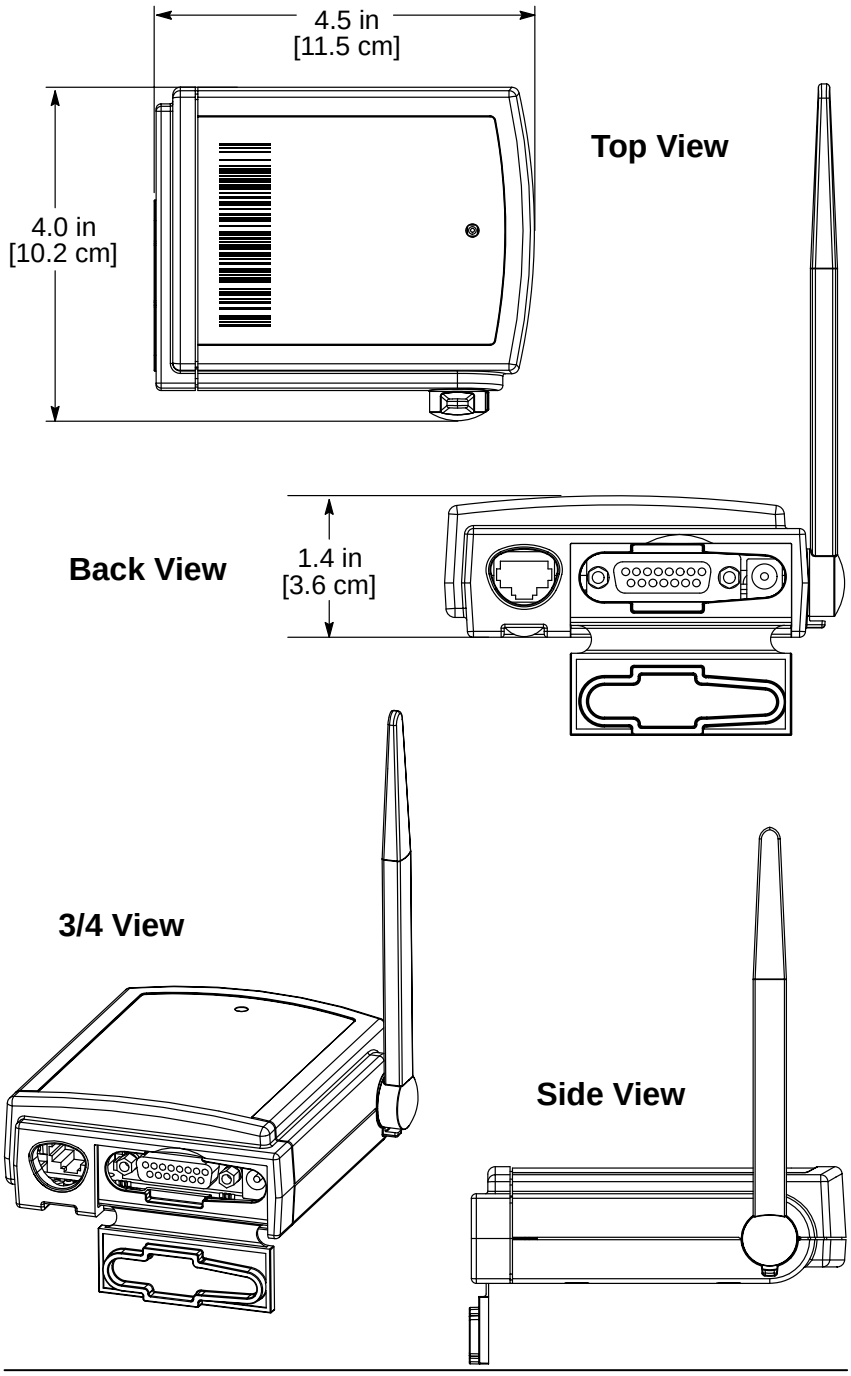
Keyboard / Terminal and RS-232 (Host Port) Connector: DB–15 Pin Female

Pin	Signal Name	Description
1	GND	Power/Signal Ground
2	VCC	5 Volt DC Power Out
3	RXD	RS-232 Receive Data (input)
4	CTS	RS-232 Clear to Send (input)
5	KDATA	Keyboard Data from Keyboard
6	KCLK	Keyboard Clock from Keyboard
7	Key Press	WYSE
8	RX/TX	IBM 4683
9	VIN	High Voltage Power (input, maximum = 14 VDC)
10	BSTRAP	MCU Bootstrap Mode Startup Signal (input)
11	TXD	RS-232 Transmit Data (output)
12	RTS	RS-232 Request to Send (output)
13	TDATA	Keyboard Data to Terminal
14	TCLK	Keyboard Clock to Terminal
15	RX*/TX*	IBM 4683

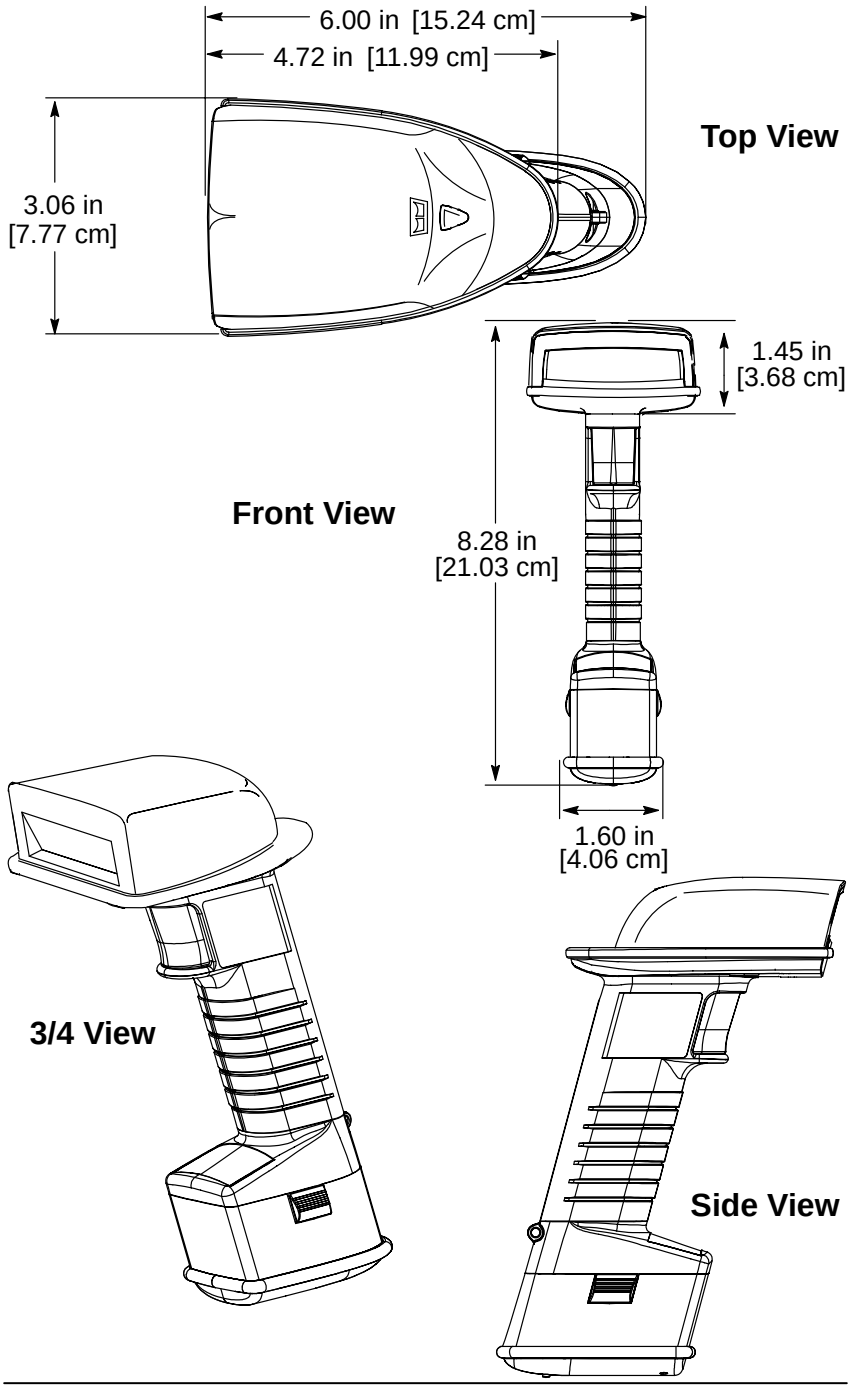
External Power Connector

DC power to the cordless Base can come from an external power supply or from the terminal to which the Base is connected. External power is provided through a two-position barrel-type connector on the Base’s back panel. The input voltage range is 4 VDC to 14 VDC and the schematic diagram is shown below.

Cordless Base Dimensions

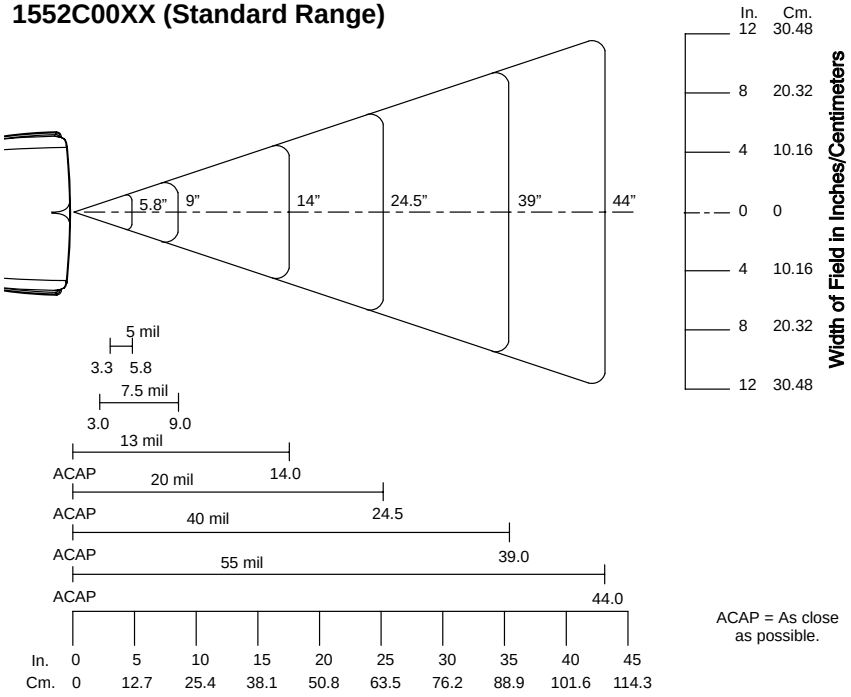


Cordless Scanner Dimensions



Scan Maps

Typical Performance at 20°C for 1552C00XX (Standard Range)

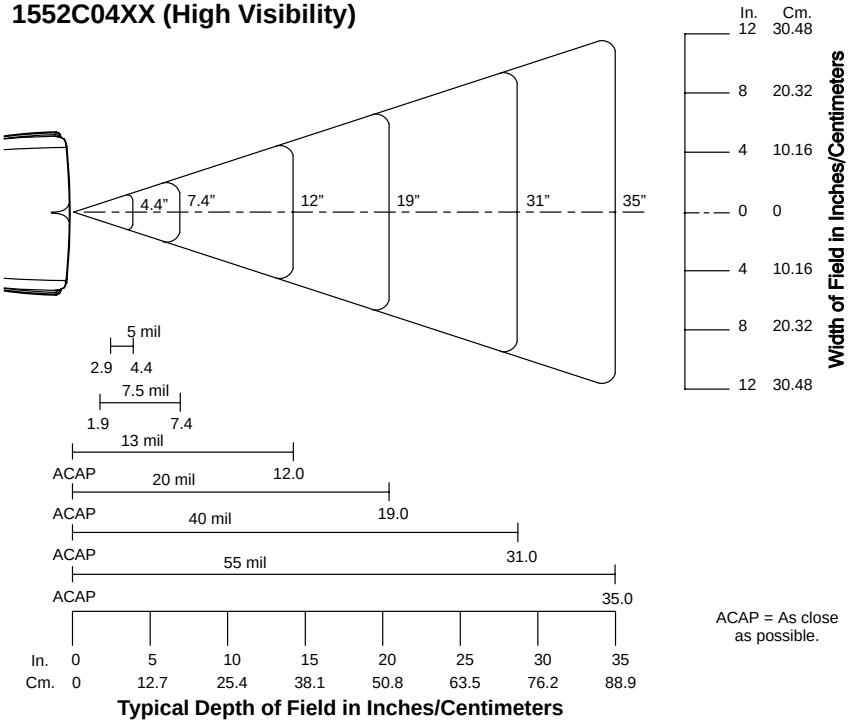


ACAP = As close as possible.

Typical Depth of Field in Inches/Centimeters

Scan Maps

Typical Performance at 20°C for 1552C04XX (High Visibility)

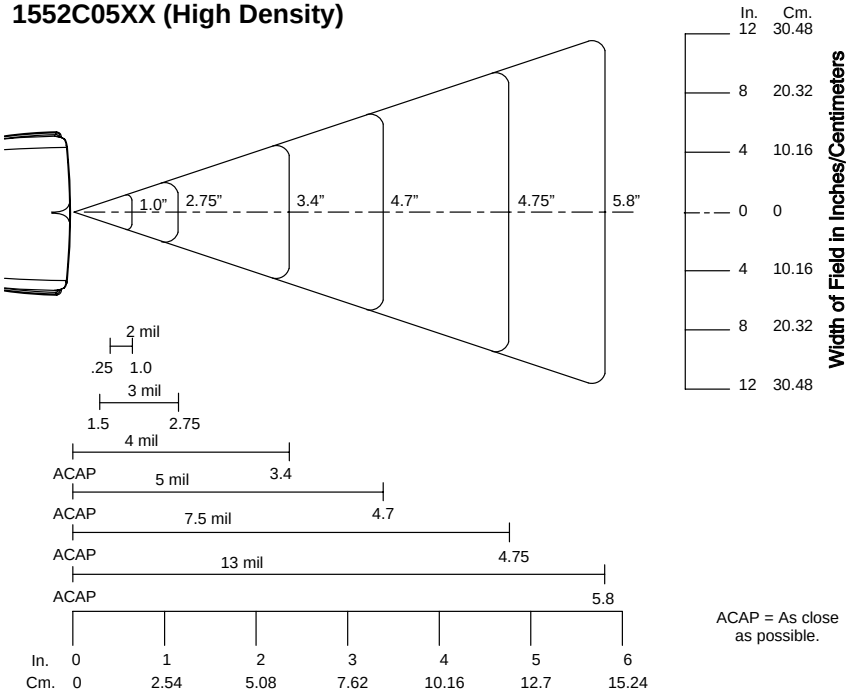


Typical Depth of Field in Inches/Centimeters

ACAP = As close as possible.

Scan Maps

Typical Performance at 20°C for 1552C05XX (High Density)

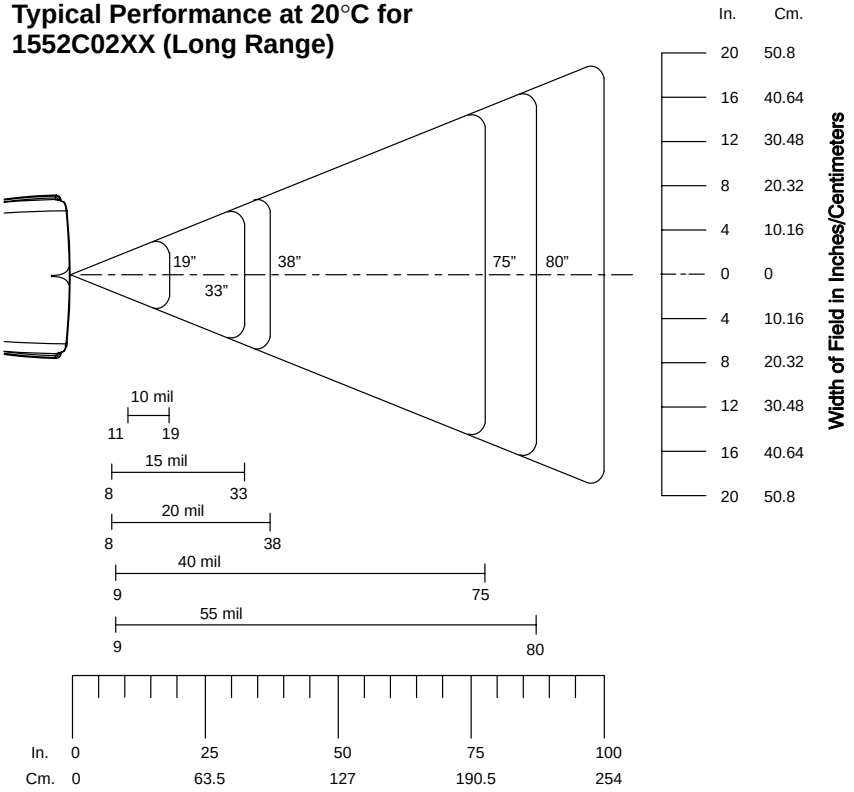


ACAP = As close as possible.

Typical Depth of Field in Inches/Centimeters

Scan Maps

Typical Performance at 20°C for 1552C02XX (Long Range)



Typical Depth of Field in Inches/Centimeters

Two additional depth of field measurements, using special reflective bar code targets, are shown below:

Target X Dimension	*Near Distance*	*Far Distance*
70-mil reflective	68 inches (172.7 cm)	13.4 feet (4.08 m)
100-mil reflective	82 inches (208.3 cm)	17.4 feet (5.30 m)

Maintenance

The Cordless Scanning System provides reliable and efficient operation with a minimum of care. Although specific maintenance is not required, the following periodic checks ensure dependable operation:

Cleaning the Scan Window of the Cordless Scanner

Scanning performance may degrade if the Cordless Scanner's scan window is not clean. If the window is visibly dirty, or if the scanner isn't scanning well, clean the scan window with a soft cloth or facial tissue dampened with water (or a mild detergent– water solution). If a detergent solution is used, rinse with a clean tissue dampened with water only.

The Cordless Scanner and Base housings may also be cleaned the same way.

Inspecting Cords and Connectors

Inspect the Cordless Base's interface cable and connector for wear or other signs of damage. A badly worn cable or damaged connector may interfere with operation. Contact your Intermec sales representative for information about cable replacement.

Examining the Cordless Scanner and Cordless Base Housings

Routinely examine the Cordless Scanner and Cordless Base housings for signs of damage. A damaged housing may cause the internal components to move and may result in a malfunctioning unit.

Care and Handling of the Battery Pack

Proper handling of the batteries while recharging extends the useful life of the batteries. New battery packs are shipped uncharged. In order to break in the new battery, we suggest that you fully charge and discharge the packs approximately two to four times so they can reach their full rated capacity.

If the battery pack is left plugged in for extended periods of time (for instance, several weeks) the contacts between the prongs may become dirty, causing charging problems. Clean the prongs with a cotton swab and rubbing alcohol to remove any accumulation of dirt.

Warning:

Do not submerge the Cordless Scanner or the Cordless Base in water. Their housings are not water–tight.

Do not use abrasive wipers or tissues on the scan window: abrasive wipers may scratch the window.

Never use solvents (alcohol or acetone) on the housings or the window: solvents may damage the finish or the window.

Do not open the Cordless Scanner or the Cordless Base. There are no serviceable parts inside.

Maintenance & Troubleshooting

Replacing the Interface Cable

The standard host interface cable is attached to the Cordless Base with a 15–pin D–type receptacle connector. Tighten the holding screws to properly seat the interface connector. The cable is designed to be field replaceable.

Auxiliary Port cables use a 10-position modular plug. To remove the Aux Port cable, depress the dimple located on the bottom of the Base unit underneath the Aux Port and pull the cable from the unit.

Notes:

- Order replacement cables from Intermec or from an authorized distributor.
- When ordering a replacement cable, specify the cable part number of the original interface cable.

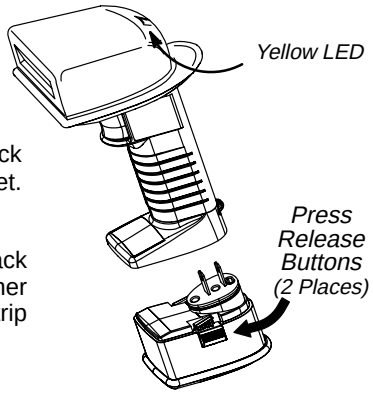
Recharging and Replacing the Cordless Scanner's Battery Pack

When the battery pack needs to be recharged, follow the instructions below to recharge and replace the Cordless Scanner battery pack.

❶ Detach the battery pack from the bottom of the Cordless Scanner (*see Figure at right*).

❷ In North America, plug the battery pack directly into any common 120 Volt outlet.

❸ To charge more than one battery pack (or to charge the pack for all other countries), use the Charge Strip (available as an accessory).



The LED on the bottom of the battery pack is red when the unit is charging; it is green when it is fully charged and ready to use. (*See Battery Pack Specifications, page 7–3 for charging time and expected hours of operation.*)

❹ After the battery pack is fully charged, attach to the Cordless Scanner by pressing the pack firmly (align the prongs on the pack with the mating receptacles) in the base of the scanner until the release buttons click, holding the pack firmly in place.

❺ If the scanner wasn't previously associated to a base, scan the Association Bar Code on the top of the Base. If the scanner was previously associated to a base, it will automatically re-associate. (The association process takes about ten seconds.)

Maintenance & Troubleshooting

To Reset Factory Settings

If you are unsure of the programming options that have been set up in your Cordless System, want the factory settings restored, refer to Main Menu Selections in Section 2 and scan the ***Factory Default Settings*** bar code.

Troubleshooting

The Cordless System automatically performs self-tests whenever you turn it on. If your Cordless Scanner or Cordless Base is not functioning properly, review the following Troubleshooting Guide to isolate the problem.

Troubleshooting Guide

Is the power on? Is the Scanner's red illuminated beam on?

If the red scan beam on the Cordless Scanner isn't illuminated, check that:

❶ the battery pack is connected properly to the Cordless Scanner.

❷ the battery pack is not low on power (check the low battery LED). If there is no LED, try charging the battery pack.

Is the Cordless System having trouble reading your bar codes?

If the Cordless System isn't reading bar codes well, check that the:

❶ bar codes aren't smeared, rough, scratched, or exhibiting voids.

❷ bar codes aren't coated with frost or water droplets on the surface.

❸ bar codes are enabled (*see Section 5, Symbology Menu*).

❹ Cordless Scanner window is clean.

If the scanner is triple beeping and you are in range, reset the scanner by pulling the battery pack and reinserting it into the scanner base. Wait for the re-association beep before scanning.

Is the bar code displayed but not "entered"?

The bar code is displayed on the host device correctly, but you still have to press a key to enter it (*the Enter/Return key or the Tab key, for example*).

You need to program a suffix.

Programming a suffix enables the Cordless System to output the scanned bar code *plus* the key you need (such as a "CR," carriage return) to enter the bar code into your application. (*See Suffix Selection in Section 4, Application Work Group Menu.*)

Maintenance & Troubleshooting

Does the Cordless System read your bar code incorrectly?

If the Cordless System reads a bar code (*one beep for a good read*), but the bar code is not displayed correctly on the host screen:

❶ The Cordless System may not be programmed for the appropriate terminal interface.

Example: *You scan "12345" and the host displays "@es%."*

Reprogram the Cordless System with the correct "Plug and Play" or Terminal Selection bar code (*see Section* 1).

❷ The Cordless System may not be programmed to output your bar code properly.

Example: *You scan "12345" and the host displays "A12345B."*

Reprogram the Cordless System with the proper Symbology selections (*see Section 5, Symbology Menu*).

The Cordless System won't read your bar code at all?

If the Cordless System will not read your bar code:

❶ Try scanning the Sample Bar Codes (*found on the back cover of the System Manual*).

If the Cordless System reads the Sample Bar Codes, check that your bar code is readable. (*See "Is the Cordless System having trouble reading your bar codes" on the previous page.*)

Verify that your bar code symbology is enabled. (*See Sections 5, Symbology Menu.*)

If the Cordless System does not read the Sample Bar Codes either, continue to #2, below...

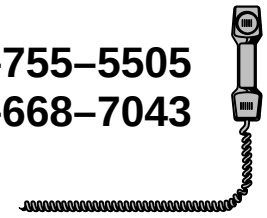
❷ If the Cordless System won't read the Sample Bar Codes either:

Verify that the bar code symbologies are enabled. (*See Sections 5, Symbology Menu.*)

Scan the "Default All... " bar code on each symbology menu page in Section 5 to enable most symbologies.

Technical Support

USA 1–800–755–5505
CANADA 1–800–668–7043



Limited Warranty

Intermec Technologies Corporation hereby warrants its products to be functional and free from manufacturing defects at the time of delivery. Intermec further warrants that it will replace or repair, at its option, any unit that fails to perform according to Intermec's published specifications during a specified duration (see chart below) from the time of shipment by Intermec to the user at the time it is purchased from any of Intermec's Authorized Distributors. Any attempt on the part of the user to disassemble or service the equipment shall void the warranty.

The warranty does not apply to product which have been damaged by improper handling, shipping, or misuse. The warranty does not apply, if, in the sole opinion of Intermec Technologies Corporation, the unit has been damaged by accident, misuse, neglect, improper shipping and handling. Since the unit is sensitive to static, the responsibility to protect it from static damage is solely that of the user. The warranty is valid only if the unit has not been tampered with or serviced by any party unauthorized by Intermec as a repair facility.

THE WARRANTIES SET FORTH HEREIN ARE IN LIEU OF ANY AND ALL OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE BUYER ACKNOWLEDGES THAT NO OTHER REPRESENTATIONS WERE MADE OR RELIED UPON WITH RESPECT TO THE QUALITY AND FUNCTION OF THE CORDLESS SYSTEM HEREIN SOLD.

In no event shall Intermec Technologies Corporation or its resellers be liable for any loss, inconvenience or damage whether direct, incidental, consequential or otherwise, and whether caused by negligence or other fault resulting from the breach of any express warranty except as set forth herein. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state or country to country.

Limited Warranty Durations

Cordless Laser Scanner	Cordless Base Unit	Battery
3 Years	3 Years	1 Year

Default Chart

Quick Start and Interface Menu Defaults

The following chart lists the factory default Quick Start and Interface Menu settings (indicated by a "✶" on the programming menu pages).

Parameter Name	*Default Setting*	*Page Reference*
Country Code Selections		
Keyboard Country	United States	Page 2–7
Keyboard & Delays Selections		
Keyboard Style	Regular	Page 2–8
Keyboard Style Modifiers	Control + ASCII Mode Off Turbo Mode Off Numeric Keypad Mode Off Auto Direct Connect Off	Page 2–9 Page 2–9 Page 2–9 Page 2–9
Output Delays Intercharacter Delay	00 (x5 mS)	Page 2–10
Interfunction Delay	00 (x5 mS)	Page 2–10
Intermessage Delay	00 (x5 mS)	Page 2–10
Wand Emulation Selections		
Transmission Rate	25 ips	Page 2–11
Output Polarity	Black High	Page 2–11
Power Settings		
Base Low Power Mode	Off	Page 2–12
Battery Conservation Mode	No Timeout	Page 2–12

Communications Menu Defaults

The following chart lists the factory default Communications Menu settings (indicated by a "✶" on the programming menu pages).

Parameter Name	*Default Setting*	*Page Reference*
Host Port Communications		
Baud Rate	38400	Page 3–2
Parity	None	Page 3–3
Word Length Data Bits	8	Page 3–3
Word Length Stop Bits	1	Page 3–4
Serial Wedge Output	None (RS-232)	Page 3–4
Hardware Flow Control	Off	Page 3–4
Host ACK	Off	Page 3–5

Default Chart

Communications Menu Defaults

The following chart lists the factory default Communications Menu settings (indicated by a "✶" on the programming menu pages).

Parameter Name	*Default Setting*	*Page Reference*
Auxiliary Port Communications		
Baud Rate	38400	Page 3–6
Parity	None	Page 3–7
Word Length Data Bits	8	Page 3–7
Word Length Stop Bits	1	Page 3–8
Protocol	Record	Page 3–8
Aux Port I.D. Transmit	Off	Page 3–8
Hardware Flow Control	Off	Page 3–10
Data Character		
SOR (Start of Record)	00 (NUL)	Page 3–10
EOR (End of Record)	0D (CR)	Page 3–10
SOB (Start of Block)	00 (NUL)	Page 3–10
EOB (End of Block)	04 (EOT)	Page 3–10
Aux Prefix / Suffix		
Aux Prefix (Incoming Data)	None	Page 3–11
Aux Suffix (Incoming Data)	None	Page 3–11
Aux Prefix (Outgoing Data)	None	Page 3–11
Aux Suffix (Outgoing Data)	CR	Page 3–11
Aux Data Formatter		
Aux Data Format	None	Page 3–15
Aux Data Formatter	On	Page 3–20
Aux Data Format Required	Not Required	Page 3–20

Default Chart

Application Work Groups Menu Defaults

The following chart lists the factory default Application Work Groups Menu settings (indicated by a "✶" on the programming menu pages).

Parameter Name	*Default Setting*	*Page Reference*
Output Selections (User Feedback)		
Application Work Group	Group 0	Page 4–2
Beeper Volume	High	Page 4–3
Beeper Pitch	Medium	Page 4–4
Decode Beep	Off	Page 4–4
Scanner Voting	Off	Page 4–5
Laser Marker Beam	Off	Page 4–5
AIM I.D. Prefix	Off	Page 4–6
Code I.D. Prefix	Off	Page 4–6
Prefix / Suffix Selection		
Prefix	None	Page 4–10
Suffix	CR	Page 4–10
Data Formatter Selections		
Data Format	None	Page 4–15
Data Formatter	On	Page 4–16
Require Data Format	Not Required	Page 4–16

Default Chart

Symbology Menu Defaults – Industrial

The following chart lists the factory default Industrial Symbology Menu settings (indicated by a "✶" on the programming menu pages).

Parameter Name	*Default Setting*	*Page Reference*
Codabar Selection		
Codabar	On	Page 5–2
Start / Stop Characters	Don't Transmit	Page 5–2
Message Length	Min = 2, Max = 60	Page 5–2
Check Character	Don't Validate	Page 5–3
Check Character	Don't Transmit	Page 5–3
Concatenation	On	Page 5–3
Concatenation	Don't Require	Page 5–3
Code 39 Selection		
Code 39	On	Page 5–4
Start / Stop Characters	Don't Transmit	Page 5–4
Message Length	Min = 0, Max = 48	Page 5–4
Check Character	Don't Validate	Page 5–4
Check Character	Don't Transmit	Page 5–4
Full ASCII	On	Page 5–5
Append	Off	Page 5–5
Code 93 Selection		
Code 93	On	Page 5–6
Message Length	Min = 0, Max = 80	Page 5–6
Interleaved 2 of 5 Selection		
Interleaved 2 of 5	On	Page 5–7
Message Length	Min = 4, Max = 80	Page 5–7
Check Digit	Don't Validate	Page 5–7
Check Digit	Don't Transmit	Page 5–7
Lengths of 6, 14 or 16	Off	Page 5–7

Default Chart

Symbology Menu Defaults – Industrial (continued)

Parameter Name	*Default Setting*	*Page Reference*
Code 2 of 5 Selection		
Code 2 of 5	On	Page 5–8
Message Length	Min = 4, Max = 48	Page 5–8
Matrix 2 of 5 Selection		
Matrix 2 of 5	On	Page 5–8
Message Length	Min = 4, Max = 80	Page 5–8
Code 11 Selection		
Code 11	On	Page 5–9
Check Digits Required	2 Check Digits	Page 5–9
Message Length	Min = 4, Max = 80	Page 5–9
Code 128 Selection		
Code 128	On	Page 5–10
Message Length	Min = 0, Max = 80	Page 5–10
UCC/EAN–128	Off	Page 5–10
Telepen Selection		
Telepen	On	Page 5–11
Message Length	Min = 1, Max = 60	Page 5–11
Telepen Output	Numeric Only	Page 5–11

Default Chart

Symbology Menu Defaults – Retail

The following chart lists the factory default Retail Symbology Menu settings (indicated by a "✶" on the programming menu pages).

Parameter Name	*Default Setting*	*Page Reference*
EAN / JAN 8 / 13 Selection		
EAN / JAN 8	On	Page 5–12
EAN / JAN 13	On	Page 5–12
Check Digit	Transmit	Page 5–12
ISBN	Off	Page 5–12
UPC A Selection		
UPC A	On	Page 5–13
Check Digit	Transmit	Page 5–13
Number System	Transmit	Page 5–13
UPC E0 Selection		
UPC E0	On	Page 5–14
Check Digit	Transmit	Page 5–14
Number System	Transmit	Page 5–14
Version E Expand	Don't Expand	Page 5–14
UPC E1 Selection		
UPC E1	Off	Page 5–14
EAN / UPC Addenda Selection		
EAN / UPC Addenda	Don't Require	Page 5–15
EAN Two Digit Addenda	Off	Page 5–15
EAN Five Digit Addenda	Off	Page 5–15
UPC Two Digit Addenda	Off	Page 5–15
UPC Five Digit Addenda	Off	Page 5–15

Default Chart

Voting Table						
Symbol Type	**Voting Off**			**Voting On**		
(C = symbol length)	C< 5	5=C<10	C=10	C< 5	5=C<10	C=10
Codabar	5	3	1	5	3	3
Code 39	5	3	1	5	3	3
UPC	N/A	3	1	N/A	3	3
EAN	N/A	3	1	N/A	3	3
Interleaved 2 of 5	5	3	3	5	3	3
Code 2 of 5	5	3	1	5	3	3
Code 11	5	3	1	5	3	3
Code 128	5	3	1	5	3	3
Matrix 2 of 5	5	3	1	5	3	3
Telepen	5	3	1	5	3	3

Programming Chart

This programming chart contains alphanumeric bar codes used for setting additional programming options, such as the digits representing Symbology Message Length. Scan the programming selection bar code first, and then scan the bar code(s) representing the option you want to set. Programming selections that require options to be set are marked with a ‡ symbol.

0

1

2

3

4

5

6

7

8

Programming Chart

9

A

B

C

D

E

F

Discard Current Changes

Save

Sample Bar Codes

Code 39

TEST–SHEET

Matrix 2 of 5

6543210

Code 128

CODE 128

Code 93

123456–9$

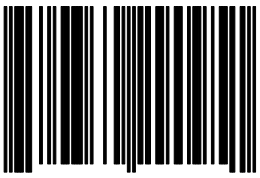
Codabar

0013557900

Code 2 of 5

123456

EAN 13



9 780330 290951

UPC A with 5 digit addenda

56098

0 12345 67890 5

Interleaved 2 of 5

1234567890

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