User's Manual

code

Code Reader 2.0

This version of the manual only supports firmware version 04AH and greater

Statement of Agency Compliance

The Code Reader 2.0 has been tested for compliance with FCC regulations and was found to be compliant with all applicable FCC Rules and Regulations.

IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements, this device must not be co-located or operate in conjunction with any other antenna or transmitter.

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The Code Reader 2.0 has been tested for compliance to CE standards and guidelines and was found to conform to applicable CE standards, specifically the EMC requirements EN 55024, ESD EN 61000-4-2, Radiated RF Immunity EN 61000-4-3, ENV 50204, EFT EN 61000-4-4, Conducted RF Immunity EN 61000-4-6, EN 55022, Class B Radiated Emissions, and Class B Conducted Emissions.

The Code Reader 2.0 can be set to use targeting lasers.
If the targeting lasers are activated, do not stare into the beams.
The Code Reader's targeting lasers have been rated as Class 2 Lasers by ANSI 2136.1-1993.

The Code Reader 2.0 has been tested by an independent electromagnetic compatibility laboratory in accordance with the applicable specifications and instructions.

Code Reader 2.0 User's Manual

The Code Corporation, 11814 S. Election Road, Suite 200, Draper, UT 84020

www.codecorp.com

Table of Contents

Table of Contents

Table of Contents

Chapter 1 - CR2 Overview

1.1 - Introduction

CR2 is a revolutionary new, bar code reader. Developed to be the first universal reader, no other single device performs as many functions. With a cost of ownership far less than comparable systems, the CR2 incorporates a unique dual path optical system, a 1.3 million pixel CMOS sensor, and a 400 MHz processor. This combination has created a reading system that supports:

- High density matrix codes and larger low density linear codes
- Superior working range
- High-speed omni-directional decoding
- Cordless and cabled interfaces
- Unsurpassed data rates
- Linux OS (OEM version)

The CR2 sets a new benchmark for size and weight. It is smaller and lighter than comparable systems yet can withstand multiple drops to concrete. It is the only product available in handheld, gun handle, and presentation stand form factors with cabled, batch and cordless versions. The cordless version utilizes the latest Bluetooth™ class 1 radio with a 300 foot operating range. The CR2 is rugged and lightweight and the cordless version will operate for more than a complete shift at the highest use rate. The CR2 performs more than 3000 reads and transmits from a single battery charge.CR2 will automatically discriminate between all major 2-D matrix and linear bar code symbologies and features a timestamp feature for logging data.

Whether you need a small, palm-held device or a traditional gun, CR2 was specifically developed so users may easily choose the device that best meets their needs. The CR2 is available in three (3) basic configurations:

- **CR2 Cabled** - USB or RS-232 interfaces
- **CR2 Batch** - Store and forward device with memory and long-life battery
- **CR2 Cordless** - Long life battery and Bluetooth radio

1.2 - Unpacking

Remove the imager from its packing and inspect it for damage. If the scanner was damaged during shipping, please call Code Corpration at (801) 495-2200.

The standard CR2 unit is shipped with a USB cable interface. The unit also features a battery blank that must be installed in the unit at all times.

Various accessories are available for the CR2. An overview of these accessories can be found on page 9.

Please keep your packing materials. The CR2 is shipped in an approved shipping container and should be used if you ever need to return your equipment for servicing.

1.3 - General Safety Information

Repairs and Adjustments

Only those individuals authorized by Code should attempt to make repairs or adjustments to Code Reader equipment.

Power Supply

Use only the particular power supply provided for use with a specific unit when operating Code equipment.

Accessories

Only those accessories approved by Code (page 9) should be utilized with Code equipment.

Non-compliance with any of the above may result in:

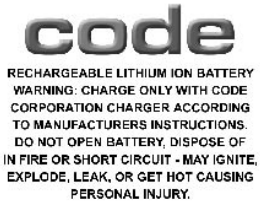
- Injury to individuals handling the equipment
- Damage to the equipment
- Voiding of the maintenance contract

Lasers

The CR2 utilizes a laser **FOR TARGETING PURPOSES ONLY.** If the laser is activated, do not stare into the beam.

Lithium Ion Battery

Warning: Charge the battery with Code Corporation cables ONLY. Do not open battery, dispose of in fire, or short circuit - it may ignite, explode, leak, or get hot causing personal injury.



1.4 - Warranty

Code manufactures its hardware products in accordance with industry-standard practices. Code warrants that for a period of twelve (12) months from date of shipment, products will be free from defects in materials and workmanship. This warranty is provided to the original owner only and is not transferable to any third party. This warranty is subject to any and all accompanying disclaimers, limitations and other terms of this Agreement.

It shall not apply to any product (I) which has been repaired, altered or tampered with unless done or approved by Code, (ii) which has not been maintained in accordance with any operating or handling instructions supplied by Code, (iii) which has been subjected to unusual physical or electrical stress, misuse, abuse, power shortage, negligence or accident or (iv) which has been used other than in accordance with the product operating and handling instructions. Preventive maintenance is the responsibility of customer and is not covered under this warranty. Wear items and accessories having a Code serial number, will carry a 90-day limited warranty. Non-serialized items will carry a 30-day limited warranty.

Warranty Coverage and Procedure

During the warranty period, Code will repair or replace defective products returned to Code's service center in the US. For warranty service in North America or international, call **Code Warranty Support at 1-801-495-2200.**

If warranty service is required, Code will issue a Return Material Authorization Number. Products must be shipped in the original or comparable packaging, with shipping and insurance charges prepaid. Code will ship the repaired or replacement product freight and insurance prepaid in North America. Shipments from the US or other locations will be made F.O.B. Code's manufacturing plant. Code will use new or refurbished parts at its discretion and will own all parts removed from repaired products. Customer will pay for the replacement product in case it does not return the replaced product to Code within 3 days of receipt of the replacement product. The process for return and customer's charges will be in accordance with Code's Exchange Policy in effect at the time of the exchange.

Customer accepts full responsibility for its software and data including the appropriate backup thereof. Repair or replacement of a product during warranty will not extend the original warranty term. Code's Customer Service organization offers an array of service plans, such as on-site, depot, or phone support, that can be implemented to meet customer's special operational requirements and are available at a substantial discount during warranty period.

1.4 - Warranty (con't)

General

Except for the warranties stated above, Code disclaims all warranties, express or implied, on products furnished hereunder, including without limitation implied warranties of merchantability and fitness for a particular purpose and noninfringement. The stated express warranties are in lieu of all obligations or liabilities on part of Code for damages, including without limitation, special, indirect, or consequential damages arising out of or in connection with the use or performance of the product. Seller's liability for damages to buyer or others (regardless of the form of action, whether by contract, warranty, tort, malpractice, and/or otherwise) resulting from the use of any product, shall in no way exceed the purchase price of said product. In no event shall Code be liable for any consequential, special, indirect, incidental or punitive damages, or for any loss of profits, revenue or data, even if Code has been advised of the possibility thereof.

1.5 - Targeting and Reading Techniques

The CR2 utilizes digital camera technology to take a picture of a symbol. Once an image is captured, the CR2 utilizes advanced decoding algorithms to extract data from the captured image.

The CR2 is available as a palm-held unit or users may purchase a clip-on “gun format” handle.

The palm held unit features left and right buttons (figure 1.1). These buttons may be programmed to perform various features (see section 4.8). The reader is shipped with the left button and right button functioning as a decode symbol command.

The “gun format” handle features a trigger on the handle (figure 1.2). The two triggers on the top of the unit also work when the handle is attached.

Figure 1.1

Figure 1.2

To read a symbol with the CR2:

1. The CR2 features omnidirectional decoding. Center the symbol in any orientation within the laser dot aiming pattern (figure 1.3).

   Note: The CR2 can read a symbol that is not centered however, the CR2 performs best when a code is centered. If two (2) bar codes are with the imagers decode zone, the CR2 will decode the symbol closest to the center of the aiming dot.

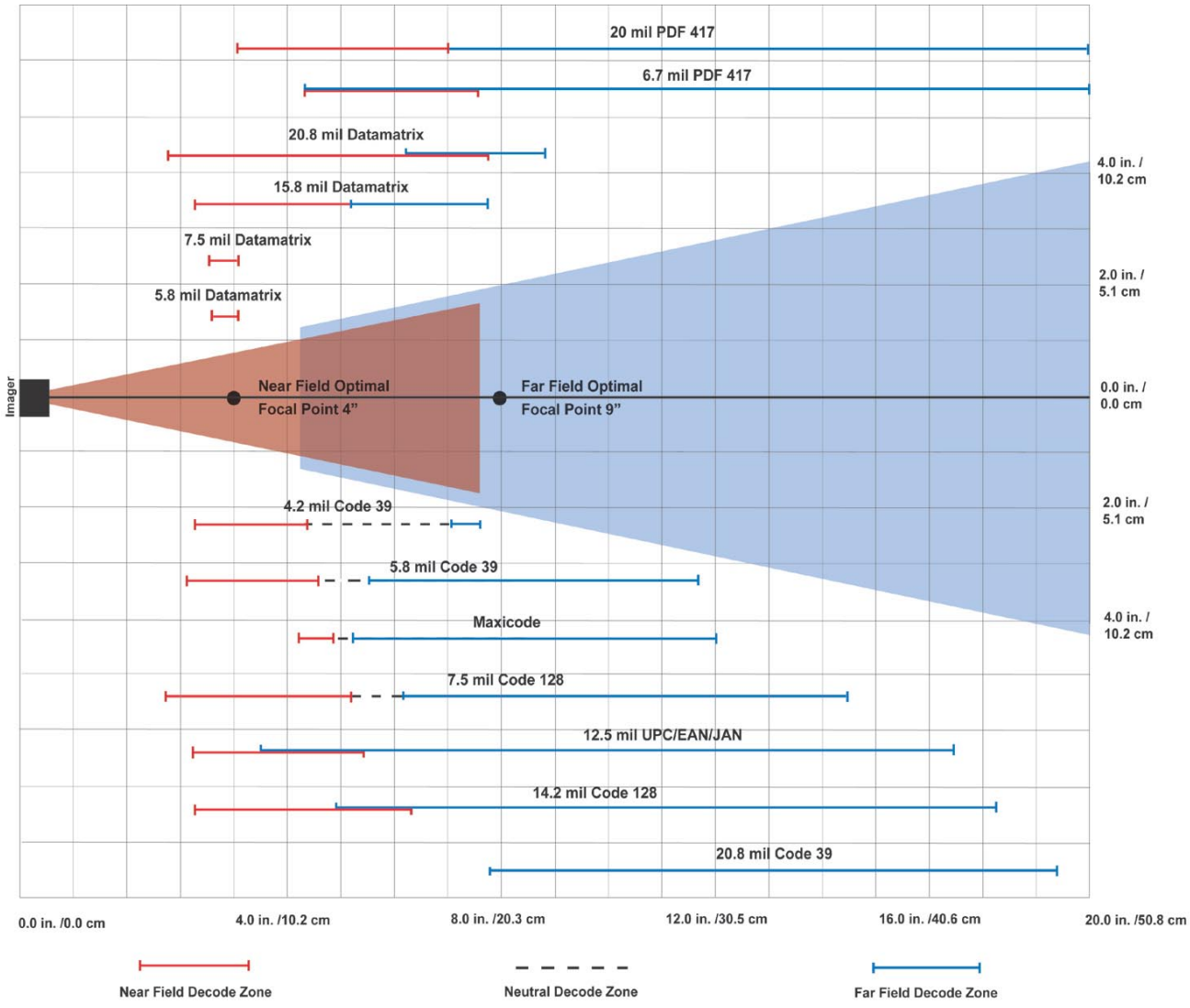
Figure 1.3

1.5 - Targeting and Reading Techniques (con't)

2. The CR2 was developed to decode both very small 2-dimensional symbols and larger 1-dimensional symbols. The unit features two imagers to create an innovative dual decode zone. The CR2 features a high speed processor and **DECODES BOTH ZONES SIMULTANEOUSLY**. The unit has one imager focused on a near-field for smaller codes (optimal focal point is 4 inches) and one imager focused on a far-field for larger codes (optimal focal point 9 inches). To read smaller symbols move the CR2 closer to the symbol. To read larger symbols move the unit farther away from the symbol (see figure 1.4). The entire CR2 decode zone varies between two (2") and twenty (20+") or more inches.

3. Hold the Code Reader still - **DO NOT SWIPE OR MOVE THE READER.**
Press the trigger until the CR2 beeps, indicating the bar code has been successfully decoded.

Figure 1.4



1.6 - CR2 Accessories

The standard CR2 unit is a palm-held device with a USB cable interface (figure 1.5).

Figure 1.5 CR2 with USB Cable Interface

Optional Accessories

The following accessories are also available by contacting a Code representative:

- RS-232 interface cables (Figure 1.6)
- 1300 mA or 1800 mA Long-life Lithium-Ion battery (Figure 1.7)
- Clip-on pistol grip handle (Figure 1.8)
- Class 1 Bluetooth radio (300 foot operating range if connected with another Class 1 device)

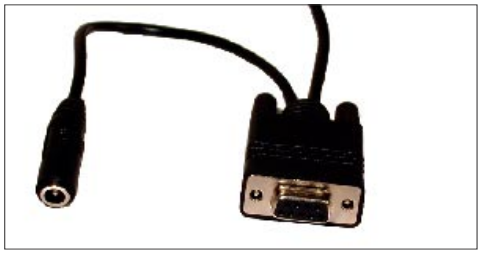


Figure 1.6 RS-232 Cable Interface

Figure 1.7 Long-life Battery

Figure 1.8 Clip-on Pistol Grip Handle

Chapter 2 - Getting Started

2.1 - Minimum Requirements

Operating Systems:	Windows © - 98 (version 2), ME, 2000, XP
Interfaces:	USB or RS-232 / Serial
Bluetooth:	CR2 only supports Bluettoth serial profile

2.2 - Installation Guide - USB Interface

To connect the CR2 to your host computer via USB interface:

1. Make sure the USB cable is sufficiently attached to your CR2 unit (figure 2.1).

2. You **DO NOT** need to power off your host computer (figure 2.2). The CR2 with USB interface can be plugged into any host while the computer is powered up.

3. Connect the USB interface cable to the host (figure 2.3). If you are unsure of the proper location to connect the USB cable please consult the manual of your host computer.

4. The USB interface does not require additional power supply. If you are using the 1300 mA or 1800 mA battery for batch mode, the CR2 will automatically recharge the battery whenever the unit is a attached to a host that is powered up.

5. The CR2 will power on automatically.

6. Scan the following code to set reader into USB communication mode.

Note: You may also scan the code on page 45 of the User's Manual

7. Your CR2 unit should be ready for use. Open the application you wish to send data and begin scanning.

Figure 2.1

Figure 2.2

Figure 2.3

2.2 - Installation Guide - RS-232 Interface

To connect the CR2 to your host computer via RS-232 interface:

1. Make sure the RS-232 cable is sufficiently attached to your CR2 unit (figure 2.4).
2. Power off your host computer (figure 2.5).
3. Connect the RS-232 interface cable to your host computer (figure 2.6). If you are unsure of the proper location to connect the RS-232 cable please consult the manual of your host computer.
4. The RS-232 interface does require additional power. The RS-232 interface should have come with a power supply. Plug the power supply adapter into the RS-232 interface cable (figure 2.7) and then plug the power adapter into a wall socket (figure 2.8). If you are using the 1300 mA or 1800 mA battery for batch mode, the CR2 will recharge the battery whenever the unit is a attached to a RS-232 cable that is plugged into a wall socket.
5. Power up the host.
6. The CR2 will power on automatically.
7. Scan the following code to set reader into RS-232 / Serial communication mode.

Note: You may also scan the code on page 47 of the CR2 User's Manual.

8. Your CR2 unit should be ready for use. Open the application you wish to send data and begin scanning.

Figure 2.4

Figure 2.5

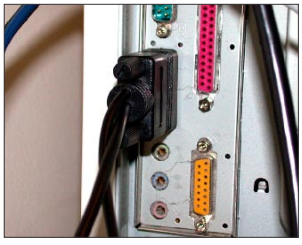


Figure 2.6

Figure 2.7

Figure 2.8

2.2 - Installation Guide - Batch Interface

The CR2 unit features a batch mode for applications requiring a portable reader. Batch mode allows a user to store scanned data to the reader's non-volatile memory. The user may transfer the data to a host computer when needed. To utilize batch functionality you will need to purchase the 1300 mA or 1800 mA Lithium Ion battery from a Code representative.

How Batch Mode Works

The CR2 unit will automatically detect when the USB cable is detached or the Bluetooth® radio is out of range and will switch into batch mode. CR2 units featuring RS-232 interfaces have to be programmed to enter batch mode by scanning a code (see section 4.6).

When the reader is reconnected to your host computer or when the Bluetooth Radio is back in range and the user scans another code or the specific transfer data code, (Users may also program a button in section 4.6 to transfer data) the reader will transfer scanned data. Once transferred, the scanned data is immediately erased from the readers memory.

Batch Mode Feedback

After a successful scan in batch mode the unit will beep once and the battery LED will flash amber and the memory LED will flash either green, red or amber depending on memory level. For more information on CR2 feedback see section 2.6.

Note: The CR2 dedicated batch memory is a minimum of 1MB. To determine the number of reads that may be stored, divide the average bytes of a scan into the total minimum memory.

Figure 2.9

2.2 - Installation Guide - Batch Interface (con't)

Batch Programming Modes

The CR2 can be programmed to operate in two (2) other operating modes:

1. **Manual Erase Mode -** In manual erase mode, when the reader Is reconnected to your host computer or when the Bluetooth Radio is back in range and the user scans another code or the specific transfer data code (Users may also program a button in section 4.6 to transfer data) the reader will transfer scanned data. However, once the readers memory has been transferred, the user must scan a specific code to erase the units memory (see section 4.6). If you enter batch mode again without erasing the data, the new scanned data will be added to the existing data.

   Note: Once the unit is plugged back into a cable or enters within radio range, any data scanned **WILL NOT** be saved to the non-volatile memory. The only data that will be saved is the data scanned while in batch mode.

2. **Send and Store Mode -** In send and store mode, the reader will automatically try to transfer scanned data everytime a new code is scanned. In parallel, the unit will also store a copy of all scanned data on the unit's non-volatile memory. If the readers memory has been transferred to a host computer all scanned data will still reside on the units memory until the user scans a specific code to erase the memory.

   Note: All scanned data WILL be saved to the non-volatile memory even if a cable is attached or the radio is within range.

2.2 - Installation Guide - Cordless Interface

Overview

The CR2 features an add-on Bluetooth® wireless radio. The radio allows for point to point wireless communication with other Bluetooth devices. The Bluetooth radio replaces the cord, allowing for 300 feet or more of operating range if you are connecting with another Class 1 device.

A typical set-up to link the CR2 unit to a desktop or a laptop computer would require purchasing an attachable USB Bluetooth radio. For more detailed instructions on connecting with approved Bluetooth enabled devices please see Appendix A.

The CR2 stores a memory of 256 devices it has established a connection with. Code makes it simple to reconnect with these devices. If you wish set up a network of readers or devices please see Appendix B “Setting up a Network of Bluetooth Devices”.

The following guide will give you general instructions on connecting your CR2 to a desktop or laptop computer with a Bluetooth Radio antennae. Each brand of attachable radio will have unique connection manager software however, the process of getting connected is very similar. You should be able to follow these general steps and establish a connection.

If you have questions with your connection please call Code Technical Support at 1-801-495-2200.

Creating a Bonded Relationship

When you create a bonded relationship you are establishing that your devices know each other and will connect directly after the first encounter. Bonding is also often refferred to as pairing. To create a bonded relationship with another Bluetooth device you must get the Bluetooth Radio PIN # of your CR2. The Bluetooth PIN # is the same as your units serial #. The serial number is located underneath the battery on the CR2 specification sticker or you can scan the Reader ID code on page 52 of the CR2 User’s Manual. **THE BLUETOOTH PIN # FOR BETA UNITS IS: 12345678.**

1. To minimize connection interference, turn off all other Bluetooth devices in the area.

2. Open the connection manager software on the device you wish to connect to and select the following settings:

    - Bluetooth radio is enabled
    - Low Security - Discoverable by all devices
    - Enable serial port profile

2.2 - Installation Guide - Cordless Interface (con't)

Note: Your CR2 unit will function as the master (head device) in a group of enabled devices. Other devices are referred to as slave devices. It is very important to understand that the CR2 will have precedence over other devices. The CR2 units are shipped with the authentication and encryption security feature disabled. When making initial contact with another device, you must have the authentication and encryption functionality disabled on the slave device you are connecting to.

3. Scan the Reset code then scan the Enable Radio code below:

Reset to Factory Defaults

Enable Radio (RF)

4. With your CR2, scan the "pairing" command code, then scan the "inquire and connect" command code. The CR2 will search and automatically request to bond with activated devices.

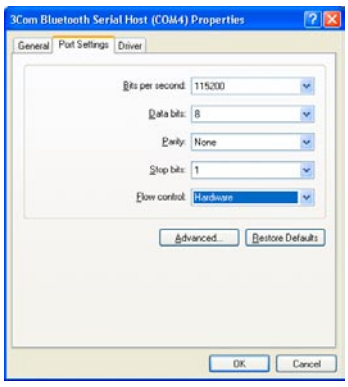
Enable Pairing

Inquire and Connect

5. When the desired slave device prompts for a pin, type in your CR2 Bluetooth PIN #.

6. The CR2 should now be added to the slave devices bonded list.

7. Once you have established a connection, you must make sure the device is set to a serial port profile. On your host, right click the My Computer icon on your desktop. Open Properties. Under the Hardware tab select Device Manager button. Click on the appropriate device and set to the following settings:



8. You must also set up your application software to a serial port profile.

9. If encryption is desired, disconnect then scan "enable encryption" then scan "inquire and connect". Be prepared to type the PIN again.

Disconnect

Enable Encryption

Note: Code strongly suggests that each slave device be enabled to connect only with devices in its bonded/paired list. This action will preclude unwanted outside connections, including hostile connection attempts.

.

You may have to repeat the process. Reasons why connection may not occur are:

- Device is out of range or the Bluetooth radios is turned off
- The desired device is already connected to another device
- CR2 is not in bonded list
- CR2 has incorrect Bluetooth address or link key, or both associated with the desired device list number

Transferring Data

The application software on the desired device must be running. As codes are read, they will automatically transmit to the application.

Disconnecting

Disconnection is commanded by CR2 by reading the disconnect code below. The CR2 will not appear disconnected in the slave Bluetooth connection manager for 10 – 15 seconds after the command is issued.

Disconnect

2.2 - Installation Guide - Cordless Interface (con't)

Reconnecting to a Device

You may easily reconnect with up to 256 slave devices the CR2 has created a bonded relationship with. these devices by utilizing our label template at:

www.codecorp.com/products/downloads/bluetoothlabels.

Note: The template will not be available until 3/1/03. To test this feature follow the instructions below:

1. While connected to a the desired slave device, scan the "Save to 001" code located below.

2. Disconnect devices. Scan the "Connect to 001" code. Now everytime you scan the "Connect to 001" code, the CR2 you will instantly bond with the device

Save to 001

Connect to 001

Save to 002

Connect to 002

2.3 - Attaching and Switching Cables

Attaching and Switching Cables

The CR2 is available with USB (standard) and RS-232 cables. All of the cables are connected to the CR2 with a 8-pin DIN connector. Different cables may be required for different hosts.

Palm Held CR2

To install a cable on the standard palm-held unit, correctly line up the 8-pin DIN connector (figure 2.10) into back end of the unit. The arrows on the connector should be facing down. When they are lined up, firmly push the cable in (figure 2.11). To unattach, you must pinch the plastic on the 8-pin DIN and pull back to disengage the connector (figure 2.12).

CR2 with Attachable Handle

If you purchased the attachable handle accessory (see section 2.3 for handle attaching instructions), the 8-pin DIN connection is at the botton of the handle. Insert 8-Pin connector (figure 2.13) and firmly push cable into the handle (figure 2.14). To unattach, you must pinch the plastic on the 8-pin DIN and pull back to disengage the connector (figure 2.15).

Figure 2.10

Figure 2.11

Figure 2.12

Figure 2.13

Figure 2.14

Figure 2.15

2.4 - Attaching Handle

Attaching the Handle

To attach the handle, please follow the following steps.

1. Place the CR2 in the cradle of the handle and slide the unit back (figure 2.16).

   Be careful not to place fingerprints on the front glass when attaching handle.

2. Once the 8-pin DIN connector of the handle begins to enter the opening in the back of the unit, firmly press the unit back until the unit is flush against the handle (figure 2.17).

Figure 2.16

Figure 2.17

2.5 - CR2 Lithium Ion Battery and CR2 Battery Blank

CR2 Battery Blank

All cabled CR2 units feature a battery blank. **THE BATTERY BLANK NEEDS TO BE ATTACHED AT ALL TIME WHEN USING THE CR2**. Installing the battery blank is identical to installing the battery. Please follow the instructions below.

Attaching and Detaching the Lithium Ion Battery

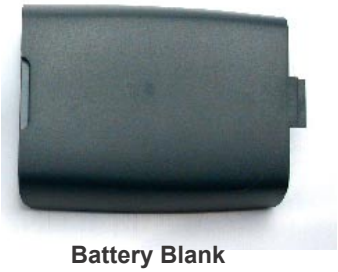
The CR2 is available with a 1300 mA or 1800 mA Lithium Ion battery. If you wish to purchase, contact a Code representative. To install battery or battery blank in cradle or to detach battery from unit, push the locking mechanism up toward the front of the scanner and insert or detach battery (figures 2.18 & 2.19).

Charging the Lithium Ion Battery

The battery automatically charges everytime a cable inteface is attached to the unit and the host is powered up

Note: The RS-232 interface power adapter must be plugged into a wall socket for the unit to charge.

Battery



Battery Blank

Figure 2.18

Figure 2.19

2.6 - CR2 Feedback Definition Guide

The CR2 features two (2) LED's on the front of the unit. These LED's give a user feedback on the various functionality of the unit. Each LED has a small icon underneath that represent the following:

 **Battery Power Icon**

 **Memory Icon**

Each LED can show three (3) colors; Green, Amber or Red. The colors will vary depending on the message the unit is sending.

- **Green** = 50% - 100% capacity of Battery or Memory
- **Amber** = 20% - 50% capacity of Battery or Memory
- **Red** = 0% - 20% capacity of Battery or Memory

The CR2 also emits beeps for feedback. Please follow the table below to better understand your unit's feedback.

	Memory LED	**Battery LED**	**Sound**
CR2 Successfully Powers Up	Flash battery status either Green, Amber or Red	Flash either Green, Amber or Red	1 Beep
Attempting to Decode	None	None	None

2.6 - CR2 Feedback Definition Guide (con't)

	Memory LED	Battery LED	Sound
Successful Decode and Data Transfer via cable	Flash battery status either Green, Amber or Red	Flash Green	1 Beep
Successful Decode in Batch mode	Flash either Green, Amber or Red	Flash Amber	1 Beep
Successful Decode unable to transfer data in Batch mode	Flash either Green, Amber or Red	Flash Green then Red	1 Beep
Configuration Code Successfully Decoded	Flash either Green, Amber or Red	None	2 Beeps
Batch Mode memory full	Red	Flash either Green, Amber or Red	4 Beeps

Chapter 3 - Symbology Programming

3.1 - Introduction

The following chapter will allow a user to change the symbology settings on the Code Reader. To reset the unit to factory defaults or to save the current settings please scan one of the codes below:

Save Settings

Note: If you do not save your settings and the CR2 loses power you will lose your settings.

Reset to Factory Defaults

3.2 - Aztec Symbology

Scan the following codes to enable/disable Aztec symbology settings:

Aztec On

Aztec Off

Aztec Inverse On

Aztec Inverse Off

Aztec Both

3.3 - Codabar Symbology

Scan the following codes to enable/disable Codabar symbology settings:

Codabar On

Codabar Off

Check Checksum

Don’t Check Checksum

3.4 - Code 128 Symbology

Scan the following codes to enable/disable Code 128 symbology settings:

Code 128 On

Code 128 Off

3.5 - Code 93 Symbology

Scan the following codes to enable/disable Code 93 symbology settings:

Code 93 On

Code 93 Off

3.6 - Code 39 Symbology

Scan the following codes to enable/disable Code 39 symbology settings:

Code 39 On

Code 39 Off

Check Checksum

Don’t Check Checksum

Check Checksum and Stip From Result

Code 39 Full ASCI On

Code 39 Full ASCI Off

3.7 - Composite Symbologies

Scan the following codes to enable/disable Composite symbology settings:

Composite On

Composite Off

3.8 - Data Matrix Symbology

Scan the following codes to enable/disable Data Matrix symbology settings:

Data Matrix On

Data Matrix Off

Data Matrix Inverse On

Data Matrix Inverse Off

Data Matrix Both

Data Matrix Rectangle On

Data Matrix Rectangle Off

3.9 - GoCode Symbology

Scan the following codes to enable/disable GoCode symbology settings:

GoCode On

GoCode Off

3.10 - Interleaved 2 of 5 Symbology

Scan the following codes to enable/disable Interleaved 2 of 5 symbology settings:

Interleaved 2 of 5 On

Interleaved 2 of 5 Off

3.11 - Maxicode Symbology

Scan the following codes to enable/disable Maxicode symbology settings:

Maxicode On

Maxicode Off

3.12 - MSI Plessy Symbology

Scan the following codes to enable/disable MSI Plessy symbology settings:

MSI Plessy On

MSI Plessy Off

3.13 - PDF 417 Symbology

Scan the following codes to enable/disable PDF 417 symbology settings:

PDF417 On

PDF417 Off

3.14 - Micro PDF 417 Symbology

Scan the following codes to enable/disable micro PDF 417 symbology settings:

MicroPDF417 On

MicroPDF417 Off

3.15 - Postal Symbologies

Scan the following codes to enable the appropriate Postal symbology:

Note: If you wish to change which Postal code is activated, you MUST scan the disable all postal codes symbol and then scan your desired symbology.

Australian Post On

Japan Post On

KIX On

Planet On

Postnet On

Postnet and Planet On

Royal Mail

DISABLE ALL POSTAL CODES

3.16 - QR Code Symbology

Scan the following codes to enable/disable QR Code symbology settings:

QR Code On

QR Code Off

QR Code Inverse On

QR Code Inverse Off

QR Code Both

Check Checksum

Don’t Check Checksum

3.17 - RSS Symbology

Scan the following codes to enable/disable RSS symbology settings:

RSS On

RSS Off

3.18 - UPC/EAN/JAN

Scan the following codes to enable/disable UPC/EAN/JAN symbology settings:

UPC On

UPC Off

UPC Extension On

UPC Extension Off

UPC Supplemental On

UPC Supplemental Off

Chapter 4 - CR2 Advanced Programming

4.1 - Reader Communication Settings - USB Interface

Scan the following codes to set your reader to the appropriate USB communication setting:

USB Keyboard (Default)

USB Native

USB IBM

4.1 - Reader Communication Settings - RF Interface

Scan the following codes to set your reader to RF communication setting:

RF Communication

4.1 - Reader Communication Settings - RS-232 Interface

Scan the following code to set your reader to RS-232/serial communication setting:

RS-232 / Serial

4.2 - RS-232 Interface Settings - Set Data Bits

Scan the following codes to set the appropriate data bit:

7 Data Bits

8 Data Bits (Default)

4.2 - RS-232 Interface Settings - Set Stop Bit Data

Scan the following codes to set the appropriate stop bit data:

1 Stop Bit

2 Stop Bits

4.2 - RS-232 Interface Settings - Set Baud Rate

Scan the following codes to set the appropriate baud rate:

1200

2400

4800

9600

19200

38400

57600 (Default)

4.2 - RS-232 Interface Settings - Set Parity

Scan the following codes to set parity:

Even

Odd

None (Default)

4.3 - Set Prefix / Suffix

Scan the following codes to set parity:

These codes will only work if CR2 unit is set to RS-232 / serial communication mode (page 44).

Suffix - Carriage Return Line Feed ON *

Suffix - Carriage Return Line Feed OFF *

* These codes are subject to change for later versions of firmware.

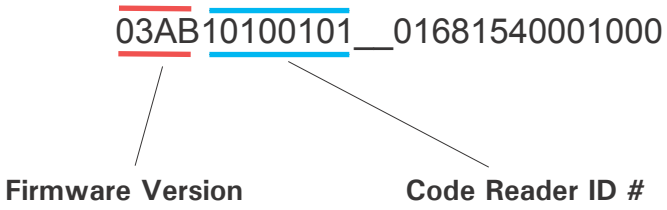
4.4 - Get Reader ID and Firmware Version

To find out the Reader ID and firmware version, open a text editor program (i.e. Notepad, Microsoft Word...) and read the following code:

Note: For units with a Bluetooth Radio, the Reader ID is also your Bluetooth Radio PIN #.

Reader ID and Firmware

You will get a text string with your firmware version and Code Reader ID number (see below):



4.5 - Time Stamp Settings

CR2 has a time stamp feature for logging data (The time stamp is defaulted off in shipped units). If you enable the time stamp feature, everytime the CR2 is powered off or rebooted, the timer will stop.

A 8-digit number represents the time stamp. The format is ddhhmmss (dayday/hourhour/minuteminute/secondsseconds). Scan the following codes to turn the time-stamp on/off:

On

Off

4.6 - Batch Mode Settings

Scan the following codes to set the appropriate batch functionality:

Transfer Scanned Data from Memory

Delete Scanned Data Memory

Enable Send and Store

Enable RS-232 Batch Mode

Disable Send and Store

Enable RS-232 Cabled Mode

Enable Manual Erase

Disable Manual Erase

4.7 - Bluetooth Radio Settings

Scan the following codes to set the left button functionality:

Enable RF

Inquire and Connect

Pairing Enabled

Enable Encryption and Authentication

Disconnect

4.8 - Left Button Programming

Scan the following codes to set the left button functionality:

Erase Image

Read Strip Code

Keep Awake

Take Picture

No Function

Set Laser Targeting

Read Codes in Both Zones (Default)

Upload Stored Data

Read Code with Far-Field Imager ONLY

Read Code with Near-Field Imager ONLY

4.8 - Right Button Programming

Scan the following codes to set the right button functionality:

Erase Image

Read Strip Code

Keep Awake

Take Picture

No Function

Set Laser Targeting

Read Codes in Both Zones (Default)

Upload Stored Data

Read Code with Far-Field Imager ONLY

Read Code with Near-Field Imager ONLY

4.8 - Handle Button Programming

Scan the following codes to set the handle button functionality:

Erase Image

Read Strip Code

Keep Awake

Take Picture

No Function

Target

Read Codes in Both Zones (Default)

Upload Stored Data

Read Code with Far-Field Imager ONLY

Read Code with Near-Field Imager ONLY

4.9 - Volume and Vibration Settings

Scan the following codes to set vibration mode:

Vibrate On / Beep On

Vibrate On / Beep Off

Vibrate Off / Beep On (Default)

Scan the following codes to set your reader's volume:

Beep Off

Beep Low

Beep High (Default)

4.10 - Continous Scan Settings

Scan the following codes to turn continous scanning on/off:

On

Off

Note: This fuction is only reccommended for short term use because of battery consumption.

4.11 - Decode Difficulty

The default settings for the CR2 are designed for optimal, general purpose performance with good quality symbols on typical surfaces.

For poor quality codes or codes on non-standard surfaces (shiny, low-contrast), the unit may require more time to process the code before the system abandons the image and restarts on a new decode attempt. To allow for additional processing time for marginal symbols, scan one of the following codes:

Note: Utilizing this feature may affect the overall performance of the reader, but “unreadable” codes may become readable by adding processing time.

Normal Decode Time (Default)

Long Decode Time

Extra Long Decode Time

4.11 - Decode Settings

Scan the following codes to enable/disable strip decoding:

On

Off

4.11 - Set Targeting Zone Tolerances

Scan one of the following codes to set the decode accuracy of the CR2 unit. The 0 setting is the most accurate while the 1600 code is the most tolerant (If you set the unit to a 0 setting, you will have to aim the targeting dot directly on the desired code for it to be read).

0

25

50

75

100

125

150

200

400

1600 (Default)

4.12 - Image Quality Settings

Scan the following codes to set image quality *:

Low

Medium

High

* This software is based in part on the work of the Independent JPEG Group.

4.13 - Laser Settings

Scan the following codes to turn laser targeting on/off:

On

Off

4.14 - Reset Reader to Factory Defaults

Scan the following code to reset reader to factory defaults:

Reset to Factory Default Settings

4.15 - Save Settings on Reader

Scan the following code to save settings on reader:

Save Settings

4.16 - Reboot Reader

Scan the following code to reboot your reader:

Reboot

Chapter 5 - CR2 Specifications

5.1 - CR2 Reader Specifications

PHYSICAL CHARACTERISTICS

Dimensions	Reader: 1.3” H x 4.3” D x 1.8” W (3.3cm H x 10.9cm L x 4.6cm W) Handle: 3.8” H x 1.4” D x 1.2” W (9.65cm H x 3.6cm D x 3cm W)
Weight	Reader: 2.5 oz (71.5 gm) - Does not include cable Battery: 2.1 oz (59.5 gm) - Does not include cable Battery Blank: .5 oz (13.6 gm) - Does not include cable Handle: 2.1 oz (58.9 gm) - Does not include cable
Cable Length:	6ft/1.8m

USER ENVIRONMENT

Operating Temperature:	0 ° to 40 ° C/32 ° to 104 ° F
Storage Temperature:	-20 ° to 60 ° C/-4 ° to 140 ° F
Humidity:	0% to 95% noncondensing
Decode Capability:	MaxiCode, PDF417, Data Matrix, QR Code, MicroPDF417, GoCode, UCC Composite, Aztec Code, Code 39, Code 128, UPC/EAN/JAN, Int 2 of 5, Codabar, Code 93, UCC RSS, POSTNET, PLANET, Japanese Post, Australia Post, Royal Mail RM4SCC, KIX code
Image Output Options:	Formats: JPEG, BMP, TIFF
Field Selection:	Near or Far
Resolution Selection:	1024 x 640, 640x480, 354x288
Gray Scale:	256 Level
Time Stamp:	Interval Logging

5.1 - CR2 Reader Specifications (con't)

PERFORMANCE CHARACTERISTICS

Field of View:	Near: 21.5º horizontal by 16.2º vertical Far: 22.9º horizontal by 11.6º vertical
Focal Point:	Near: 21.5º horizontal by 16.2º vertical Far: 22.9º horizontal by 11.6º vertical
Sensor:	Progressive Scan CMOS 1.33MP (1024x1280) 256 level gray scale
Optical Resolution:	Near Field: 1024 x 640 Far Field:1024 x 640
Pitch:	± 60 ° (from front to back)
Skew:	± 60 ° from plane parallel to symbol (side-to-side)
Rotational Tolerance:	± 180 °
Print Contrast Resolution:	25% (1D symbologies) or 35% (PDF417) absolute dark/light reflectance differential, measured at 650 nm
Target Beam	Class 2 Visible Laser Diode at 630nm
Ambient Light Immunity:	Sunlight: Up to 9,000ft-candles/96,890 lux
Shock:	Withstands multiple drops of 6.56 feet (2 Meters) concrete
Power Requirements:	Reader @ 5vdc (mA) - Typical = 110; Peak = 500; Standby = 28 Bluetooth Radio (mA) - Typical = 120; Peak = 600; Standby = 28 Battery with radio will support 3000 read/transmits per charge including 8 hours of standby interval.
Interfaces:	USB (standard) or RS-232, Bluetooth Class 1 Radio (300 feet)

Chapter 6 - Maintenance and Troubleshooting

6.1 - Frequently Asked Questions

6.2 - CR2 Maintenance

6.3 - Troubleshooting Guide

1. See section 2.1 Minimum Requirements

2. If utilizing Windows 98, you will need to upgrade to version 2.0

3. The CR2 will only support Bluetooth USB devices with serial port profile.

Chapter 7 - Factory Default Settings

7.1 - CR2 - Default Settings

The following are the default settings for your the Code Reader 2:

Symbology Defaults:

All 1D Codes	ON
Aztec	OFF
Codabar	ON
Code 128	ON
Code 93	ON
Code 39	ON
Composite	OFF
Data Matrix	ON
DM Inverse	OFF
DM Rect.	OFF
GoCode	OFF
Interleaved 2 0f 5	ON
MaxiCode	OFF
MSIP	ON
PDF 417	ON
Micro PDF	OFF
Postal Codes	OFF
QR	OFF
RSS	OFF
UPC	ON

Control Setting Defaults:

Communication Mode	USB Keyboard
Left Button	All Decodes
Right Button	All Decodes
Handle	Both Near and Far
Beeper Volume	High
Laser Targeting	On
Time Stamp	Off
Continuous Scan	Off

7.1 - CR2 - Default Settings (con't)

RS-232 Interface Setting Defaults

You must scan the RS-232 commuincation settings code on page 44 to switch the reader in RS-232 communication mode. When enabled your unit will default to the following settings:

Baud Rate	57600
Stop Bits	2
Data Bits	8
Parity	None

Batch Mode Setting Defaults

Your unit will recognize when the USB cable is detached or the bluetooth radio is out of range and automatically switch into batch mode with the following settings.

Auto Storage Erase	On
Send and Store	Off
RS-232 Connected	On

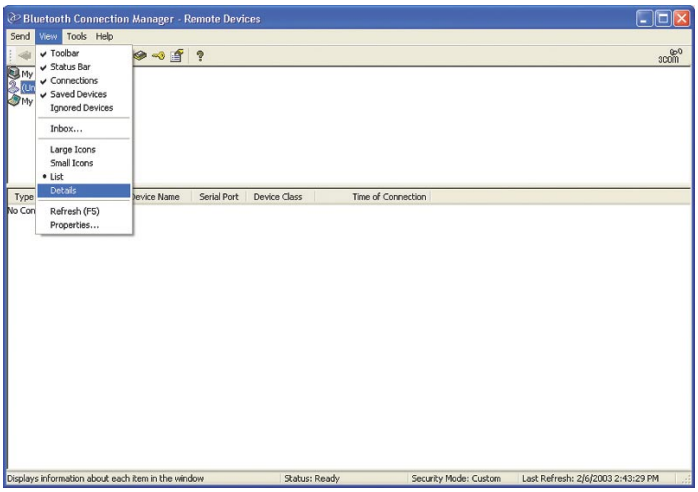
Appendix A

Connecting the CR2 Bluetooth Radio to Other Bluetooth Enabled Devices

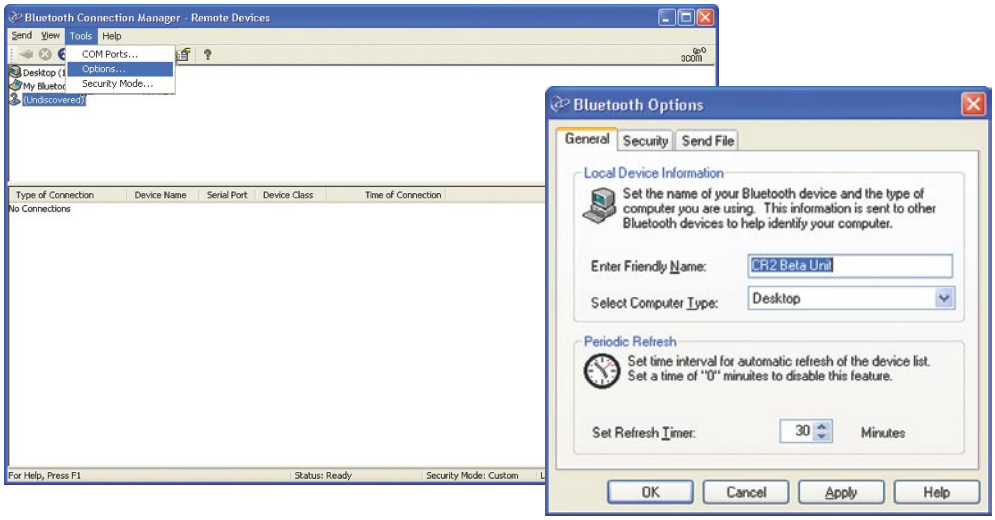
Quickstart Guide for Connecting the CR2 Bluetooth® Radio to the 3Com® Wireless Bluetooth USB Device # 3CREB96

1. Follow the instructions that came with the 3Com device and install on the host computer you wish to utilize.

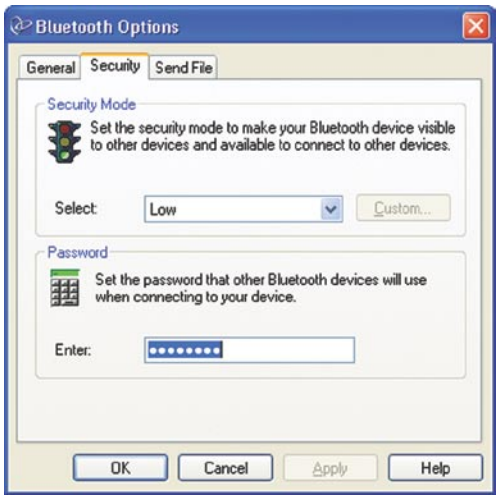
2. Once you have properly installed the device, open the Bluetooth Connection Manager. In the View menu select to view the Toolbar, Status Bar, Connections, Saved Devices, Ignored Devices and Details.



3. Under the Tools menu select Options. Under the General tab, make sure to select your appropriate computer type. When Done click OK.



4 Under the Tools menu select Options. Under the Security tab, make sure to select the Low security option under Security Mode. At this point you will have to enter your Bluetooth PIN #. Your PIN # is the same as the serial number of your reader. The serial number is located on a sticker behind the battery. You may also access the PIN # by scanning a code on page 53 in the CR2 Users Manual. Once you have the Radio PIN # enter it in the password box. When done click OK.



Note: For beta units the temporary password is:

12345678

5 Under the Tools Menu, select Secuity Mode. Set to Security Mode to Custom and click on Custom button. Under Custom Security Mode screen make device Connectable and Discoverable. Set the Security Level to none. When done click on OK.

6 To enable the CR2 unit for RF communication, scan the Reset code then scan the Enable RF codes below:

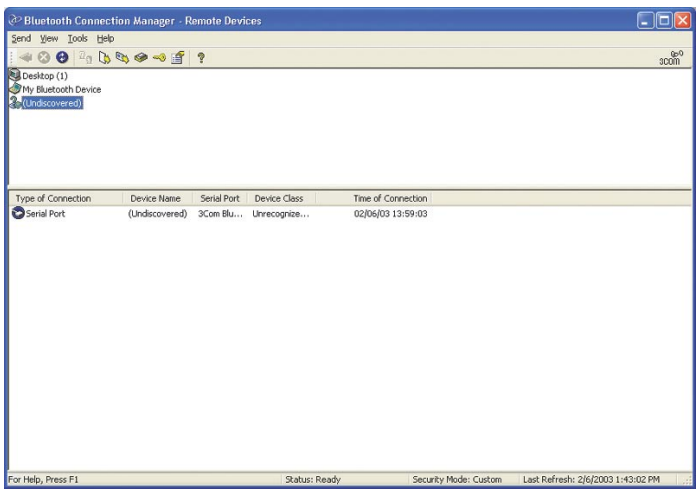
Reset to Factory Defaults

Enable RF Communication Mode

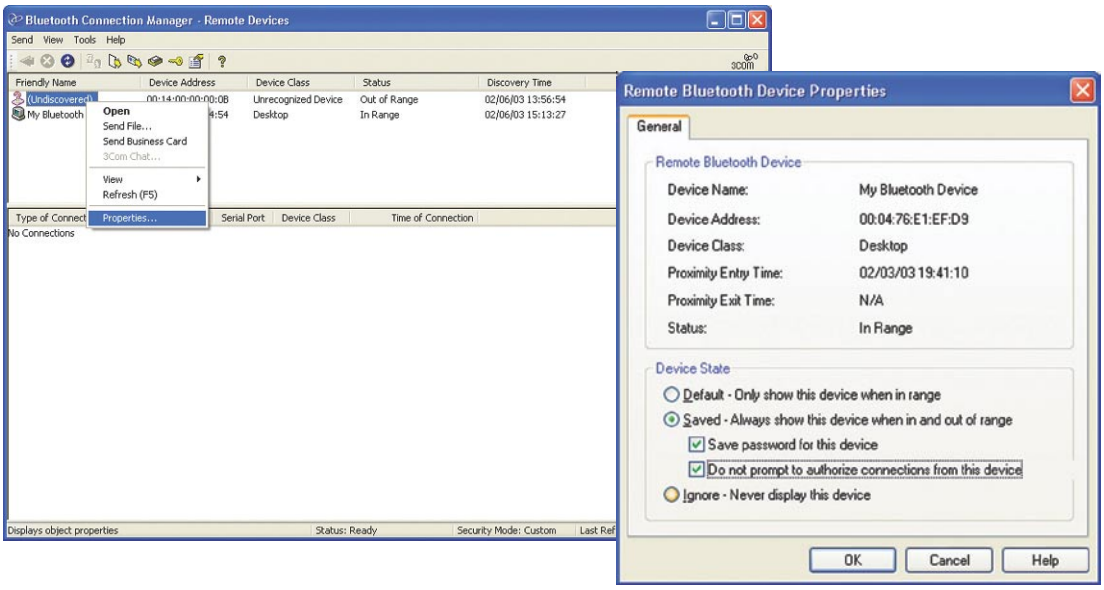
7 Scan the code below to inquire and connect to the desired device. It may take 20 - 30 seconds for the devices to connect. Observe the connection status check-mark on the device ICON in the Bluetooth Connection Manager upper screen and in the serial port connection at the bottom of the screen.

Note: For Beta units your device name will come up as *undiscovered*

Inquire and Connect



8 When the ICON appears in upper screen, right click on it and select Properties. Save Password and do not prompt to authorize connections.



9

Disconnect from the CR2 unit by scanning the code below.
Wait 20-30 seconds for the devices to disconnect.

Disconnect

10

Scan the following code below to enable device pairing:

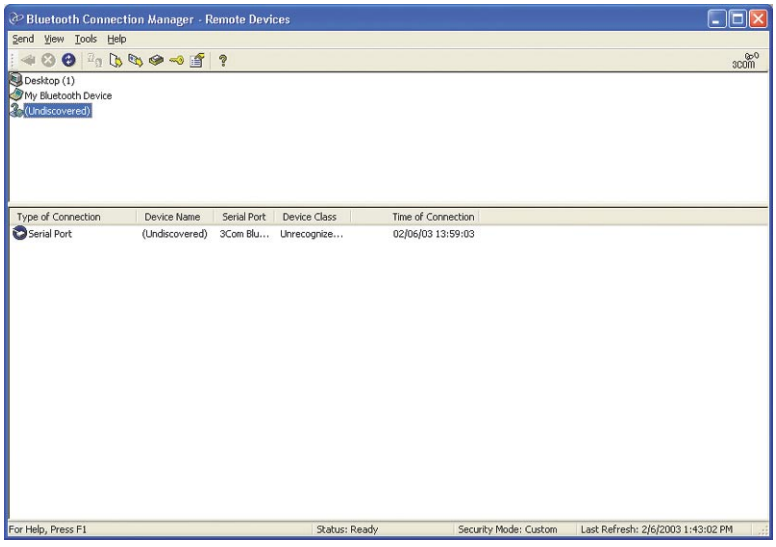
Enable Pairing Mode

11

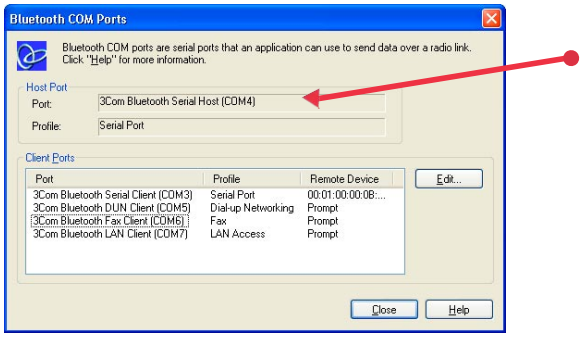
Scan to inquire and connect to the desired device.

Inquire and Connect

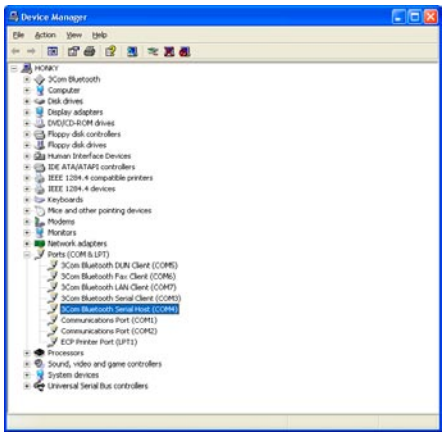
Note: It may take 20 - 30 seconds for the devices to connect. Observe the connection status check-mark on the device ICON in the Bluetooth Connection Manager upper screen and in the serial port connection at the bottom of the screen.



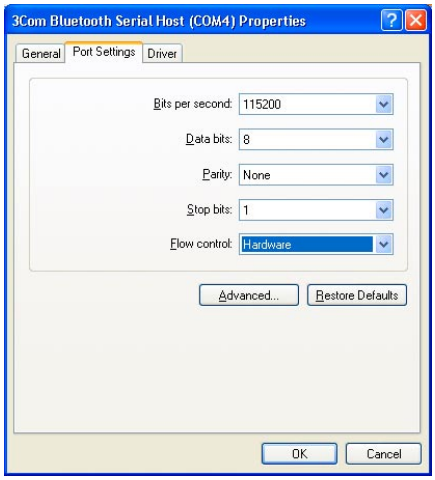
12 Under the Tools menu select COM ports. The application will connect to the serial host COM port shown in the menu below. Click Close.



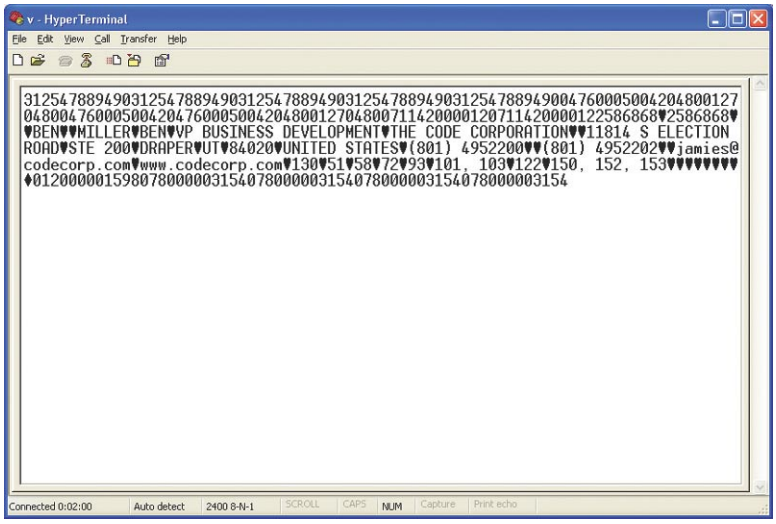
13 On your host, right click the My Computer icon on your desktop. Open Properties. Under the Hardware tab select Device Manager button. Double click on the 3Com Serial Bluetooth Host.



14 Make sure to match the settings of the port to the below settings:



15 Open an application and begin scanning codes to verify data output (make sure the application is set to the host COM port observed in the previous steps).



16 Disconnect from the CR2 unit by scanning the code below. Wait 20-30 seconds for the devices to disconnect.

Disconnect

18 Scan the code to inquire and connect to the desired device.

Inquire and Connect

Note: It may take 20 - 30 seconds for the devices to connect. Observe the connection status check-mark on the device ICON in the Bluetooth Connection Manager upper screen and in the serial port connection at the bottom of the screen.

19 Open the sheet of labels that came with your CR2 unit. The CR2 can save up to 256 bonded hosts. You can instantly connect to a host by associating it with a label on the sheet. Follow the steps below to associate a host with a label:

1. Scan the Save 001 code from the label sheet.

2. Peel the Connect 001 label off and stick it on the host.

   When a user now scans the Connect 001 code the CR2 will instantly link to that device. If you wish to associate more than 25 devices please contact a Code representative.

If you would like to test the functionality, scan the following code:

Save 001

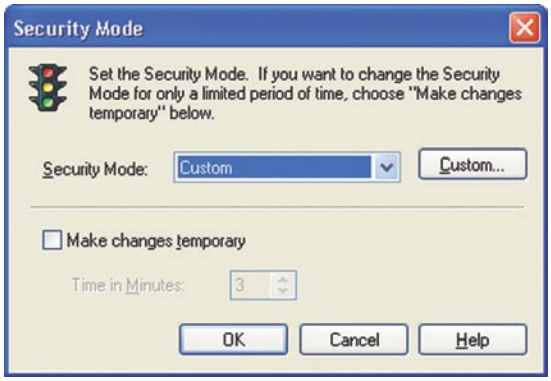
20 Disconnect from the CR2 unit by scanning the code below.
Wait 20-30 seconds for the devices to disconnect.

Disconnect

21 Reconnect to the host by scanning the Connect 001 code below.
Wait 20-30 seconds for the devices to connect.

Connect 001

22 Under the Tools Menu, select Secuity Mode. Set to Custom and click on Custom button.Under Custom Security Mode screen make sure Connectable box is checked but deselect the Discoverable box. Set the Security Level to Link. When Done click on OK.



23 Scan the code below to save the settings on your Reader.

Save Settings on Reader

Appendix B - Setting up a Network of Bluetooth Enabled Devices

Appendix C - Upgrading CR2 Firmware

Instructions for Downloading CR2 Firmware

1. Insert the CR2 Firmware CD in a host computer and copy the CR2 Firmware folder on the CD to your Desktop. If you were emailed a version, please save the files included in the email to the Desktop in a folder called CR2 Firmware.

2. In the CR2 Firmware folder on the Desktop, open the CR2 Firmware Dowloader software by double-clicking on the red arrows Icon.

3. Attach your CR2 unit to the host with the USB interface.

4. Scan the code below to set the CR2 unit to USB Native Communication mode:

USB Native

5. Verify that your CR2 unit is detected by the CR2 Firmware Dowloader software by checking if the devices name appeards in the USB Device window (figure 1).

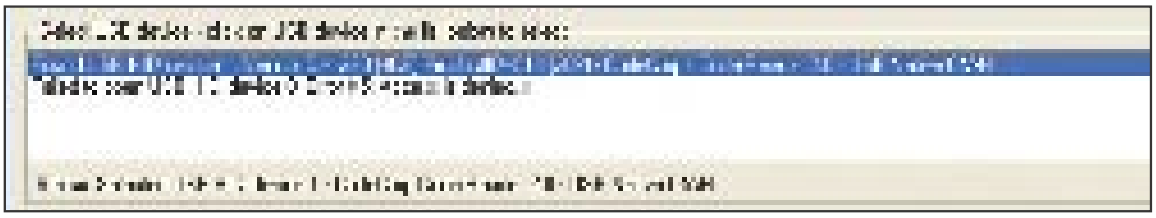


figure 1

6. With the browse button select the firmware file to download. The correct file is located in the CR2 Firmware folder on the Desktop. Highlight the file and click Open.

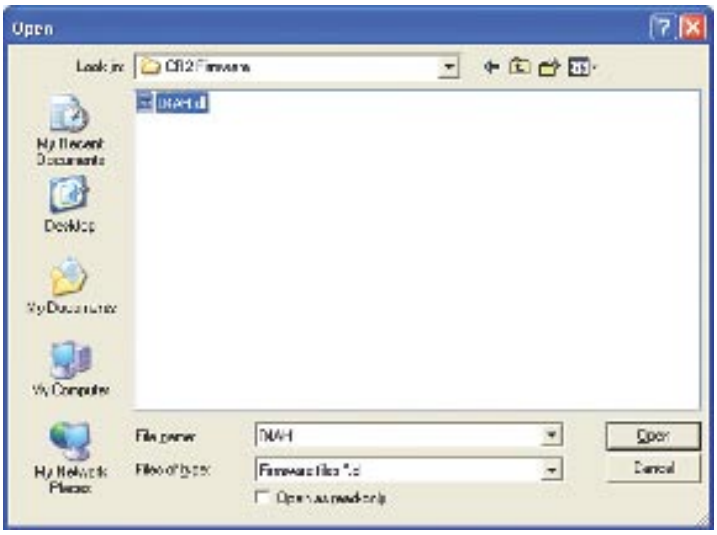


figure 2

7. Click on the Download Now button. Firmware will automatically be uploaded to your CR2 unit (figure 4).

Note: DO NOT unplug the unit while upgrading firmware!

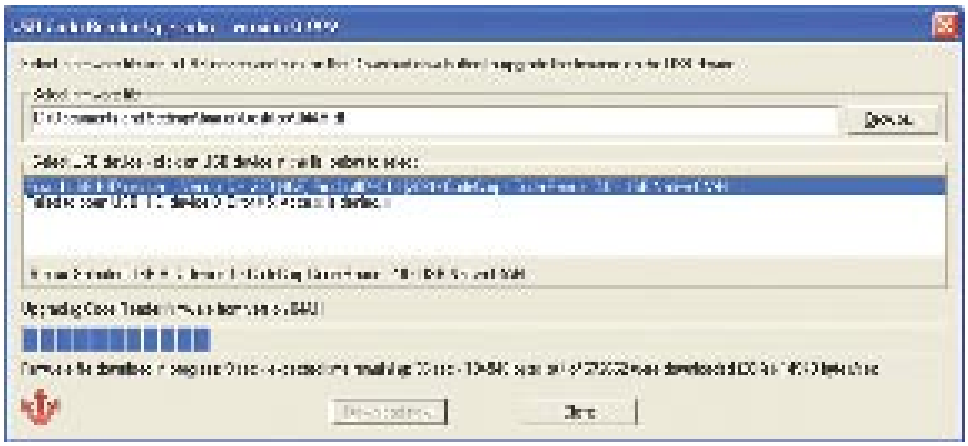


figure 3

8. When done uploading, you will see a Pass Icon in the lower left corner and a note saying FIRMWARE HAS BEEN SUCCESSFULLY UPGRADED (figure 4).

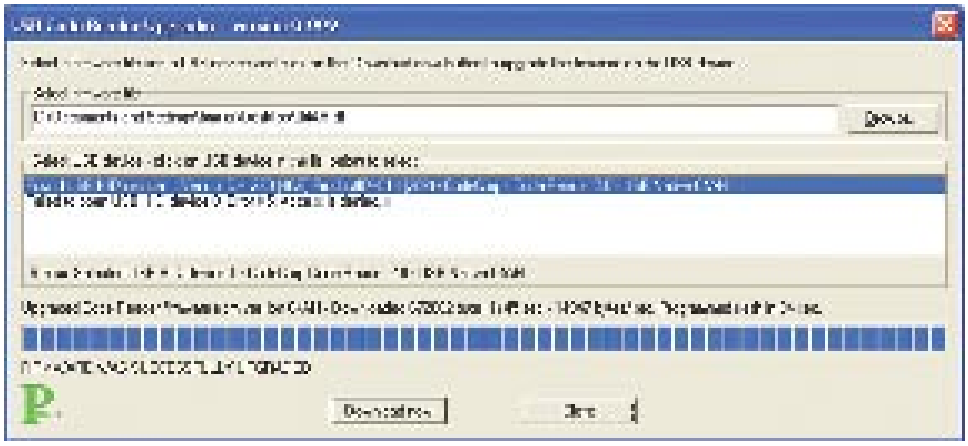


figure 4

9. Power off your reader. Power the unit back up then scan the Reset to Factory Defaults code then Save Settings code:

Reset to Factory Defaults

Save Settings