



ChronoTrack User Manual

ChronoTrack Systems, Inc.

111 East Diamond Avenue

Evansville, Indiana 47711

U.S.A.

812-423-7800 Main

314-406-7243 Sales

812-759-7877 Support

812-423-7801 Fax

www.chronotrack.com

© Copyright 2010 ChronoTrack Systems, Inc. All rights reserved.

“ChronoTrack”, “D-Tag”, and “D-Tag Interrogator” are trademarks of ChronoTrack Systems, Inc. “Windows” is a registered trademark of Microsoft Corporation in the United States and other countries. All other trademarks used herein are property of their respective owners.

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

This document contains proprietary information, which is protected by copyright. No part of this document may be photocopied, reproduced, or translated into another language without the prior written consent of ChronoTrack Systems.

ChronoTrack Systems shall not be liable for technical or editorial errors or omissions contained herein. The information is provided “as is” without warranty of any kind and is subject to change without notice.

1 Table of Contents

1	Table of Contents	1-3
2	Introduction	2-1
2.1	About This Guide	2-1
2.2	ChronoTrack System Overview	2-1
3	Gator Setup and Configuration	3-1
3.1	Possible Gator Configurations	3-1
3.2	Positioning and Linking Gators	3-3
3.3	Connecting Antennas	3-4
3.4	Creating a “Dead Zone”	3-4
4	Controller Setup	4-1
4.1	The Controller Interface	4-1
4.1.1	Status Indicator LEDs	4-2
4.2	Powering ON	4-3
4.3	Pre-Event Configuration	4-3
4.4	Charging	4-3
5	Using BoxScore	5-1
5.1	The Main Screen	5-1
5.1.1	Creating a Gun Start Timestamp and File Markers	5-1
5.2	Configure Menu	5-2
5.2.1	Network Configuration	5-2
5.2.1.1	Setting the Server Address	5-2
5.2.1.2	Advanced Network Configuration	5-3
5.2.2	Powering ON/OFF Internal Components	5-3
5.2.3	Point Configuration	5-3
5.2.3.1	Point Configuration Data Input	5-4
5.2.4	Copying Files to USB	5-5
5.2.4.1	File Copy Status Messages	5-5
5.2.5	Setup Wizard	5-6
5.3	System Menu	5-6
5.3.1	Shutting Down the System	5-6
5.3.2	Setting the Time and Date	5-7
5.3.2.1	Setting the Time on a Controller	5-7
5.3.2.2	Synchronizing the Time on Multiple Controllers	5-7
5.3.2.3	Setting the Time with GPS	5-7
5.3.3	Maintenance	5-8
5.3.3.1	Fast-Charging	5-8
5.3.3.2	Dry Mode	5-8
5.4	Status Menu	5-9
5.4.1	System Status	5-9
5.4.2	Reader Status	5-10

5.4.2.1	Sending Reader Commands	5-10
5.4.2.2	Checking Connected Antennas	5-10
5.4.3	Establishing Network Connections	5-10
5.4.3.1	Establishing a Cellular (GPRS) Connection	5-12
5.4.3.2	Establishing a Wireless Connection	5-12
5.4.3.3	Establishing a Wired Connection	5-13
5.4.4	Operations	5-13
5.4.4.1	Immediate Mode	5-13
5.4.4.2	Zeroing Tag Counts	5-13
5.5	Messages Menu	5-14
5.5.1	Acknowledging Alerts	5-15
5.6	Updating BoxScore	5-15
6	Using CCSLite	6-1
6.1	Configuration of CCSLite	6-1
6.2	Establishing Controller Connections	6-1
6.3	CCSLite Raw Mode	6-2
6.4	Adding a Firewall Exception for CCSLite	6-2
7	Using SimpleClient	7-1
7.1	SimpleClient Operation Modes	7-1
7.1.1	Local Network Mode	7-1
7.1.2	Internet Server Mode	7-1
7.2	Connecting to the Server and Retrieving Data	7-1
7.3	Streaming Data	7-2
7.4	Tag Invalidation	7-3
7.5	File Formats	7-3
7.6	Saving SimpleClient Data	7-3
7.7	Filtering Data	7-4
7.7.1	Creating Tag Ranges for an Event	7-4
7.8	Creating Virtual Points	7-4
7.9	Creating and Using an Announcer Line	7-5
7.10	Loading Controller Files	7-5
7.11	Establishing a Direct Socket Connection with Scoring Software	7-6
7.12	Setting Time Intervals for Pass Counts and Same Tag Observations	7-6
7.13	Creating Time Shifts	7-6
7.13.1	Disabled	7-6
7.13.2	UTC to Local Timezone	7-7
7.13.3	Manual	7-7
7.13.4	00:00 Start	7-7
7.14	Renaming Events/Points	7-7
7.15	More SimpleClient Functions	7-7
8	Printing and Re-encoding D-Tags	8-1

8.1	Printer Installation	8-1
8.1.1	Printer Setup - Hardware.....	8-1
8.1.2	Printer Setup – Software	8-4
8.1.3	Printer Setup - Windows.....	8-5
8.2	RFID Encoder Installation	8-9
8.3	Barcode Scanner Installation	8-12
8.4	Installation of Software.....	8-13
8.4.1	PrintDTag Software	8-13
8.4.2	Wasp Labeler – Barcode Label Software	8-13
8.5	PrintDTag Software.....	8-14
8.5.1	PrintDTag Main Menu	8-14
8.5.2	PrintDTag Default Settings.....	8-14
8.5.3	Printing D-Tags	8-17
8.5.4	Validating D-Tags.....	8-19
8.5.5	Re-encoding D-Tags	8-20
8.5.6	Reading D-Tags	8-21
9	Troubleshooting	9-1
10	Appendix.....	10-1
10.1	System Specifications	10-1
10.2	File Format Specifications.....	10-1
10.2.1	Available Fields	10-2
10.2.2	File Format Indicator.....	10-2
10.2.3	Fixed Width Size Considerations.....	10-5
11	Index.....	1

2 Introduction

ChronoTrack is a cost-effective timing and tracking system for use at athletic events, such as a marathon or a road race. ChronoTrack “D-Tag” technology uses specially designed RFID controllers and antennas to track an EPC-certified, UHF RFID tag that is attached to the runner’s foot during the race. Using this system, ChronoTrack Systems, Inc. provides full-service race timing packages, including internationally certified race timers, bibs, tags, and race timing equipment.

2.1 About This Guide

This guide describes how to set up, configure, and use ChronoTrack system components to time and track athletic events.



This symbol indicates cautions and warnings where necessary.

2.2 ChronoTrack System Overview

The ChronoTrack system is comprised of the components listed below. See [System Specifications](#) in the Appendix for more details.

- **D-Tag Interrogator (“Gator”)**

A D-Tag Interrogator, also known as a Gator, is a specially designed modular track that is placed at each timing location. Each Gator is 42 inches long and is connected with other Gators until they span the entire width of the roadway at the designated timing location.

- **D-Tag Interrogator Core (Antenna)**

A D-Tag Interrogator Core Antenna fits inside each Gator and reads participant D-Tags as they pass over that portion of track. This information is then sent to the ChronoTrack controller.

- **ChronoTrack Controller (400 or 800 Series)**

A ChronoTrack controller stores and reads the RFID data that is recorded by the antennas at its timing location. A 400 Series controller can support a configuration of up to four Gators (a span of up to 14 feet), and the 800 Series controller can support a configuration of up to eight Gators (a span of up to 28 feet).

- **DC Power Cable**

The DC Power Cable enables you to run the ChronoTrack controller from an auxiliary battery source.

- **Cable Sets (Short or Long)**

Cable sets connect the Gator Core Antennas together and to the controller. The short cable set supports a full 400 Series controller, and the long cable set in combination with a short set supports a full 800 Series controller.

- **ChronoTrack Software**

The system comes equipped with the following software:

- **BoxScore** software that enables information to be downloaded from a controller during or after an event using a simple touch screen interface.
- **SimpleClient** software that retrieves and manipulates controller data for use in third-party scoring software.
- **CCSLite** software that helps establish LAN and Wi-Fi connections with the SimpleClient software.
- **PrintDTag** software is also available separately for printing your own D-Tags.



DOT regulations prohibit the shipping of lithium batteries by aircraft or vessel. Shipped controllers must include the following label: "LITHIUM BATTERIES: FORBIDDEN FOR TRANSPORT ABOARD AIRCRAFT AND VESSEL".

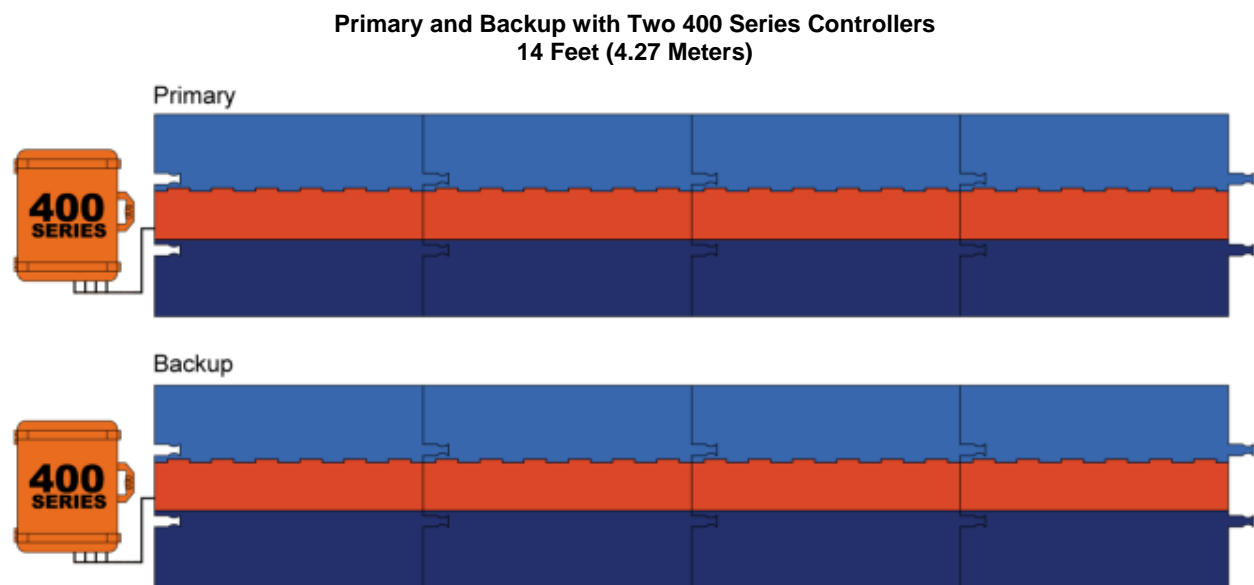
3 Gator Setup and Configuration

The ChronoTrack Controller and modular Gators are versatile and allow for multiple configurations. Timing locations can be configured to be as narrow as 42 inches or as wide as 56 feet of continuous lengths, with one controller covering as much as 28 feet.

3.1 Possible Gator Configurations

In preparation for an event, it is important to determine the width of the roadway at the designated timing locations. This information is used to determine which configurations of Gators and controllers will best suit your needs. With the ChronoTrack system, a backup start line is recommended to increase overall performance of the system and as a fail-safe measure to ensure every tag is read.

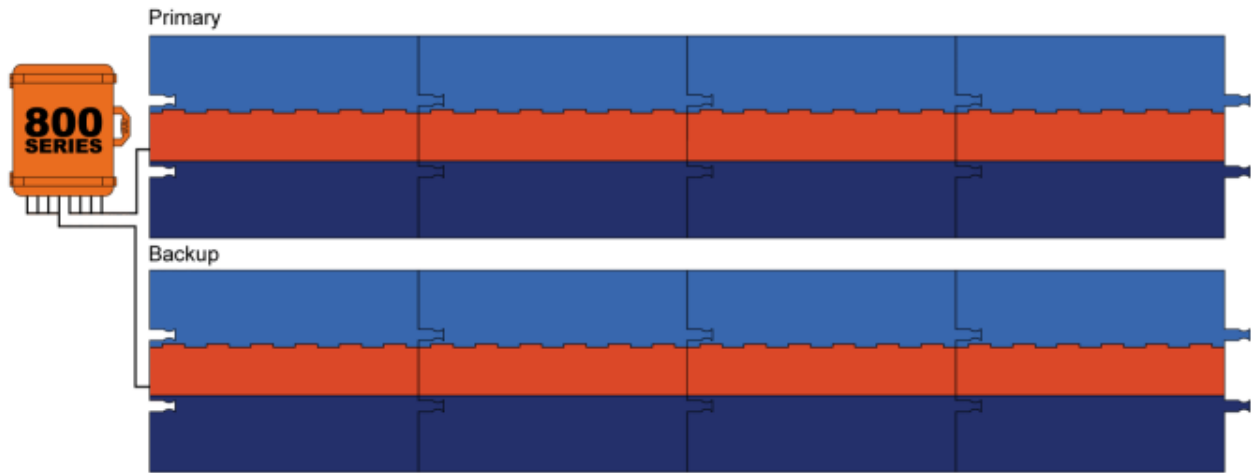
The following are some possible configurations. Note that spacing is not to scale.



Unnetworked Point Configuration: 1 Controller, 1 Reader, 4 Gators

Networked Point Configuration: 1 Controller, 1 Reader, 4 Gators

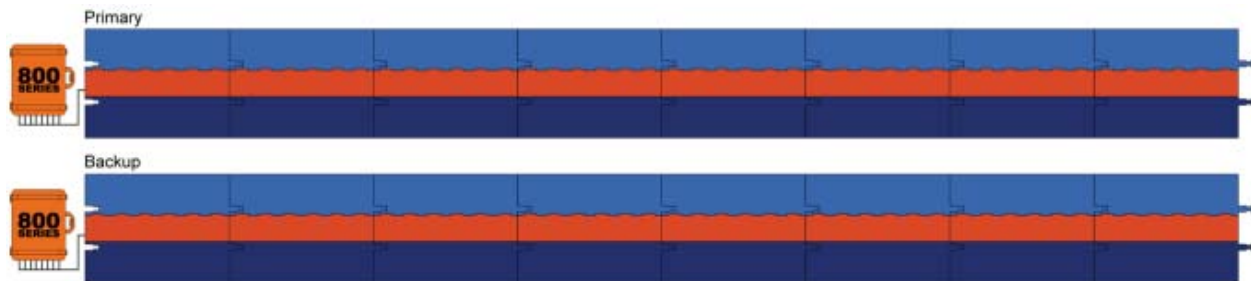
**Primary and Backup on a Single 800 Series Controller
14 Feet (4.27 Meters)**



Unnetworked Point Configuration: 1 Controller, 2 Readers, 8 Gators

Networked Point Configuration: N/A

**Primary and Backup with Two 800 Series Controllers
28 Feet (8.53 Meters)**



Unnetworked Point Configuration: 1 Controller, 2 Readers, 8 Gators

Networked Point Configuration: 2 Controllers, 4 Readers, 16 Gators

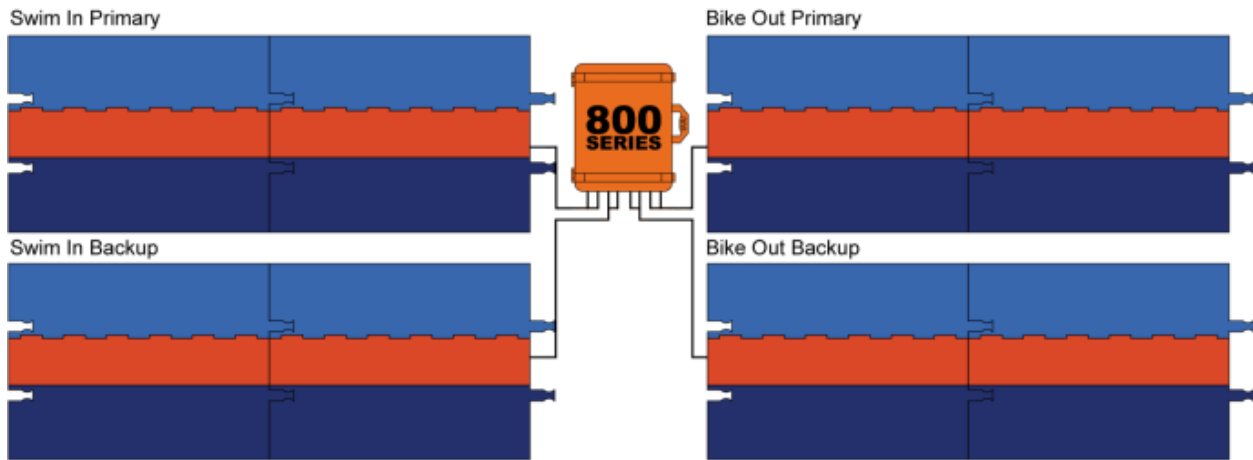
**Primary and Backup with Four 800 Series Controllers
56 Feet (17.07 Meters)**



Unnetworked Point Configuration: 1 Controller, 2 Readers, 8 Gators

Networked Point Configuration: 4 Controllers, 8 Readers, 32 Gators

**Primary and Backup Triathlon In and Out on a Single 800 Series Controller
7 Feet (2.13 Meters)**



Unnetworked Point Configuration: 1 Controller, 2 Readers, 8 Gators

Networked Point Configuration: N/A

3.2 Positioning and Linking Gators

To position and link Gators, complete the following procedure:

1. Position the Gators on the ground with the cable compartment hinges facing in the direction from which runners will be approaching, and then link the connecting ends together. Primary and backup lines should be spaced 10 to 12 feet apart.
2. Insert the Impinj Threshold antenna into the cable compartment of each Gator, placing it in the direction of the controller with the writing on top. The Impinj logo will face the runners.
3. Starting with the Gator farthest from the controller, connect the Core antennas together using the appropriate cable set for your configuration. When the connectors tangibly 'click', the cables are connected correctly.



4. Pass the cables through the Gators using the top trough in the cable compartments. Make sure the cables do not cross over the top of a trough. This can cause the lid of the Gator to close unevenly.
5. Connect the cables from the nearest Gator to the corresponding ports on the controller, matching the color of each cable to the color of the port (Red cable to red port, blue to blue, etc.)

6. The only antenna licensed for use with this controller is the Impinj Threshold Antenna P/N: IPJ-A031-USA0E using the cable sets provided by ChronoTrack Systems LLC. **CAUTION – Any changes or modifications to antenna and or cables used to attach the antennas to the controller without the express permission of ChronoTrack System LLC will void the user's authority to operate this equipment.**



3.3 *Creating a "Dead Zone"*

In order to avoid cross-reads when lines are placed next to each other, for example, two races finishing at the same location on different ChronoTrack lines, it is necessary to either create an 8' x 12' "dead zone" or use a reflective insulation barrier.

4 Controller Setup

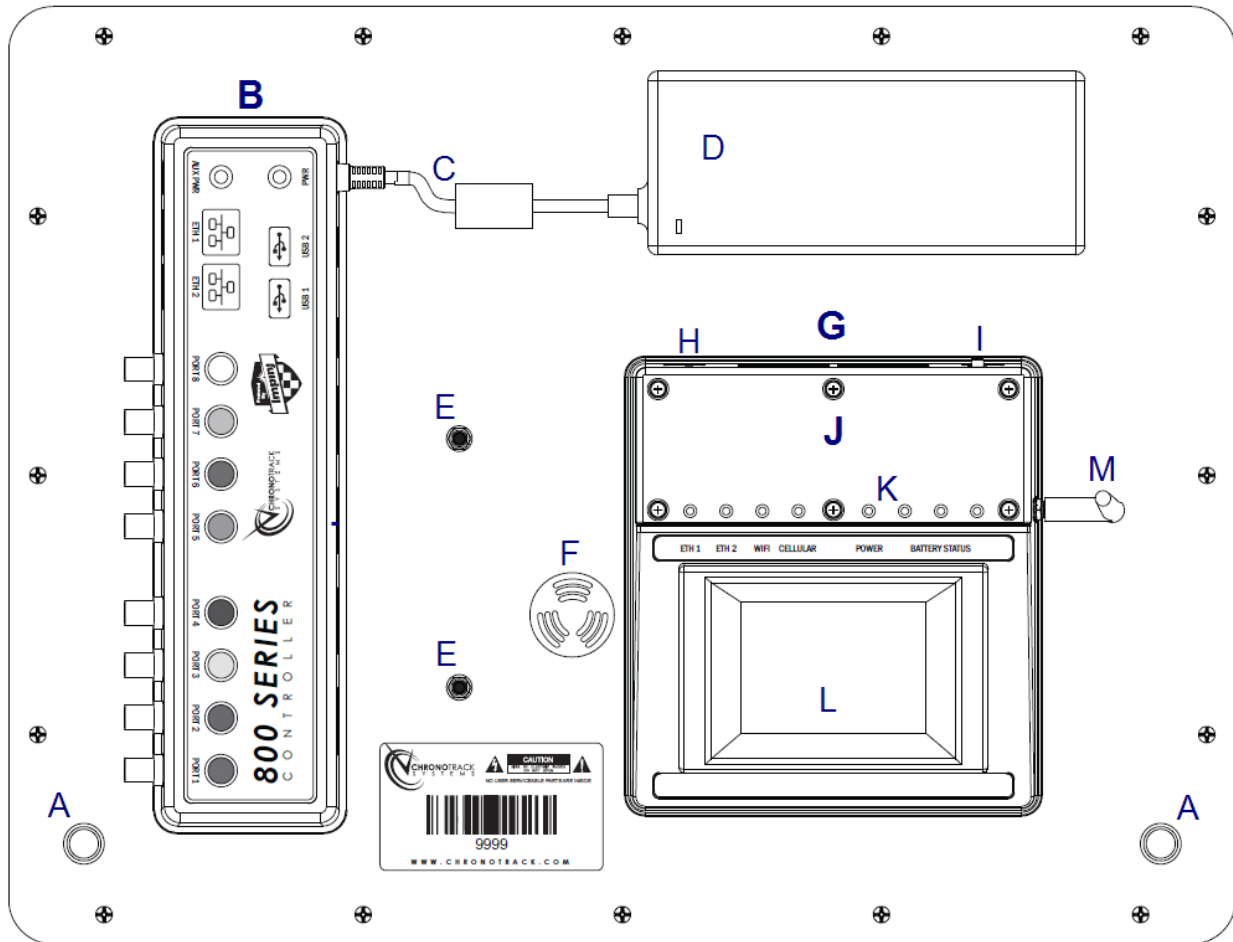
4.1 *The Controller Interface*

ChronoTrack Controllers housed in crush-proof, waterproof, heat-resistant transport cases. The cases also provide magnetized lid supports to shield the controller interface during inclement weather. In harsh conditions, you can place controllers in plastic bags for further protection.

The controllers run on the Windows CE operating system and are pre-loaded with [BoxScore](#) software for easy setup and configuration. A touch panel LCD screen is used to interface with the controller.

Two RFID readers are inside each controller. The readers correspond to the ports on the controller: Ports 1-4 correspond to Reader 1, and Ports 5-8 correspond to Reader 2. To ensure accurate D-Tag readings, tags are read within eight feet of a timing line, and the data is tracked and calculated as participants pass over the line so that the most accurate time is reported.

The controller interface and legend are shown as follows:



- | | |
|------------------------|------------------------------------|
| A. Lid Support Magnets | H. Reset Button Pinhole |
| B. Connection Mesa | I. Power Switch |
| C. AC Power Cable | J. TPC (Touch Panel Computer) Mesa |
| D. Power Supply | K. Status Indicator LEDs |
| E. Wi-Fi Antennas | L. Touch Panel Screen |
| F. Loudspeaker | M. Cellular Antenna (GPRS) |
| G. Display Mesa | |

4.1.1 Status Indicator LEDs

When a controller is powered ON, LEDs on the Display Mesa light up depending on the status/activity. The LEDs are described in the following table.

LED Name	Color	Function
ETH 1	Flashing green	Activity
	None	No activity
ETH 2	Flashing green	Activity
	None	No activity
WIFI	Flashing green	Activity
	None	No activity
Cellular	Flashing green	Activity
	None	No activity
Power	Green	Power ON
	None	Power OFF
Battery Status	Green	Total battery charge over 50%
	Amber	Total battery charge at 50% or less
	Red	Total battery charge at 10% or less

4.2 Powering ON

To power ON a controller, press the red switch on the back of the Display Mesa.

Each time a controller is powered ON, the [Setup Wizard](#) initializes the box. The first time the Setup Wizard runs, you are prompted to enter information about the event, such as the event name, point name, and number of controllers and Gators being used (see [Point Configuration](#)). When the controller is subsequently powered ON, if properly configured, the Setup Wizard ensures that the proper connections are made and completes without interruption.

NOTE: When networking controllers together, the number of Controllers, Readers and Gators must be configured during initial setup of each controller. The time and date can be set on one controller and synchronized with the others. See [Synchronizing the Time on Multiple Controllers](#) for more information.

4.3 Pre-Event Configuration

Before an event, you must configure the type of point (start, split, etc.), and set the time and date using the BoxScore software. After configuring these items, shut down the controller and deploy it to its proper timing point. See [Point Configuration](#) and [Setting the Time and Date](#) for more information.

4.4 Charging

Each controller contains up to six batteries. The charge on each battery is good for approximately eight hours with a single reader (400 Series) in use, and four hours with two readers (800 Series) in use. [LED lights](#) on the controller TPC Mesa indicate the total battery charge. The battery charge percentages are also shown on the [System Status](#)

screen. When the total battery charge is depleted to 10% of its capacity, the controller sends an alert (see [Acknowledging Alerts](#)).

To charge the controller battery, use one of the following methods:

- **Use the power cord:** Connect the power cord to the **PWR** jack on the Connection Mesa and power the system ON. The controller must be powered ON in order to charge.
- **Use an external battery:** Unplug the power cord and connect the external battery to the **PWR** jack. (This method of charging is not power efficient)

To operate the controller using an auxiliary battery source, connect the DC cable to the auxiliary battery and plug it into the **AUX PWR** jack on the Connection Mesa. Power the system ON.

Turn off ports that are not being used and other internal components for increased battery life. See [Powering ON/OFF Internal Components](#) for more information.

5 Using BoxScore

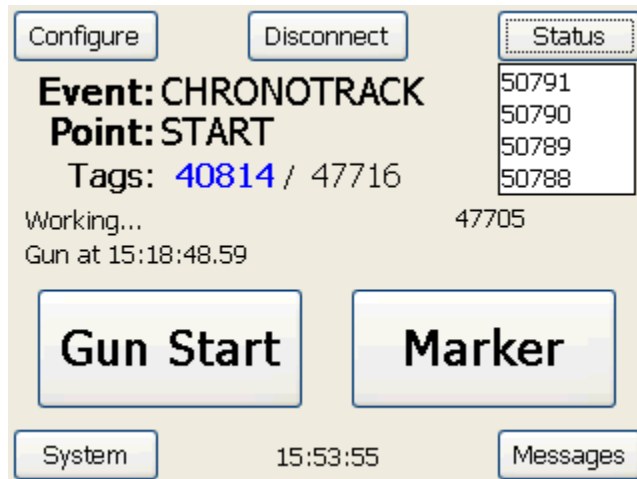
BoxScore is the software application that runs on the controllers.

5.1 The Main Screen

After a controller is powered ON and the Setup Wizard completes, the main screen is displayed.

The following menus can be accessed using buttons on each corner of the screen:

- **Configure** menu: Used to configure settings before an event.
- **Status** menu: Used during an event to display status.
- **System** menu: Used for system maintenance after an event.
- **Messages** menu: Used to view and acknowledge system alerts, and to display gun and marker timestamps.



Other elements of the main screen include:

- **Connect** or **Disconnect**: This button is used to establish a cellular, wireless, or LAN connection to the server. When a network is connected, the button text changes to “Disconnect” and can be used to disconnect from the network. See [Establishing Network Connections](#) for more information.
- **Event** and **Point**: These fields display the event and point names as configured in the [Point Configuration](#).
- **Tags**: The blue count indicates the total number of unique D-Tags read by the controller. The black count indicates the total number of tags read by the controller. (A tag is read again if a participant passes over the same timing line beyond the five second read window, for example, if the start line is also used as the finish line.) The box to the right of the tag count (beneath the Status button) displays up to five of the most recent tag reads. Data is not displayed here until after the accurate time is calculated and assigned for the tag (about five seconds). To clear the tag count, see [Zeroing Tag Counts](#).
- **Network connection status**: The area beneath the Tags label indicates the controller’s network connection status. The black number next to the connection status is the total number of reads that have been passed over the network. See [Establishing Network Connections](#) for more information.
- **Message line**: The line below the network connection status displays messages such as the controller’s working status, gun start times, and marker times.
- **Gun Start** and **Marker**: These buttons are used during an event to set gun starts and markers. See [Creating a Gun Start Timestamp and File Markers](#).
- **System time**: The current system time is displayed in the bottom center of the main screen. To change the system time, see [Setting the Time and Date](#).

5.1.1 Creating a Gun Start Timestamp and File Markers

To set the Gun Start during an event, touch the **Gun Start** button on the BoxScore main screen. This creates a gun start timestamp in the data files for later use in your scoring software.

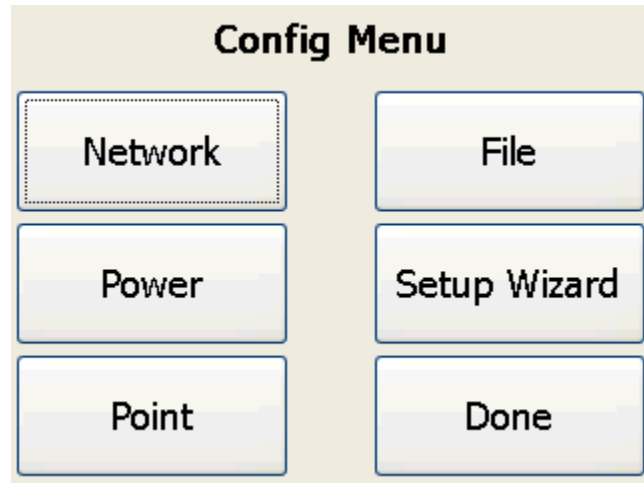
To create a marker timestamp, touch the **Marker** button. Creating file markers helps you organize the data. When you set a marker, data from that point on is collected in a different session.

Gun start and marker timestamps are displayed on the message line of the BoxScore main screen, and can also be viewed from the [Messages](#) menu.

5.2 Configure Menu

The **Configure** menu provides the following buttons:

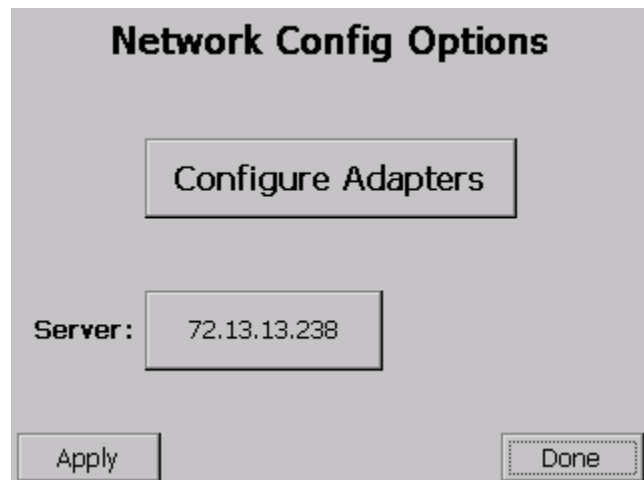
- **Network:** Used to set the server address for LAN, Wi-Fi and cellular connections and for advanced network configurations. See [Network Configuration](#).
- **Power:** Used to power internal controller components on and off for battery conservation. See [Powering ON/OFF Internal Components](#).
- **Point:** Used to configure events and points. See [Point Configuration](#).
- **File:** Used to copy files from the controller to a USB device, usually before or after an event. See [Copying Files to USB](#).
- **Setup Wizard:** Used to run the Setup Wizard to reinitialize the controller. The Setup Wizard resets all settings to the defaults and can be used as a troubleshooting step. See [Setup Wizard](#).
- **Done:** Used to exit the Configure menu and return to the [main screen](#).



5.2.1 Network Configuration

Network configuration options are available to set the server address for LAN, Wi-Fi and cellular connections (see [Setting the Server Address](#)), and to reconfigure the IP address, netmask, and gateway for LAN and Wi-Fi networks (see [Advanced Network Configuration](#)). To access these options, complete the following steps:

1. From the BoxScore main screen, touch **Configure**.
2. On the Config Menu screen, touch **Network**.
3. When finished working with Network Config options, touch **Done**.



5.2.1.1 Setting the Server Address

In order to download controller data directly to a laptop, a network connection must be established with a server. To set the server address, complete the following steps:

1. On the Network Config Options screen, touch the **Server** button.
2. Enter the IP address you wish to use as the server, Touch **OK**.
The Server button displays the server or IP address that you entered.
3. Touch **Apply**, and then touch **Done**.

After setting the server address, you must establish the network connection. See [Establishing Network Connections](#) for more information.

5.2.1.2 Advanced Network Configuration

To change the IP address, netmask, and gateway for LAN and Wi-Fi networks, click the **Configure Adapters** button on the Network Config Options screen.

Click the buttons to change the addresses and gateway. The Cellular addresses are assigned by the Internet service provider and are read-only.



Do not make changes here unless directed.

5.2.2 Powering ON/OFF Internal Components

Battery power can be conserved by turning off individual controller components that are not being used. The readers consume the most power. If you are only using four ports on an 800 Series controller, turn off the second reader to nearly double battery life.

To power on/off internal components, complete the following steps:

4. From the BoxScore main screen, touch **Configure**.
5. On the Config Menu screen, touch **Power**.
On the Power Menu screen, buttons indicate whether a component is on or off.
6. Touch the desired item to switch to the opposite setting.
7. When finished, touch **Done**.

5.2.3 Point Configuration

When you first set up a controller, the [Setup Wizard](#) prompts you to configure the timing point by displaying the Point Config screen. Thereafter, as long as the proper connections are made based on the configuration, the Setup Wizard continues through the point configuration. For example, if the controller is configured as shown in the image and only four antennas are connected, the Setup Wizard will display the Point Config screen and the **# Gators** box will display **4 of 8**, until the other four antennas are connected or until you touch **Done**.



Touching Done without proper configuration will result in reduced performance of the system.

Network Config Options

	IP Address	Netmask
LAN:	172.20.23.120	255.255.252.0
Cellular:	0.0.0.0	0.0.0.0
WiFi:	Powered Off	
Gateway:	Undefined	

Message: Changes may interrupt operations!

Done

Power Menu

GPRS: ON	Reader 1: ON
WiFi: ON	Reader 2: ON
GPS: ON	Done

You can make changes to the point configuration at any time. To access the Point Config screen, do the following:

1. From the BoxScore main screen, touch **Configure**.
2. On the Config Menu screen, touch **Point**.

Buttons on the Point Config screen display the current settings. Touch a button to name or rename an event or point, or to specify the number of controllers, readers, and Gators used for this event. See [Point Configuration Data Input](#) for information about switching between alpha and numeric text entry.

Event values should be unique per event, for example, "NYMARATHON" or "CHICAGO5K". Point values should be unique based on their location, for example, "START", "10KSPLIT", or "FINISH". All controllers for an event should have the same event name.

When **Alert on Change** is checked, an audible alert is sounded and the Display Mesa flashes red lights when the controller detects a disconnect, such as loss of antenna or network connection.

Note: Selecting **Alert on Change** does not require hitting **Accept**.

5.2.3.1 Point Configuration Data Input

When entering values for point configuration items, you can use the Alpha Entry screen or Numeric Entry screen.

To switch between the two screens, touch the **ALPHA** or **NUM** button in the top left corner of each screen.

When done entering text, touch **OK**. A blank value is entered if there is no entry. To cancel without making changes, touch **Quit**.

The Alpha Entry screen is similar to a telephone alphabet. To select a letter that is not the first listed in the block, you must touch that button multiple times. For example, to enter an R, you would touch the **PQRS** button three times.

5.2.4 Copying Files to USB

When a controller is powered ON, it creates and works on one data file until the box is powered OFF. If a controller is powered ON and sees no tags during that session, an empty file is created.

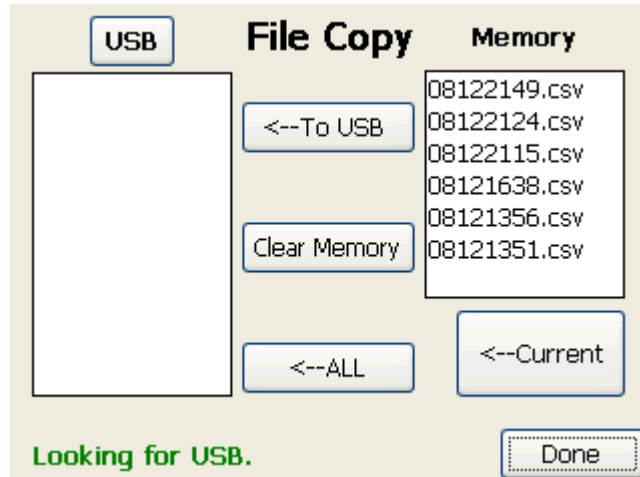
You can copy the data files from a controller to a USB device to load the data into [SimpleClient](#).

To copy files to a USB device, complete the following procedure:

1. From the BoxScore main screen, touch **Configure**.
2. On the Config Menu screen, touch **File**.
3. Insert a USB device into one of the USB 1.0 drives on the controller.



While the USB 2.0 Standard is backward-compatible with 1.0, not all USB devices meet the USB 2.0 standards. We recommend testing your flash drive before an event. We also recommend using thumb drives less than 2GB; larger drives take longer to initialize and sometimes appear to have caused the system to lock up when it has not.



4. Confirm that the status line in the lower left corner states “Ready to Copy”. If the status line does not display “Ready to Copy” in 15 seconds, touch the **USB** button on the top left of the File Copy screen to reinitialize the drive. See [File Copy Status Messages](#) for more possible status line messages.
5. When the status line indicates that the system is ready, select file(s) to copy by doing one of the following:
 - To copy an individual file, touch the file to copy in the Memory section, then touch **< To USB**.
 - To copy all files, touch **<ALL**.
 - To copy the current working file, touch **<Current**. This function can be used during an event to capture waves of participants. For example, if the first 100 participants have finished, you may want to copy the current file to obtain that data immediately.

If the files are large, it can take several seconds for the file to copy. The status line on the File Copy screen displays a count to indicate the progress.

6. When finished, touch **Done**. A folder is created on the USB device with a name matching the point name. Data files are time and date stamped (MM/DD/TIME) in CSV (Comma Separated Value) format.

Files older than two weeks are erased automatically to conserve memory. To clear data files manually, touch the **Clear Memory** button on the File Copy screen.

5.2.4.1 File Copy Status Messages

The following is a list of possible messages displayed on the status line of the File Copy screen:

- Ready to Copy
- Error Copying File
- Looking for USB
- Copy Complete
- Insert USB
- Copy All Complete
- Copy in Progress

- Clear in Progress
- Select Item to Copy
- Clear Complete
- System Busy

5.2.5 Setup Wizard

The Setup Wizard runs automatically each time a controller is powered ON, performing steps to initialize the box. The first time the Setup Wizard runs, you are prompted to configure a point for this event. When the controller is subsequently powered ON, the Setup Wizard completes without any prompts as long as connections match the point configuration. See [Point Configuration](#) for more information.

The Setup Wizard can be run manually at any time to reinitialize the controller as a troubleshooting step. To run the Setup Wizard manually, do the following:

1. From the BoxScore main screen, touch **Config**.
2. On the Config Menu screen, touch **Setup Wizard**.
3. When done, touch **Done** to exit this screen.



5.3 System Menu

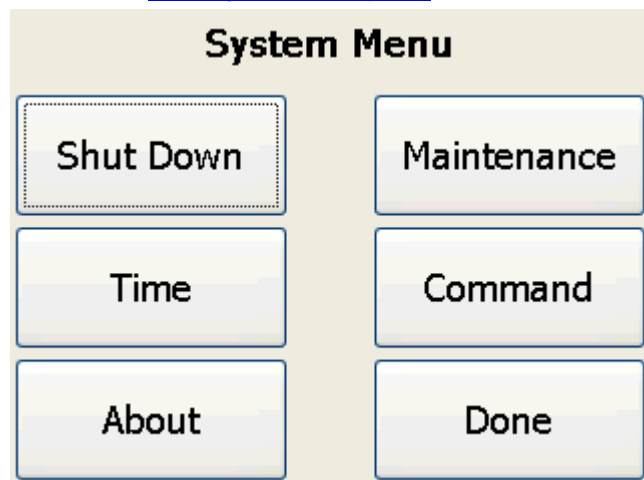
The **System** menu provides the following buttons:

- **Shut Down:** Used to properly power OFF the controller. See [Shutting Down the System](#).
- **Time:** Used to set the time and date on the controller. See [Setting the Time and Date](#).
- **About:** Displays ChronoTrack Systems contact information and BoxScore version information.
- **Maintenance:** Used to “fast-charge” the battery and to dry out the controller. See [Maintenance](#).



Do not touch this button during an event. This will cause the controller to stop collecting data.

- **Command:** Used by ChronoTrack Support to help you troubleshoot issues.
- **Done:** Used to exit from the System Menu and return to the [main screen](#).



5.3.1 Shutting Down the System

To properly shut down a controller, do the following:

1. From the BoxScore main screen, touch **System**.
2. On the System Menu, touch **Shut Down**.

3. On the confirmation screen, touch **YES**.

This procedure ensures that the proper processes are complete and the data is saved.

A hard shut-down is not recommended, but can be accomplished by pressing the power button for seven seconds.

5.3.2 Setting the Time and Date

To set the time and date, do the following:

1. From the BoxScore main screen, touch **System**.
2. On the System menu, touch **Time**.
3. Select one of the following three options for setting the time:
 - **Current:** Set and synchronize the time on networked controllers.
 - **Manual:** Set the time on this controller.
 - **Update with GPS:** Obtain the time automatically from a GPS satellite.
4. Set the date by typing into the **Month**, **Day**, and **Year** boxes or by using the up/down arrows. Setting the date is important if events run past 24 hours or roll over to the next day during an event.
5. After setting the time and date, to exit from this screen, touch **Done**.

Manage Time

Current: 08:54:44

Manual: Not Set Enter Time

Satellites Not in View

Update with GPS

Month: 1 Day: 6 Year: 2009

Set Time Done

5.3.2.1 Setting the Time on a Controller

To set the time on a single controller, complete the following procedure:

1. On the Manage Time screen, touch **Manual**.
2. Touch the **Enter Time** button.
3. On the Enter Time screen, enter the correct time in [hh]:[mm]:[ss] format. Be sure to insert colons as appropriate.
4. When done, touch **OK**.
5. On the Manage Time screen, make sure the date is correct or make adjustments.
6. Touch **Set Time**.

The Display Mesa glows red to indicate that the time is now synchronized. If the controller does not glow reset the time.

5.3.2.2 Synchronizing the Time on Multiple Controllers

To synchronize one controller with other networked controllers, complete the following procedure on the controller you would like to synchronize to:

1. Connect the controllers together using a network cable. (This does not need to be a crossover cable, and a hub/switch/router is not necessary since the controllers have two network ports.)
2. On the Manage Time screen, touch **Current**.
3. Touch **Set Time**.

The Display Mesa glows red on all networked controllers to indicate that the time is now synchronized. If one controller does not glow, check the cables to make sure they are properly connected and re-sync the time.

5.3.2.3 Maintenance

The **Maintenance** menu can be used to perform a quick charge of the battery or to turn on fans to dry out the controller.

To perform maintenance, do the following:

1. From the BoxScore main screen, touch **System**.
2. On the System menu, touch **Maintenance**.



Do not enter into Maintenance during an event.

The operations on this screen cause the controller to stop collecting data.

5.3.2.4 Fast-Charging

Fast-charging is useful when you need to quickly obtain as much power as possible, for example, when you have two back-to-back events.

To perform a fast charge, touch the **Fast Charge** button on the Maintenance Menu screen. This shuts down unused components. The battery charge status is displayed next to the button.

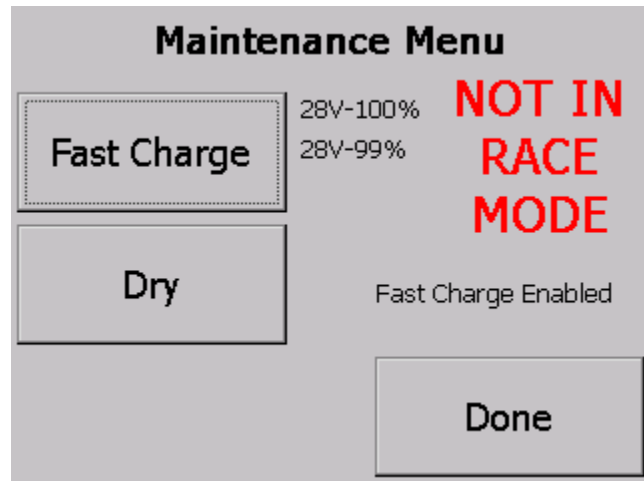
To stop fast-charging and exit the Maintenance Menu, touch **Done**. The [Setup Wizard](#) runs to initialize the controller.

5.3.2.5 Dry Mode

Dry mode causes the controller to enable both readers to produce heat, and turns on fans to pump air through the box.

To start Dry mode, touch **Dry** on the Maintenance Menu screen.

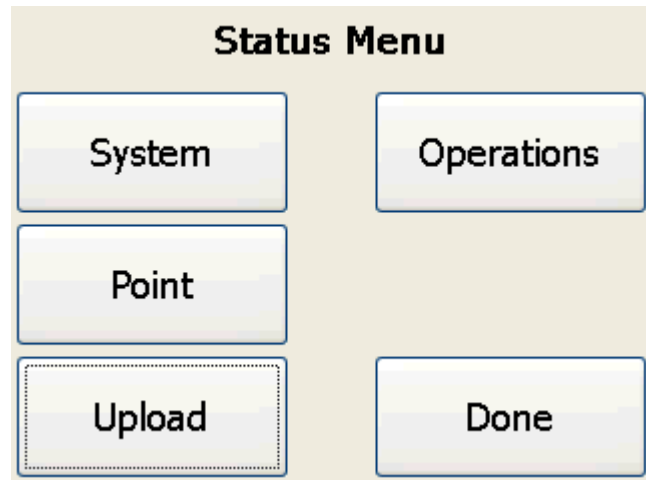
To stop Dry mode and exit from the Maintenance Menu, touch **Done**. It can take several seconds for the fans to stop, then the [Setup Wizard](#) runs to initialize the controller.



5.4 Status Menu

The **Status** menu provides the following buttons:

- **System:** Displays battery and memory usage, version information, and other status information about the controller. See [System Status](#).
- **Point:** Used to send commands directly to a reader and to check the status of antenna port connections. See [Reader Status](#).
- **Upload:** Used to establish cellular network connections. See [Establishing Network Connections](#).
- **Operations:** Used for enabling Immediate mode for working with live results and for resetting tag counts. See [Operations](#).
- **Done:** Used to exit from the Status Menu and return to the [main screen](#).



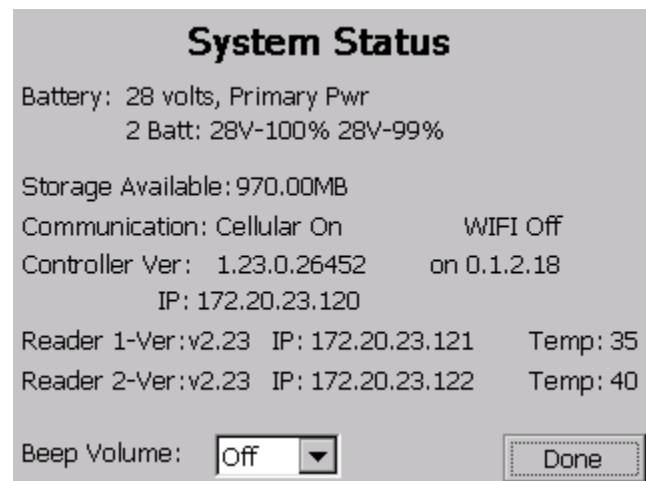
5.4.1 System Status

The System Status screen is used to view status information about the controller. To access this screen, do the following:

1. From the main BoxScore screen, touch **Status**.
2. On the Status Menu screen, touch **System**.

The information is organized as follows:

- **Battery:** This area shows the number of batteries and the voltage and available charge percentage of each.
- **Storage Available:** Displays the amount of available memory. Each controller provides up to one GB of storage.
- **Communication:** Displays whether Cellular and Wi-Fi is on or off.
- **Controller Ver:** The top number displays the current version of BoxScore software. The bottom number displays the static IP address of this controller. If networked with other controllers, each controller must use a unique static IP address.
- **Reader 1 and Reader 2:** The first number displays the current reader version. The second number displays the IP address of each reader. Current reader temperatures are shown to the right. One temperature is typically higher because the readers are stacked inside the unit.
- **Beep Volume:** This option controls whether an audible alert is sounded whenever a D-Tag is read. Select **Off** for no alert, or select **Low** or **High** to enable the alert and set the volume.



To exit from the System Status screen, touch **Done**.

5.4.2 Reader Status

Using the Reader Status screen, you can send commands directly to a reader, bypassing the BoxScore application, and check the status of connected antennas on each reader. To access this screen, do the following:

1. From the BoxScore main screen, touch **Status**.
2. On the Status Menu screen, touch **Point**.
3. When you are finished working with the Reader Status screen, touch **Done**.

5.4.2.1 Sending Reader Commands

The left side of the Reader Status screen (with the controller image) lets you send commands directly to readers, bypassing the BoxScore application.



Do not attempt to use this feature without advanced knowledge of these commands. If controllers are networked, these commands are sent to all controllers and subsequent readers on the network.

To send a command to either or both readers, do the following:

1. In the first drop-down menu, select **All**, **Reader1**, or **Reader2**.
2. In the second drop-down menu, select the command to send.
3. Touch **Send**.

5.4.2.2 Checking Connected Antennas

The right side of Reader Status screen displays a list of reader ports. This information is useful as a troubleshooting step. When ports are connected, the status next to the port number shows **OK**. When ports are disconnected, the status is displayed as "--".



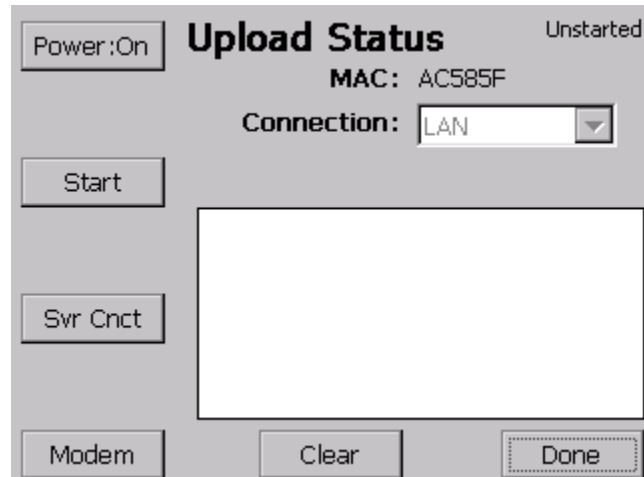
5.4.3 Establishing Network Connections

Before you can send live data from a controller box to SimpleClient on your computer, you need to establish a network connection. There are three methods for establishing a network connection: [Cellular](#), [Wireless](#), and [Wired](#) (LAN).

The Upload Status screen is used to establish cellular network connections. To access this screen, do the following:

1. From the BoxScore main screen, touch **Status**.
2. On the Status Menu, touch **Upload**.

A status message in the top right corner of the screen indicates when a network connection has been established. The MAC address of the controller and connection type are also displayed.



The following buttons are available on the left side of the screen:

- **Power:** Displays the cellular modem status. Touch the button to power the modem on or off.

- **Start:** Starts the cellular modem when establishing a cellular connection.
- **Svr Cnct:** Re-establishes a server connection.
- **Modem:** Displays the Cellular screen, if the modem software is running.

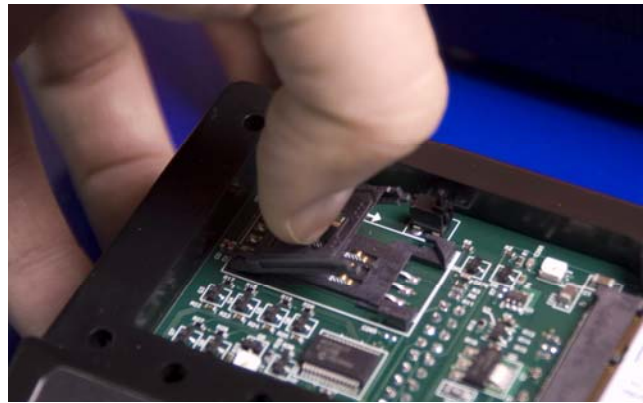
The large box displays a connection log showing server activity and other details. To clear the log, touch **Clear**.

When you are done working with this screen, touch **Done**.

5.4.3.1 Establishing a Cellular (GPRS) Connection

To establish a cellular (GPRS) network connection, complete the following procedure:

1. Install a SIM card in the controller. To do this, use the following steps:
 - a. Unscrew the top plate to the TPC Mesa.
 - b. Unlock the SIM card sleeve by sliding it to the left.
 - c. Flip up the SIM card sleeve, as shown in **Figure 1**.
 - d. Insert the card into the sleeve, as shown in **Figure 2**.
 - e. Fold the sleeve back down into place -- sliding it into the locked position and reattach the top plate.
2. Confirm that the **Cellular** LED is on. If not, enable the GPRS (see [Powering ON/OFF Internal Components](#)).
3. Use the Network Config Options screen to set the server address (see [Setting the Server Address](#)). Use the ChronoTrack server by entering the IP address **72.13.13.238** (Backup: 72.13.13.239).
4. Start the modem by touching **Start** on the Upload Status screen.
5. On the Cellular screen (shown at right), touch **Initialize Modem**. Wait until the status line at the top reports **Profile activated – Connect to Internet**, then touch **Connect to Internet**.
6. Confirm that the controller has received an IP address.
7. Return to the BoxScore main screen, and touch **Connect**.

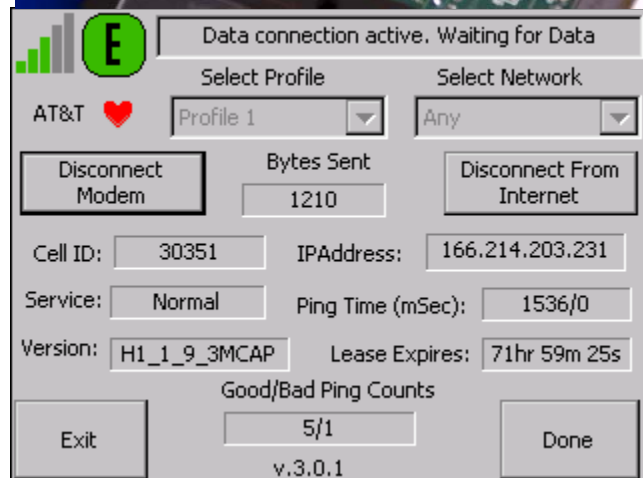
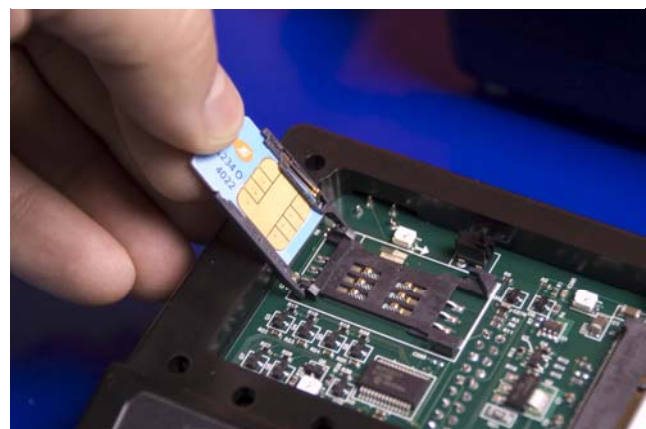


5.4.3.2 Establishing a Wireless Connection

To establish a wireless network connection, do the following:

1. Enable Wi-Fi on the controller (see [Powering ON/OFF Internal Components](#)). Make sure the **WIFI** LED light on the controller is green.
2. Make sure your computer firewall is not blocking port 61610.
3. Start the CCSLite bridge application on your computer (see [Using CCSLite](#)).
<<insert screenshot>>
4. Create a wireless ad hoc network on your local computer. Please refer to your operating system or network card manufacturer for instructions. The IP assigned should be 192.168.0.X (preferably between 2-99). If an appropriate IP address is not assigned, please manually assign an IP address in this range. For the appropriate networking key and SSID, please refer to the ChronoTrack user forum (<https://secure.chronotrack.com>).

Figure 2



Note that a valid ChronoTrack user account is needed to log in to the forum.

<<insert screenshot>>

5. Configure the server IP address on the controller to match the IP address of the wireless device on your computer.

<<insert screenshot>>

6. Touch **Connect** on the main screen.

5.4.3.3 Establishing a Wired Connection

To establish a wired network connection using an Ethernet cable:

1. Configure the computer with a designated static IP address and subnet mask. Set the IP address to a number in the range **172.20.23.2-99** (do not use 172.20.23.1). Set the Subnet Mask to **255.255.252.0**. Consult your operating system manufacturer for networking instructions.

<<insert screenshot>>

2. Make sure your computer firewall is not blocking port 61610.
3. Start the CCSLite bridge application on your computer (see [Using CCSLite](#)).
4. Change the server IP address on the controller to match the IP address that you set on your computer (see [Setting the Server Address](#)).
5. Connect an Ethernet cable from the controller to your computer.
6. On the BoxScore main screen, touch **Connect**.

5.4.4 Operations

The Operational Status screen is used to put the controller into [Immediate mode](#) and to [reset tag counts](#). To access this screen, do the following:

1. From the BoxScore main screen, touch **Status**.
2. On the Status Menu screen, touch **Operations**.
3. When finished working with the Operational Status screen, touch **Done**.

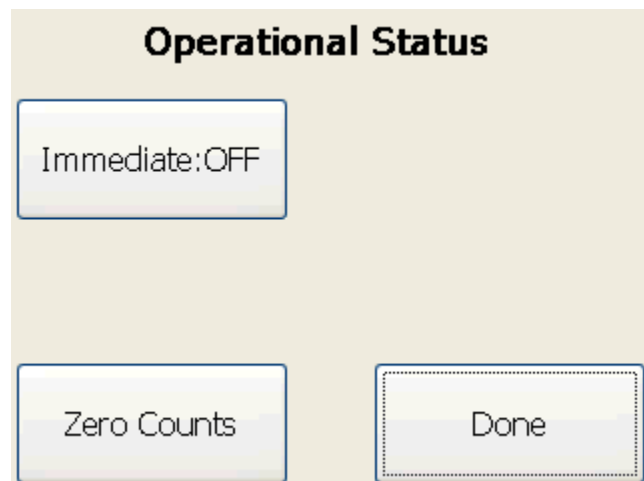
5.4.4.1 Immediate Mode

Touch the **Immediate** button to work with live results reporting for an announcer line. To create an announcer line, you must also enable Immediate mode in SimpleClient. See [Creating and Using an Announcer Line](#) for more information.

NOTE: When the controller and SimpleClient are Immediate mode, tags are only reported once despite the number of reads.

5.4.4.2 Zeroing Tag Counts

Touch the **Zero Counts** button to reset the unique and total tag count numbers that are displayed in blue and black on the BoxScore main screen. You might want to zero tag counts if you are using the same timing line for a start and finish. After all participants have crossed the start line, you can zero the tag counts in order to have a fresh count for the finish line.

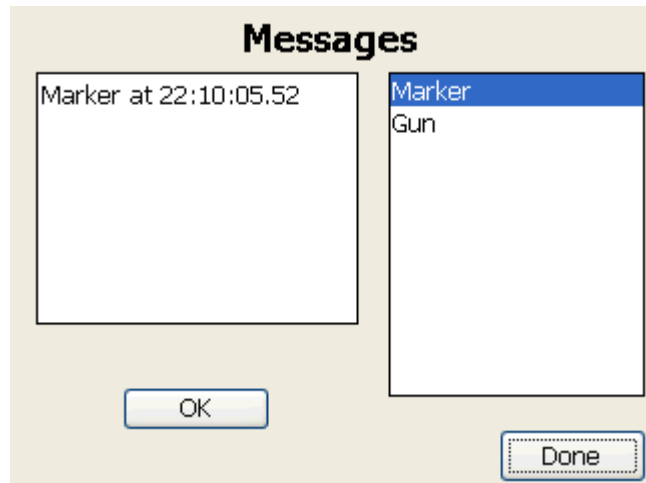


5.5 Messages Menu

The Messages screen is used to view and acknowledge system alerts, and to view gun and marker timestamps. To access this screen from the BoxScore main screen, touch **Messages**.

Alerts are shown in the box on the right (see [Acknowledging Alerts](#)). To view markers or gun starts, select the type of item to view in the box on the right. The box on the left updates to display those timestamps.

When finished working with the Messages screen, touch **Done**.



5.5.1 Acknowledging Alerts

Message alerts are listed in the box on the left side of the screen. To acknowledge an alert, touch **OK**.

The following table shows possible message alerts and meanings.

Alert Message	Meaning
Readers missing	The number of readers is set incorrectly. This message is displayed if the Alert on Change option is enabled on the Point Config screen. See Point Configuration .
Gators missing	The number of Gators is configured incorrectly. This message is displayed if the Alert on Change option is enabled on the Point Config screen. See Point Configuration .
Primary Pwr Lost	AC power is lost.
Aux Pwr Lst	DC power is lost.
BATTERY CRITICAL	The battery is below 10%. This message will only display once.
Y2K Problem	The date and time have been reset to 1/1/2000 00:00:00.
Cell Connection Lost	GPRS has lost its connection.
Bad Cell Connection	This message is displayed when there are 15 consecutive poor ping responses to the cellular network.

5.6 Updating BoxScore

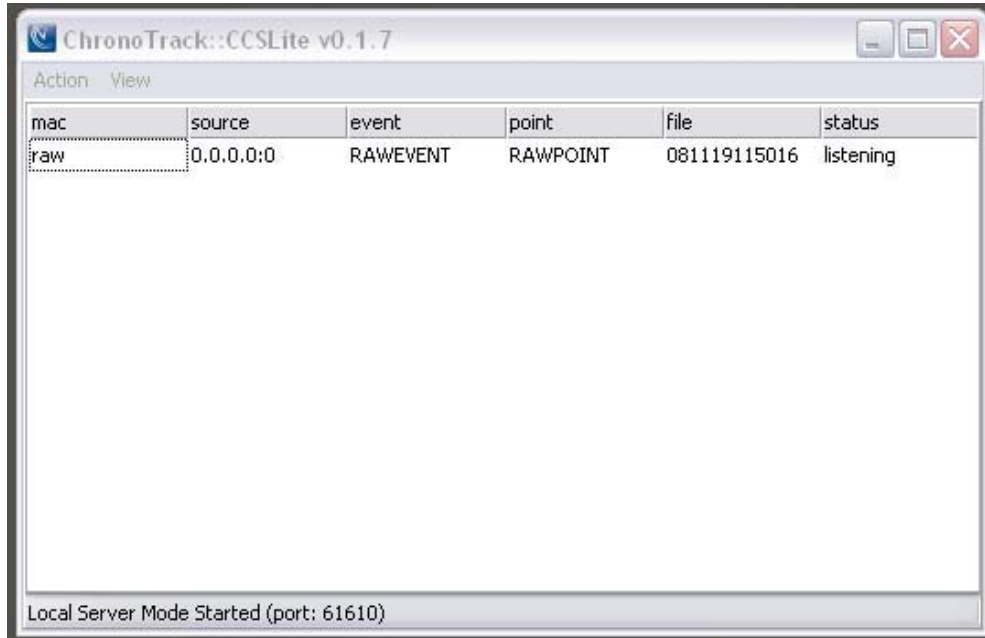
The BoxScore software version information is listed on the About screen of the [System Menu](#). To install a software update on the controller, complete the following procedure:

1. Copy the update files that you receive from ChronoTrack onto a USB drive in a directory named "new".
2. Power OFF the controller by using the proper shut-down process (see [Shutting Down the System](#)).
3. Insert the USB drive into a USB port on the controller.
4. Power ON the controller (see [Powering ON](#)).
5. During the start-up process, you will be prompted to update the BoxScore application.

6 Using CCSLite

CCSLite is an application that acts as a bridge between wired (LAN) and Wi-Fi network connections on the controller and SimpleClient, an application for retrieving and manipulating controller data.

CCSLite must be running when establishing a wired or Wi-Fi network.



6.1 Configuration of CCSLite

To configure CCSLite, complete the following steps:

1. Start the CCSLite application on your computer.
2. Make sure Windows is not blocking TCP port 61610. When CCSLite is started for the first time, you are prompted to choose whether or not the program is allowed to listen for incoming connections. If not, this setting can be altered manually—see [Adding a Firewall Exception for CCSLite](#).
3. From the menu, click **Action > Storage Directory**, and set the path where CCSLite will store controller data.
4. From the menu, click **Action > SimpleClient Path**, and select the SimpleClient executable to use when opening data streams from the CCSLite controller grid.
5. Close CCSLite to store the settings and apply them for the next start-up of CCSLite.

6.2 Establishing Controller Connections

To establish controller connections with CCSLite:

1. Start the CCSLite application on your computer.
2. With the controller's BoxScore software, make a server connection to CCSLite, using the local IP address of your computer as the server address.
3. If the controller is connected to CCSLite, you will find a new entry in CCSLite's connection grid displayed on the main screen.
4. Double-click the entry of the controller in the CCSLite grid. This will open an instance of SimpleClient showing you the available sessions from that controller's active file.

6.3 *CCSLite Raw Mode*

If controllers are connected to the local network, CCSLite will listen for tag observations straight from the readers. This is called *raw mode*.

This information does not contain markers (event names, point names, gun markers, and manual markers) and BoxScore is completely ignored. However, a backup of all raw observation data on the local network is available for use.

The raw stream also contains the information gathered from a “raw reader dump” in case of a controller lock-up. Raw reader dumps are the final option in data recovery and should only be used if all other actions have failed. To isolate data from the different controllers on the network, a virtual point configuration file (with .rmg extension) can be used (see [Creating Virtual Points](#)).

6.4 *Adding a Firewall Exception for CCSLite*

If you use a 3rd-party firewall, check the supplied documentation. Otherwise, complete the following steps to add a firewall exception to Windows XP:

1. Start the security center: From the Windows **Start** menu, open the **Control Panel** and select the **Security Center** menu item.
2. From the Security Center, open the **Windows Firewall** settings.
3. On the **General** tab, make sure the **Don't allow exceptions** box is unchecked if the firewall is activated (preferred).
4. On the **Exceptions** tab, check to see if the list box of allowed exceptions shows CCSLite. If not, unlock the program by using either the **Add Program** button or the **Add Port** button.

NOTE: If you choose to add the program to the exception list, this port is only unlocked for the CCSLite program started from the specified path. You will block it again if you change the path of CCSLite. Instead, add TCP port 61610 to ensure that any program attaching to that port can be reached, regardless of its program path. Also, there may be other applications running with firewalls set (specifically programs like anti-virus, spyware protection, and ad blockers); either disable these programs, or add exceptions for CCSLite.

7 Using SimpleClient

SimpleClient is an application used to retrieve and manipulate controller data. Data from events, including real-time stats, can be filtered and streamed from SimpleClient to your computer or directly into your race scoring software.

7.1 *SimpleClient Operation Modes*

There are two modes of operation when working with SimpleClient:

- [Local network mode](#)
- [Internet server mode](#)

7.1.1 Local Network Mode

Local network mode is used when connecting controllers through the wired (LAN) or wireless network (802.11). To load controller files in this mode, you must either use CCSLite as a bridging application (see [Using CCSLite](#)), or load them from a USB drive. To load from USB, use one of the following methods:

- From the SimpleClient main menu, click **File > Load Controller File**.
- Drag and drop a .mrk or .csv file onto the ChronoTrack logo on the SimpleClient main screen.

7.1.2 Internet Server Mode

Controllers can send their data to the ChronoTrack CCS servers located on the Internet by using either the built-in cellular modem or a connected router (wired LAN or wireless 802.11).

The following servers are available for North American users:

- **Main server:** usa1.chronotrack.net (72.13.13.238)
- **Backup server:** usa2.chronotrack.net (72.13.13.239)

The CCS Server will show sessions from all controllers and any uploaded events. This data is stored for approximately three weeks.

To obtain data from the CCS Server online and use it on your local computer, establish a connection with the CCS Server using your ChronoTrack user account. See [Connecting to the Server and Retrieving Data](#) for more information.

7.2 *Connecting to the Server and Retrieving Data*

You can send data from a controller into SimpleClient by connecting to the CCS Server. To connect to the CCS Server, complete the following procedure:

1. Establish a network connection on the controller. See [Establishing Network Connections](#).
2. Start the SimpleClient application on your computer.
3. If you want to be connected directly to your scoring software, see [Establishing a Direct Socket Connection with Scoring Software](#).
4. From the main menu, click **CCS Server > Connect**.
5. A connection box is displayed. Make sure that the box contains the following information:
 - Hostname: 72.13.13.238 or usa1.chronotrack.net
 - TCP Port: 61612
 - Your log-in username
 - Your password

6. Click **Connect**.

The Select Device Session screen is displayed and you are now connected to the server with all of your events.

SimpleClient::Select Device Session

Event Name: All events

id	device id	event	point	start date	session	device status
1111	00d0c9a9c830	TURKEYTROT	2NDLOOP	2008-11-27 07:47:33	open	offline
1109	00d0c9a9c830	TURKEYTROT	START	2008-11-27 07:41:25	closed	offline
1103	00d0c9a9c830	TURKEYTROT	START	2008-11-27 07:19:19	closed	offline
1099	00d0c9a9c830	TURKEYTROT	START	2008-11-27 06:54:05	open	offline
1112	00d0c9ab5999	TURKEYTROT	FINISH	2008-11-27 07:50:55	open	offline
1097	00d0c9ab5999	TURKEYTROT	FINISH	2008-11-27 06:14:31	open	offline
1171	00d0c9ac5354	TURKEYTROT	TT8KFIN	2008-12-05 23:03:25	closed	offline

Activate Tag Range Filtering Ranges for Event:

timercode	timername	eventcode	eventname	min. bib	max. bib
28	Split Second Timing	0	TURKEYTROT	1	999999

Time Shift:

disabled

UTC to local timezone

manual

00:00 Start

Rename Event: Immediate Mode

Rename Point: Ignore Clear Markers

7. Filter to display only your current event by unchecking **All events**.

8. Use the drop-down list to select the event from which you want to retrieve data.

9. Click on the segment to load, then click **Select** at the bottom of the screen.

The SimpleClient main screen is displayed. You can now either start streaming the data and/or save the data for import into your software:

- To start the data stream onto your computer, click **Play**. If you have a direct connection with your scoring software, you will see the times in your software.
- To save the data, click **Play**. From the main menu, click **File > Save As**.

10. Repeat these steps to connect to other checkpoints. Alternately, open a new session of SimpleClient to run multiple streams at the same time.

7.3 Streaming Data

After selecting a file segment to stream onto your computer (see [Connecting to the Server and Retrieving Data](#)), use the following buttons on the SimpleClient interface to start, stop, and rewind data:

- **Play**: Starts the data stream into a buffer on your computer.
- **Stop**: Stops the data stream. To pick up where you left off, press **Play**.
- **Rewind**: Starts the data stream over from the beginning.

As the data plays, there are two red numbers above the buttons. The first red number indicates the size of the save buffer (see [Saving SimpleClient Data](#)). The second indicates the size of the invalidated tags buffer (see [Tag Invalidation](#)).

The middle section of the screen displays the data for each tag as it plays.

7.4 Tag Invalidation

Tags can be invalidated in order to prevent them from appearing in your race scoring software. There are three features that can be used to specify which tags should be invalidated:

- Activated tag range filtering
- Ignore same tag for X seconds
- Activated invalidate negative times

To inspect tags that have been invalidated, from the SimpleClient main menu, select **View > Invalidated Tags**.

The screen shows all invalidated tags listed by order of arrival. The reason for invalidation of each tag is also shown.

If a tag has been invalidated in error, it can be revalidated:

1. Select the tag entries on the grid that should be revalidated.
2. Right-click and select **Validate Selected**.

The revalidated tags will be removed from the grid and the observations will be put at the end of the save buffer, ready to be streamed to the race scoring software or saved to text file.

7.5 File Formats

SimpleClient lets you export data and specify how the files are formatted (separators, line terminators, etc.). This is useful when you need to send data to a third-party application that requires a specific file format.

To specify file formats, from the main menu, click **File > File Format**. See [File Format Specifications](#) in the Appendix for information about available formats and syntax.

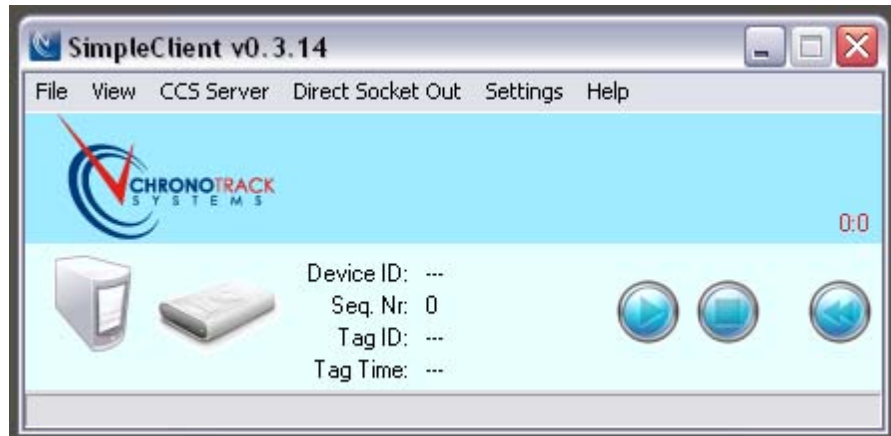
7.6 Saving SimpleClient Data

You can manually save the current feed/buffer, or configure SimpleClient to save files automatically:

- To save the current buffer in SimpleClient (as indicated by the first red number on the main screen), from the main menu, click **File > Save File**.
- To automatically save files, click **File > Auto Save** and set the path where the files should be saved. You can then configure your scoring software to retrieve data from that path.

If you want each session that you open for a different point to be automatically saved using the point designation as the file name, click **File > Auto Save** and check **Single Point/File**. When this option is not checked, each stream is saved to its event designation (so you can have multiple points in a file belonging to the same event) and uses the event designation in the file name.

When saving files, both manually and with Auto Save, the output is sent to either a text file or, if established, to a direct socket connection, for streaming into your scoring software. A direct socket connection is the preferred solution with RunScore scoring software.



7.7 Filtering Data

Filters can be applied to organize your data. You can filter out bib numbers from previous events or filter by various segments such as leagues. Tag filters can be created online and applied in SimpleClient so that only tag data within specified bib ranges, event codes, and/or timer codes is streamed.

The Select Session File screen in SimpleClient is used to activate tag range filters that you create online. To filter the data shown in SimpleClient, complete the following procedure:

1. On the Select Session screen, select the point containing the data you want to filter.
2. Select the **Activate Tag Range Filtering** option.
3. The **Tag Ranges for Event** drop-down menu contains a list of tag ranges that you have created pre-event. Select the tag ranges for your event.
4. The columns in the middle of the screen display the filtering selections of timer and event codes and names, and minimum and maximum bib numbers. D-Tags are assigned a timer and event code when they are printed and encoded.

7.7.1 Creating Tag Ranges for an Event

To create tag ranges for an event, complete the following procedure:

1. Prior to the event, log in to the ChronoTrack StreamManager at <https://secure.chronotrack.com> with your valid ChronoTrack user account. After logging in, a Welcome page with your name is displayed.
2. Click the **Manage Events** heading.
3. Click **Add an Event**.
4. Enter the information about your event.
5. Click **Submit**. The page now shows the tag range you created.
6. To save the tag ranges locally to your computer, from the main menu, click **CCS Server > Update Local TagRange DB**.

7.8 Creating Virtual Points

Some events, like triathlons, will utilize multiple points at the same location (run in, bike out). For these types of events, it is possible either to use multiple controllers in normal mode, or to split up the points based on individual Gators or combinations of Gators from a single controller. To split the point names, you will need to relocate point information on your readers and Gators by creating and loading a virtual point file in Simple Client. This file specifies which MAC addresses should be assigned to which reader and ports.

The virtual point file must be an ASCII file with an RMG file extension. The text must be semicolon-delimited with each new point on a separate row. The syntax for each row is:

[ReaderMACAddress];[FirstGatorID];[LastGatorID];[NameOfNewPoint]

Valid Gator IDs are 1, 2, 4, and 8.

Below is an example of a virtual point file:

```
003487;1;1;GATOR1
003487;2;2;GATOR2
003487;4;4;GATOR3
003487;8;8;GATOR4
```

This example relocates each Gator to a new point name. The most common setup would be to separate both readers and can be done like this:

```
003487;1;8;READER1
0034AF;1;8;READER2
```

After creating the virtual point file, load it into SimpleClient with the following steps:

1. From the SimpleClient main menu, click **Settings > Relocate Point Info on Reader/Gator**.
2. Select **Virtual Points**.
3. Click **Configure**.

The file is now loaded and will be included in the Select Session screen, labeled "Virtual Points".

7.9 *Creating and Using an Announcer Line*

Announcers can view live data about participants during an event with an announcer line. To create, load, and view an Announcer Line, do the following:

1. Create a bib file.

A bib file is an ASCII semicolon-delimited file with field headers. The field headers are displayed as column headers in the announcer line. The first field header must be the bib number, but you can add as many other fields as you like. Below is an example of the first few lines of a bib file:

```
BIB;FIRSTNAME;LASTNAME;AGE;SEX;CITY;DIVCODE
25;Scott;Abrams;51;M;LA PINE;G
26;Julio A;Aguirre;62;M;HIGHLAND PARK;I
27;Claus G.;Ahrens;25;M;JERSEY CITY;C
```

2. From the SimpleClient main menu, click **File > Load Bib File** and select the file you just created. This loads the file into SimpleClient.
3. In order to view live data streaming into the Announcer Line, make sure there is a network connection with the controller, then put the controller into Immediate mode (see [Immediate Mode](#)).
4. Enable Immediate mode in SimpleClient by selecting it from the **Tag Mode** drop-down list on the Select Session screen.
NOTE: When the controller and SimpleClient are in Immediate mode, tags are only reported once despite the number of reads.
5. From the SimpleClient main menu, click **View > Announcer Display**.
6. On the SimpleClient main screen, click the **Play** button.

You can resize the Announcer Display window to zoom text by dragging the edges.

The **Flush Queue** option clears the grid and can be used to help announcers keep up with participants if the streaming data is coming in too quickly (like runners crossing a finish line). Other options are available to set the scroll speed in seconds, change number of rows, colors, and more.

To hide tags that do not contain participant data, from the Announcer Display window, click **View > Hide Unknown Tags**.

7.10 *Loading Controller Files*

After copying a file from a controller to a USB device, load it into SimpleClient by doing one of the following:

- From the SimpleClient main menu, click **File > Load Controller File**, then select the file to load.
- Drag the file onto the SimpleClient main screen.

When you load a controller file, the Select Session screen displays the event and point names. If markers exist in the file, any tags after a marker are listed on another row.

To stream the data, select the event and point and click **Select**, then click the **Play** button on the SimpleClient main screen.

To connect directly to your scoring software, follow the instructions under [Establishing a Direct Socket Connection with Scoring Software](#). Alternately, you can save the data to a file that you can import into your scoring software by clicking **File > Save File** from the main menu.

Repeat this process to import, play, and save other files that you have copied from the controller.

7.11 Establishing a Direct Socket Connection with Scoring Software

You can connect SimpleClient to your scoring software with a direct socket connection. This enables data to stream directly into your scoring software when you start a data stream in SimpleClient.

To establish a direct socket connection, complete the following procedure:

1. Open your scoring software (for example, RunScore, Race Director, or your own software).
2. Initialize your software to allow connections from SimpleClient on port 61611.
3. Open SimpleClient.
4. On the main menu, click **Direct Socket Out**, and make sure **Enabled** and **Auto Reconnect** are checked.
5. Click **Direct Socket Out > Connect**.

A connection window is displayed showing the hostname as "local host" and the TCP port as "61611".

6. Click **Connect** on the connection window.

Connecting opens the socket so that when you play data in SimpleClient, the data is also streamed directly into the scoring application.

7.12 Setting Time Intervals for Pass Counts and Same Tag Observations

You can set the time interval for pass counts so that if the same tag is read twice within a specified time, it is not marked as a second lap. For example, if it takes at least five minutes to complete one lap, you could set the time interval to four minutes so that any tags read twice within four minutes are not counted.

To set the time interval from the SimpleClient main menu, click **Settings > Time Interval for Pass Count**.

You can also specify that the same tag should be ignored for a specified number of seconds. This is useful to prevent the same tag from being reported twice when you have primary and backup lines. To set this option, from the main menu, click **Settings > Ignore Same Tag for ... Seconds**. Ignored tags are placed in the invalidated tags list (see [Tag Invalidation](#)).

7.13 Creating Time Shifts

If the controller time was not accurate for your needs when it was collecting data, you can adjust the time using SimpleClient. To create a time shift, use the **Time Shift** set of options on the Select Session screen:

- **Disabled**: No time shift adjustments.
- **UTC to local timezone**: Shifts the time to match your computer's local time.
- **Manual**: Enables you to enter a specific time.
- **00:00 Start**: Used to set the date and time if the time at Gun Start was a zero time.

7.13.1 Disabled

By default, tag observations are not time-shifted. Since most race scoring software cannot handle dates and the ChronoTrack controller holds both date and time, the controller timing information needs to be converted. To allow timing events with a duration over 24 hours, the normal output mode is in a special 24h+ format. To convert the controller time to 24h+ format, SimpleClient introduces a concept of base dates. When a session is selected and the stream is started, the first tag observation or gun marker (whichever comes first) is inspected. The date found in this tag observation or gun marker is now set as the base date. Each consecutive observation or marker is inspected for its date and compared to the base date. If the date is the same, a normal time output can be expected, ranging

between 0:00:00.00 and 23:59:59.99. If the date found is later than the base date, the difference in days is multiplied by 24 and added to the hours section of the time of day. If the date found is earlier than the base date, the output will contain a negative time showing the difference between the observed time and midnight at the base date. If you do not want to output negative times, you can disable the output of negative times from the SimpleClient **Settings** menu.

7.13.2 UTC to Local Timezone

Use this mode when you synchronize the controllers by GPS to the UTC timezone. In this mode, the difference between UTC timezone and your computer's timezone setting will be used for a time shift, resulting in timing output converted to local time of day. After times are shifted, SimpleClient will continue to use its base date logic.

7.13.3 Manual

If you find a controller to be off by a specific amount of time, you can use the manual option to adjust the controller's misaligned timing. A positive offset will increase the times, while a negative offset will decrease times. After times are shifted, SimpleClient will continue to use its base date logic.

7.13.4 00:00 Start

This option can be used for multiple timing issues and is very powerful. By setting the date and time part of this option, you pinpoint an exact moment in time on which the timing output of SimpleClient will be equal to 0:00:00.00. The difference between a tag observation's date and time and this zero point will be the output to your race scoring software.

By only setting the date and keeping the time to 0:00:00, you can set the base date manually, overriding SimpleClient's automated base date discovery in case it gives you timing errors.

By also setting the time, you can actually convert SimpleClient's output to race time instead of time of day. If you enter both date and time equal to the gun time, you will get this behavior. If you have used a gun marker on the controller and its timing information is displayed on SimpleClient's session form, you can drag the gun marker to the **00:00 Start** Time Shift option to automatically fill it in.

7.14 Renaming Events/Points

Events and points can be renamed in SimpleClient. On the Select Session screen, type the new names in the **Rename Event** and **Rename Point** text boxes. When you change an event or point name in SimpleClient, the name is relabeled in the text file output or direct socket protocol.

7.15 More SimpleClient Functions

More SimpleClient functions are described below.

- To view gun times, from the main menu, click **View > Gun Times**. This displays information about each gun start set in the file.
- To view invalidated tags, from the main menu, click **View > Invalidated Tags**.
- If you have already loaded a session from a controller file, you can go back to the same CSV file and select another session from it to load. To do this from the main menu, click **File > Show Available Sessions**. This option is only available when working in local mode (as opposed to server mode, when you are connected to the CCS Server).
- If you are working on a session, you can close local mode and switch to a CCS Server stream without closing Simple Client. To do this from the main menu, click **File > Close Local mode**.

8 Printing and Re-encoding D-Tags

The ChronoTrack printing system is used to print and re-encode D-Tags. It is comprised of the following hardware and software:

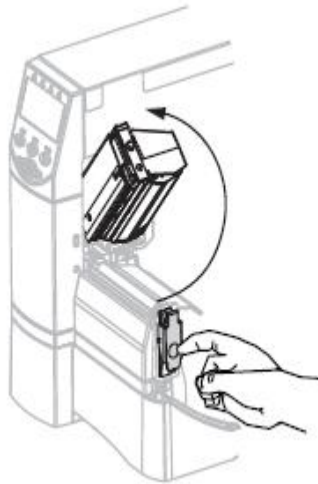
- Zebra RZ600 Printer
- Ensync RF2400 RFID Reader
- Symbol LS 2208 Barcode Scanner
- ChronoTrack PrintDTag software
- Wasp Labeler 6.06 software

8.1 Printer Installation

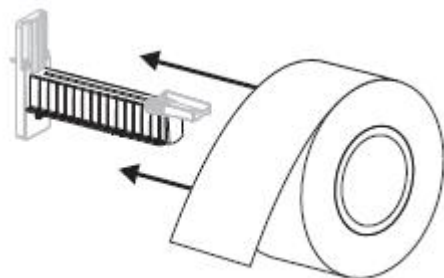
- Load ChronoTrack PrintDTag CD-ROM.
- Copy Drivers\Zebra\ZD1452 to C:\ZD1452.
- Copy Drivers\Ensync\RF1200 to C:\RF1200 Driver

8.1.1 Printer Setup - Hardware

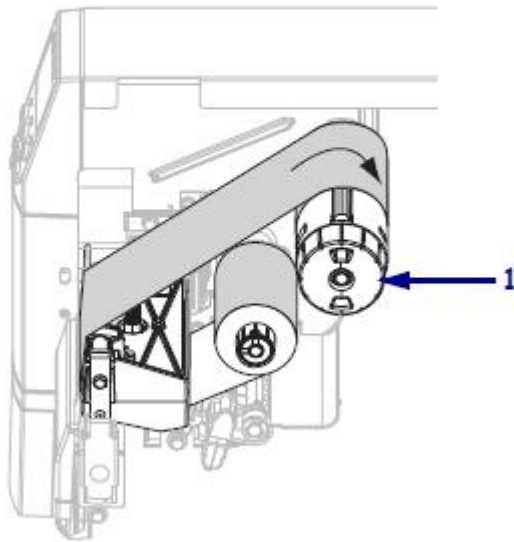
Once printer is placed in suitable location, open lift-up cover and install labels and ribbon (see RZ600 manual for detailed description).



Open printhead:



Load labels:



Load Ribbon:

Notice that labels roll off from top and ribbon rolls off the bottom. Make sure label and ribbon roll are snug against back of printer. Also make sure label backing is flush with inner cardboard label core.

Close printhead:

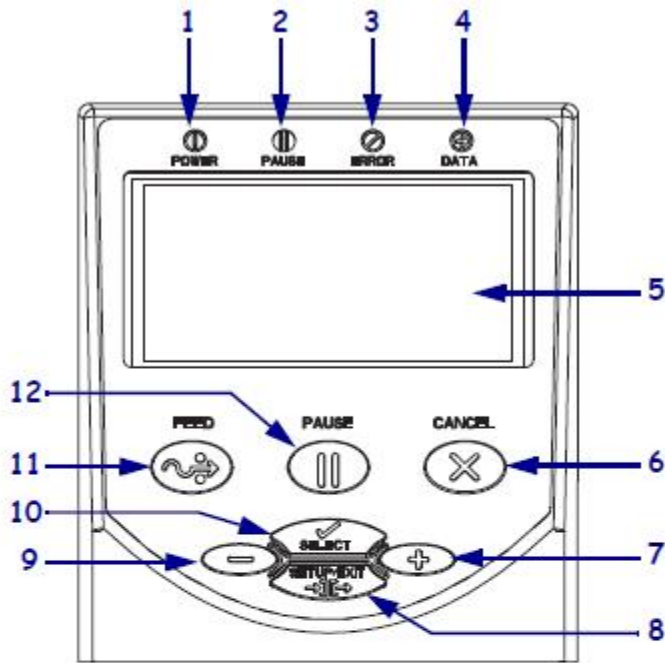


Line leading edge of label with metal tear-off bar.

Line up ribbon with vertical line on upper guide plate (top arrow above).

Line up label backing with right edge of "V" on tear-off bar (bottom arrow above).

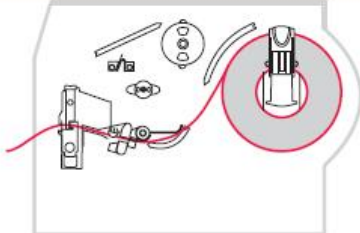
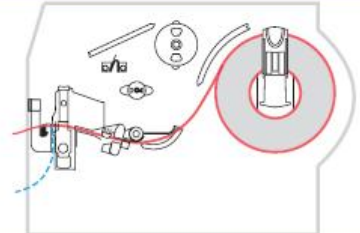
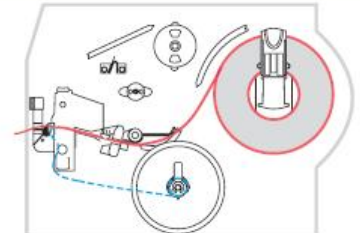
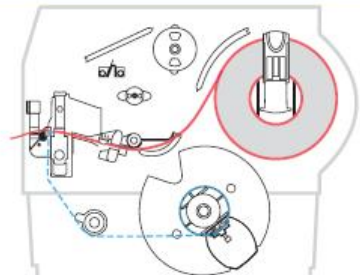
8.1.2 Printer Setup – Software



1	Power LED
2	Pause LED
3	Error LED
4	Data LED
5	LCD
6	CANCEL button
7	PLUS (+) button
8	SETUP/EXIT button
9	MINUS (-) button
10	SELECT button
11	FEED button
12	PAUSE button

- Power on printer (switch in rear).
- On printer control panel (see above), press Setup/Exit.
- Press “+” 3 times, should display **Print Mode RFID**
- Press Select, then press “-“ until **Tear Off** is displayed.
- Press Select.
- Press Setup/Exit – should display **Permanent**, press Setup/Exit again.
- Press Feed to verify printer detects labels correctly.

Printer Modes Diagram:

Print Mode	Printer Option	Media Path
Tear-Off	Printers with any printer options can use Tear-Off mode	
Peel-Off	Peel, Liner take-up, or Rewind	
Peel-Off (with Liner Take-Up)	Liner take-up	
	Rewind	

Red solid lines = media, Blue dotted lines = backing only

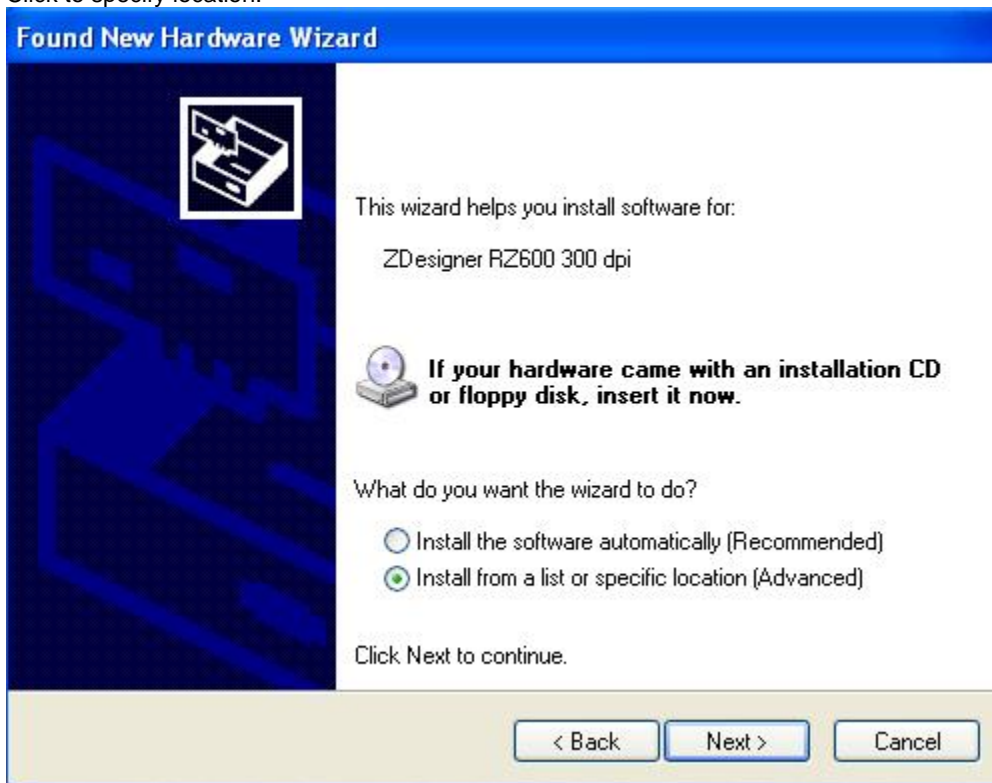
8.1.3 Printer Setup - Windows

Once the printer is initially powered on and setup, plug bi-directional parallel cable (preferred) or USB cable from PC to printer. Windows will detect new hardware. The following images are from an XP Professional installation:

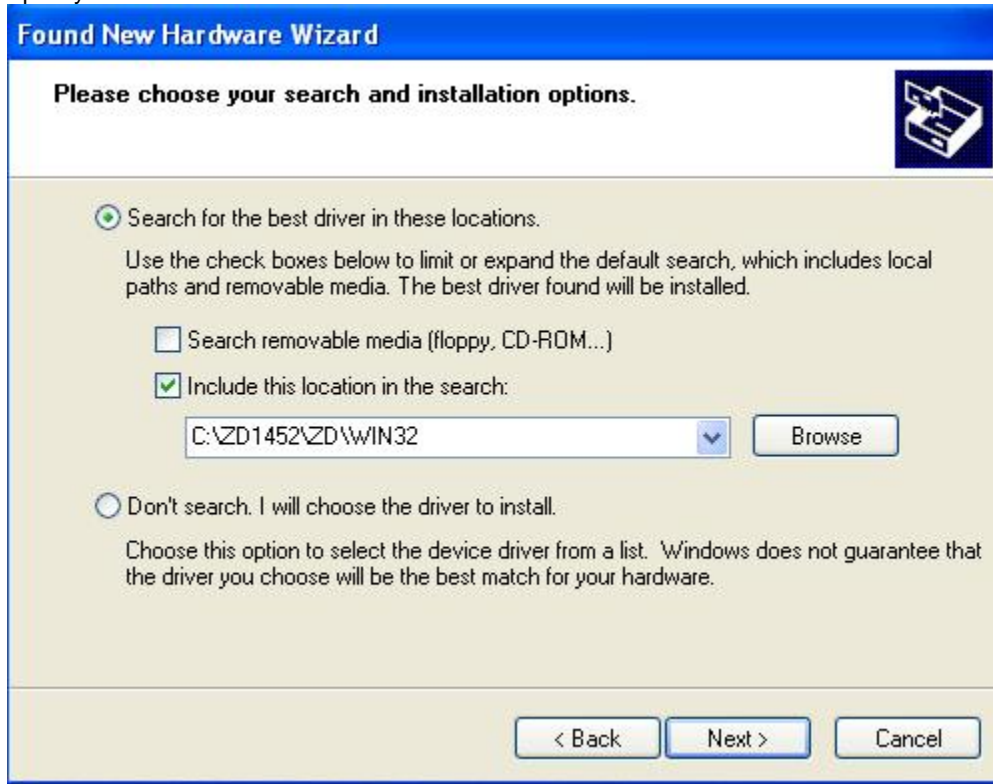
Click No for automatic update.



Click to specify location.



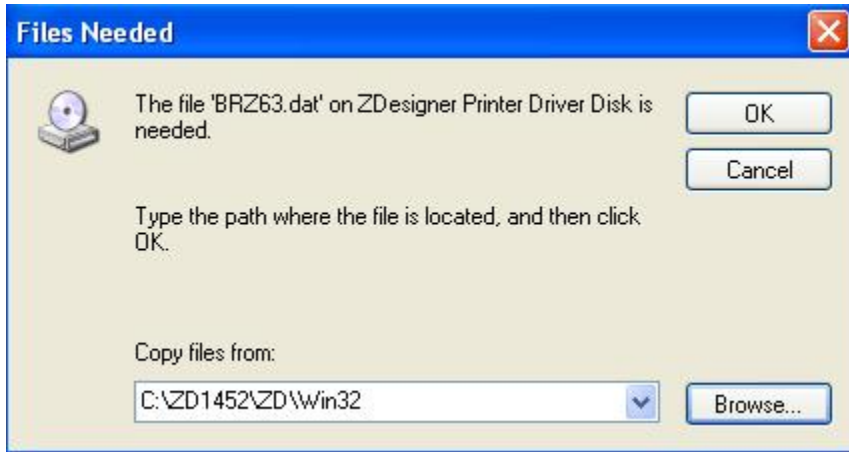
Specify C:\ZD1452 as search location.



Click Continue Anyway.



Windows may prompt for additional driver, again point to location C:\ZD1452.



Last, Finish screen should appear indicating printer has been installed.



8.2 *RFID Encoder Installation*

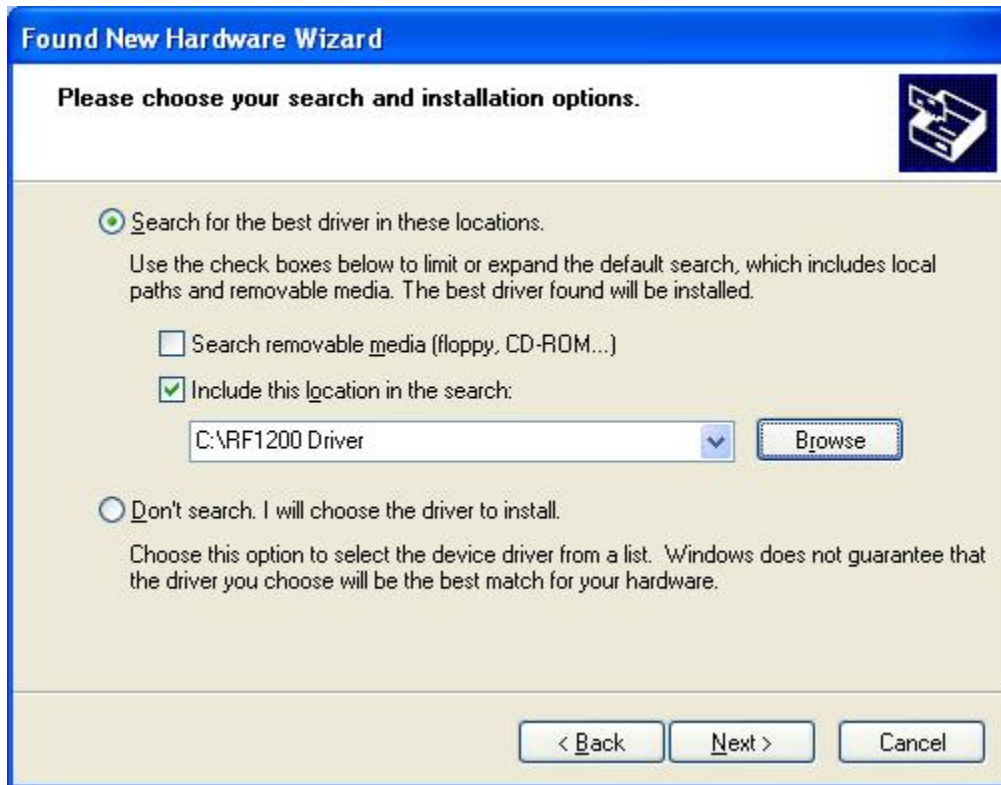
- Plug USB cable into RFID Encoder.
- Plug USB cable into PC.
- RFID Encoder should beep and PC should detect new hardware.

The following images are from an XP Professional installation:

Click No for automatic update.



Specify driver location as C:\RF1200 Driver



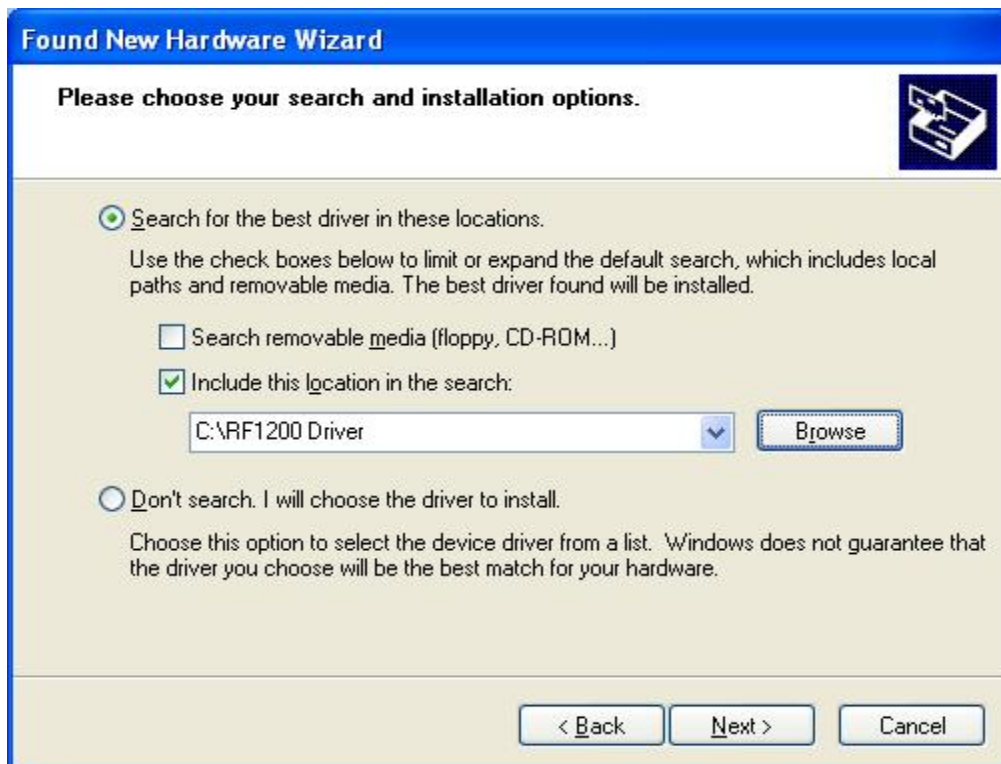
Select Continue Anyway.



Click Finish



Windows will detect another piece of hardware. Follow same procedure as above.



Continue Anyway and then Finish Installation.



Message should appear that hardware is ready to use.

NOTES:

If Encoder device is not detected by PrintDTag software or if reading/writing is not working properly:

- Stop PrintDTag program and unplug encoder from PC.
- Reconnect encoder to PC.
- Start PrintDTag program.
- If problem persists, reboot PC.

8.3 Barcode Scanner Installation

- Assemble scanner stand and plug cable into handle of scanner.
- Plug USB cable into PC. PC should detect hardware but not require any drivers to be installed.
- Open Notepad or other text entry program and scan barcode to verify it works.
- Must set post-scan character to be <ENTER>. Open scanner Quick Start Guide and scan the following barcodes in succession:

Scan Options → scanner beeps

<DATA> <SUFFIX> → scanner beeps

ENTER → scanner beeps with different tone

8.4 Installation of Software

8.4.1 PrintDTag Software

Place CD-ROM into PC and navigate to PrintDTag folder.

Execute PrintDTag-Setup.msi. Follow install prompts; recommend installing to C:\Program Files\ChronoTrack\PrintDTag.

8.4.2 Wasp Labeler – Barcode Label Software

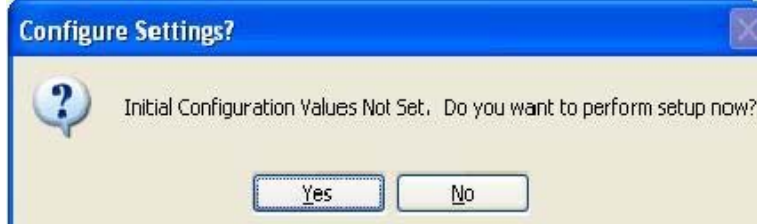
Place Wasp Labeler CD-ROM into PC. Again follow prompts to install. Installation requires serial number which is on CD packaging.

Recommend using Avery 5160 size labels (1" x 2 5/8") as these fit well with D-Tag label space.

8.5 PrintDTag Software

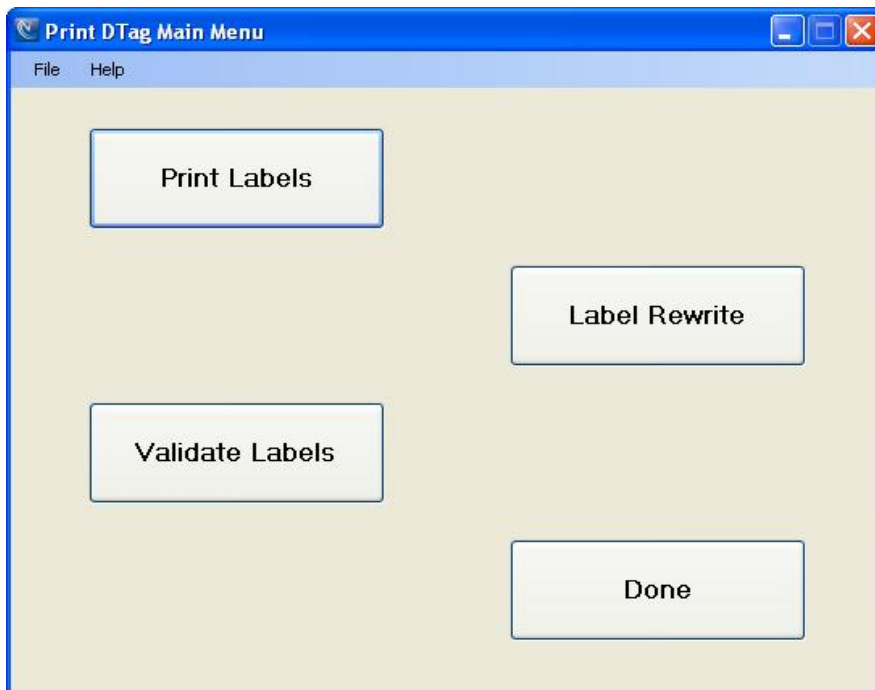
8.5.1 PrintDTag Main Menu

PrintDTag is the software application used to print, validate (future release), and re-encode (rewrite) D-Tags. When you run the PrintDTag application for the first time, you are prompted to configure default settings (select Yes).



See [PrintDTag Default Settings](#) for more information.

After saving these settings, and when you start PrintDTag again, the main menu screen is displayed.



The main menu screen provides buttons to access the following operations:

- [Print Labels](#)
- [Validate Labels](#)
- [Label Rewrite](#)

To exit the PrintDTag application, click **Done** on the main menu screen, or select **File > Exit** from the main menu.

8.5.2 PrintDTag Default Settings

You can change the default settings at any time by clicking the **File > Default Settings** menu item.

IMPORTANT!! When using printer for the first time, or if printer set to restore default settings, click **Send Printer Setup** button. **Make sure** Zebra printer has been selected and saved as **Primary Printer**. Clicking this button sends configuration settings to the printer. Next, click **Send Printer Images** button. This loads the label images to the printer. *Printer images can be loaded without printer setup.*

After making changes to these settings, click **Save and Quit** to save changes and go to the main menu screen.

The **System Settings** box contains the following information:

- **Timer ID:** The Timer ID must be a numeric value in the range 1-254. Do not use a Timer ID of 153 as this number is used for internal tag testing of the software.
- **Event Code:** The Event code must be a numeric value in the range 1-127.
- **Primary Printer:** Used to specify the printer for printing the tags.
- **Current Row ID:** Do not change—this ID is used for internal system purposes.
- **Debug Logging On:** When checked, a debugging log named “debugfile.txt” is created and saved to the software installation directory.

The **Print Label Settings** box contains the following options:

- **“Remove Selected...” Removes Saved Records:** When checked, clicking **Remove Selected Rows** on the Print Labels screen removes selected rows from the display grid and the database, so that the data is removed permanently.
- **Prompt for Merge File When Printing:** When checked and a participant data file is loaded, you are prompted to merge the data when printing each D-Tag.
- **Prompt to Update Saved Record If Exists:** When checked, if you have modified any records that were previously saved, you are prompted to update the saved record when printing.

- **Print Labels:** When checked, D-Tags are printed. If this option is not checked, you can work with database entries without printing.
- **AutoFill First RFID Value:** When checked, the *First RFID Value* entry is automatically filled with the value used in *First Label Number* entry. For the majority of events, the participants' visible number will match the RFID number and having this setting will potentially lessen the chance of data entry errors.
- **Print From CSV File:** When checked, all values used in printing will come from user supplied .csv file. The default Timer ID is used, but user must enter an Event Code.
- **Save Data When Printing:** When checked, event data is saved when you click the **Save Event Data** on the Print Labels screen. A database file named "CHRONOPRINT.MDB" is created and saved to the software installation directory. The event data can be retrieved on the Print Labels screen by selecting it from the **Event ID + Name** drop-down list. If this option is not checked and you click **Save Event Data** on the Print Labels screen, no data will be saved.
- **Make DBF File Automatically:** When checked, a file named "CHRONODB.DBF" is created in the software installation directory. This is a DBASE IV format file containing printed label information.
- **Do Reverse Print:** Prints the tag with the last label number first, and the first label number last. This is useful when rolling tags to make sure the correct number comes off the roll first.
- **Prompt To Continue Printing:** When checked, printing stops after each row and you are prompted to continue.
- **Label Template Value:** This number (1-x) represents the label template used printing. The templates are displayed and can be selected from **Select Label Template** form.
- **RFID AutoIncrement:** When checked, after tag is successfully re-encoded, the value written is incremented by one and this value appears in the RFID Write box. The user can then press **<ENTER>** or **Alt +W** to re-encode the next D-Tag.

The **Rewrite Settings** box contains the following options:

- **RFID Autowrite On:** This setting controls the default setting of the **Write RFID After Scan** option on the Rewrite Labels screen. When Autowrite is on, every time you use the RFID Reader, the tag will be automatically written and read. When Autowrite is off, you will need to click the **Write** button on the Rewrite Labels screen to write the tag.
- **RFID Autowrite Delay (secs):** This setting controls the default setting of the Write Delay option on the Rewrite Labels screen. You can specify the number of seconds to wait between the RFID Reader scan and the write operation.

8.5.3 Printing D-Tags

Use the Print Labels screen to set up a print job and print D-Tags.

To add a new event and set up a print job, complete the following procedure:

1. Enter the new **Event Name**, then click **New Event**. The **Event ID + Name** field shows the saved event code and name. The default Timer ID and Event Code are configured in the [Default Settings](#).

Event names that you type in the Event Name box are remembered if the default setting **Save Data When Printing** is checked, and will be available in the **Event ID + Name** drop-down for setting up future print jobs.

2. On the first row, set the **Label Prefix**. This is a single alpha character that does not get coded into the D-Tag; it just prints on the tag and can be used as an identifier. For example, if you have a women's category, the label prefix could be "W".

3. Set the **First** and **Last Label Number**. The first label number cannot be higher than the second. The label numbers can be the same if you just need to print one for testing. The last label number cannot exceed 100,000. The label number ranges must be unique on each row.

If you are printing tags for different segments, like a women's segment and a men's segment, you could set the label ranges on the first row to be 1-10 with a "W" prefix for women, and set the label ranges on the second row to be 20-30 with a "M" prefix for men.

4. Set the **First RFID Value**. This is the value encoded on the first label and is incremented for each label printed. RFID values cannot exceed 100,000.

If **AutoFill First RFID Value** is selected in the [Default Settings](#), the *First RFID Value* entry is automatically filled with the value used in *First Label Number* entry.

5. Set the **# Copies**. Multiples of the same tag can be printed for events such as a relays.
6. Click **Load Participant Data File**. This is a comma-delimited (CSV) file that you can create (similar to creating an [announcer line file](#)). The first entry or column of each line must be the bib number. The label image on the screen illustrates where the fields will be printed. The status line indicates if a participant data file has been loaded.

Example .csv file:

```
1,Joy,Worth, F35,Murray Striders ,"Murray,KY"  
2,John,Adams,M55,Berea Bulldogs,"Berea,KY"
```

7. If **Print From CSV File?** is checked, participant data must be loaded from CSV file. The data from the CSV file is used to determine the label number, RFID number and label printing order. The **Event Label Information** area is disabled when printing from CSV file.
8. Select the row(s) to print, then click **Print**.
9. To save the print job, select the rows to save by placing a check in the **Select** column, then click **Save Event Data**.

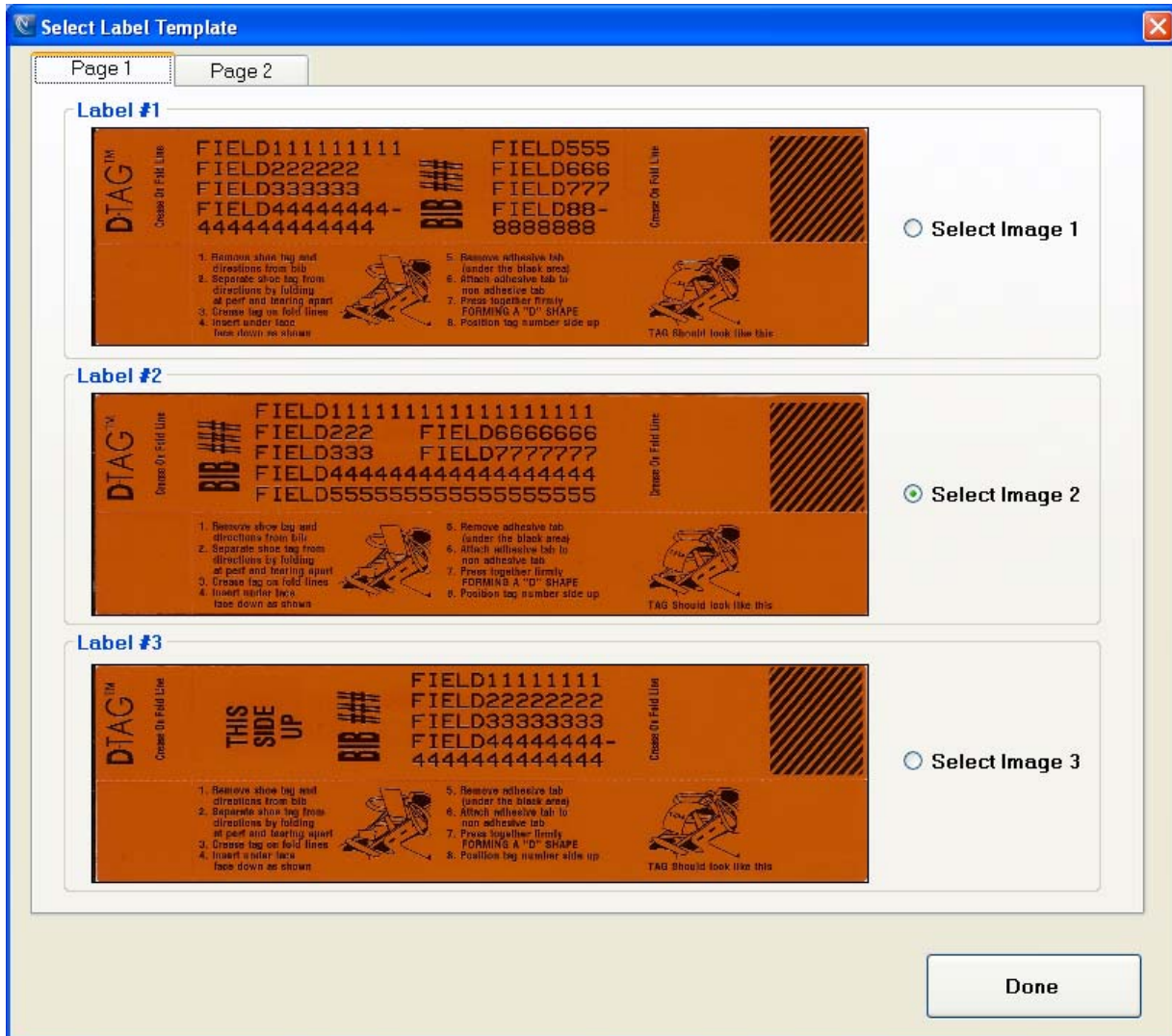
This creates a database file that you can bring back up using the **Reload Event** button. The **Save Data When Printing** setting must be checked in order to save event data.

You can remove a selected row or rows from the grid display by clicking **Remove Selected Rows**. If the **“Remove Selected...” Removes Saved Records** setting is checked, these rows are also removed from the database and can never be retrieved.

To just remove the rows from the grid display, click **Clear All Rows**.

Select Label Template – Click this button to view or change the template used in label text layout. Templates can be added as a user request, but will currently require a new software release. Click Done to save and return to **Print Labels**.

NOTE: Multiple tabs contain other templates.



8.5.4 Validating D-Tags

Documentation to be added later.

8.5.5 Re-encoding D-Tags

You can rewrite the RFID encoding on leftover tags from one event so that they can be used for a new event. Wasp Labeler 6.06 software is provided for printing new barcode labels for these tags for quick scanning. Use the PrintDTag Rewrite Labels screen along with the RFID Reader and Barcode Scanner to re-encode the tag RFIDs.

The screenshot shows the 'Rewrite Labels' software interface. It features two main sections: 'RFID Write' and 'RFID Read'. Each section has input fields for 'Timer ID', 'Event Code', and 'RFID Write' (or 'RFID Read'). The 'RFID Write' section includes a checkbox for 'AutoIncrement RFID Write Value?' (unchecked), a checked checkbox for 'Write RFID After Scan?', and a 'Write Delay (seconds)' dropdown menu set to '1'. To the right of each section is a red status box labeled 'Write Status' and 'Read Status' respectively, and a button labeled 'Write' and 'Read'. At the bottom of the window are two buttons: 'Reset RFID' and 'Done'. A green status bar at the very bottom indicates 'Reader Ready'.

The Timer ID and Event Code are displayed as configured in the [Default Settings](#). You can change the Timer ID and Event Code here; however, these changes will not be remembered.

There are two methods for re-encoding a tag: with a scanner and barcoded labels applied to D-Tags, or with no scanner.

To re-encode a tag using a scanner and barcoded D-Tags, complete the following steps:

1. Make sure that the **Write RFID After Scan** option is checked and the cursor is in the **RFID Value** field.
2. Scan the barcode on the D-Tag.
3. Hold the D-Tag over the center of the RFID Reader, approximately 1/2 inch above surface.
4. The system will attempt to write the RFID after the number of seconds specified in the **Write Delay (seconds)** box.
5. The status line at the bottom of the screen indicates the tag read/write success or failure.
 - If the write was successful, the **Write Status** and **Read Status** areas will turn green and a success tone will sound. The **Timer ID**, **Event Code**, and **RFID Value** fields in the **RFID Read** section will be populated with the values written to the D-Tag.
 - If the write failed, an error tone will sound and the status boxes will remain red.

6. When you are finished rewriting tags, click **Done**.

To re-encode a tag without using a scanner, complete the following steps:

1. Type the RFID number into the **RFID Value** field in the **RFID Write** section, then click **Write**.
2. Hold the D-Tag over the center of the RFID Reader, approximately 1/2 inch above surface.
3. The status line at the bottom of the screen indicates the tag read/write success or failure.
 - If the write was successful, the **Write Status** and **Read Status** areas will turn green and a success tone will sound. The **Timer ID**, **Event Code**, and **RFID Value** fields in the **RFID Read** section will be populated with the values written to the D-Tag.
 - If the write failed, an error tone will sound and the status boxes will remain red.
4. Confirm that **RFID Read** values for **Timer ID**, **Event Code**, and **RFID Value** match the information in **RFID Write** section.
5. When you are finished rewriting tags, click **Done**.

If **AutoIncrement RFID Write Value?** is checked, once a D-Tag is successfully re-encoded, the value written is automatically incremented by 1 and appears in the **RFID Write** field. To re-encode the next D-Tag, press **<ENTER>** or **Alt + W**.

If you make a mistake or need to start over, click **Reset RFID** to stop and reset the event handler.

If problems persist, close the PrintDTag program, unplug the USB cable from the RFID Reader, and wait 10 seconds. Plug the USB cable back into the RFID Reader (wait for beep) and restart the PrintDTag program.

8.5.6 Reading D-Tags

To determine the Timer ID, Event Code, and RFID Value for a tag, open the Rewrite Labels screen. Place the tag over the RFID Reader, then click **Read**. Tag data is displayed in the **RFID Read** group box. A read can also be done by pressing **Alt + R** on the keyboard.

9 Troubleshooting

The following table lists issues that might arise when using the ChronoTrack system, and provides steps for troubleshooting.

Issue	Steps to Resolution
Controller will not charge	<ol style="list-style-type: none"> 1. Check that the unit is powered ON. 2. Confirm that the power supply LED is green. 3. If the LED is not green, unplug the cable connecting the power supply to the connection mesa, then unplug and replug the AC cable. 4. Confirm the power supply LED is now green. If so, reconnect the cable from the power supply to the connection mesa.
Controller will not connect to CCSLite	<ol style="list-style-type: none"> 1. Disable all firewalls on the PC. 2. Make sure that the PC IP address is in the range 172.20.23.2-99.
Antenna will not report connected on controller	<ol style="list-style-type: none"> 1. Use the Reader Status screen (Status > Point) to confirm disconnection. 2. Check the cable connections at controller and antenna. 3. Swap ports to confirm working antenna and cables.

10 Appendix

10.1 System Specifications



DOT regulations prohibit the shipping of lithium batteries by aircraft or vessel. Shipped controllers must include the following label: "LITHIUM BATTERIES: FORBIDDEN FOR TRANSPORT ABOARD AIRCRAFT AND VESSEL".

Component	Specification
D-Tag Interrogator ("Gator")	<ul style="list-style-type: none"> • ADA-compliant • Physical dimensions: 42"(L)x31.5"(W)x1"(H)
ChronoTrack Controller	<ul style="list-style-type: none"> • 400 Series provides four ports • 800 Series provides eight ports • Four, eight, and 12-hour battery configurations • 3.5" QVGA TFT LCD XScale Touch Panel Computer • Intel PXA270 Processor • Windows CE and BoxScore software • 802.11 a/b/g • GSM • Two powered USB ports • Two LAN ports • LED system status indicators • Buzzer • 110v power connection • Physical dimensions: 19"(L)x14.5"(W)x7.62"(H)
Cable Sets (Short/Long)	<ul style="list-style-type: none"> • Belden 7808R • BNC-Male to BNC-Male • Short set for connecting up to 14 feet of linked Gators • Long set for connecting up to 14-28 feet of linked Gators
AC Power Cable	<ul style="list-style-type: none"> • 3-prong grounded male plug (NEMA 5-15) to 3-pin shroud female (IEC-320 C13) • 14' AWG 18/3 • SJT
DC Cable	<ul style="list-style-type: none"> • Kycon KPPX-4P

10.2 File Format Specifications

ChronoTrack offers file format flexibility. By use of a file format indicator available in the first seven bytes of a file line, it is easy to distinguish a ChronoTrack file from other files and determine the file format and layout.

10.2.1 Available Fields

Field	Data Type	Comment
file format indicator	string 7 chars fixed	Describes file format field separator, line termination, and line size (see syntax described below)
sequence number	unsigned integer (max. 6 digits)	Range: 1-999999
Location	string max. 16 characters	Invalid chars: , ; ~ <tab> <null> since they can be used as field terminator
Tag	string max. 8 characters	With ChronoTrack Systems, tag code is same as bib number
Time	string 11-12 chars	24-hour enhanced output: 0-24h: 08:19:28:84 (11 chars) 24+: 102:12:32:37 (12 chars)
lap count	unsigned integer (max. 3 digits)	Range: 1-999
reader id	hex string 6 chars fixed	NIC-specific part (4-6 th octet) of MAC address from internal reader
gator number	unsigned integer (max. 2 digits)	Line segment identification must be done by using a combination of reader ID and Gator number

10.2.2 File Format Indicator

The file format indicator makes it easy to automatically identify a ChronoTrack file and its formatting. It is up to third-party software to use this formatting logic or to implement a single file format. If a single format is implemented, it is best to implement the default format (CT01_13) which uses variable width lines, comma-delimited field separators, and <Cr><Lf> windows-style line termination.

Syntax:

CT<2-digit format number>_<2-digit format setting>

Example:

CT01_13

Comment:

This document describes format number 01. In the future, other formats may become available if new technologies or functionalities become available. Format setting 13, which uses variable width lines, comma-delimited field separators, and <Cr><Lf> windows-style line termination, is the default setting in ChronoTrack.

The 2-digit format setting is used by a file parser to identify field termination, line termination, and fixed or variable line width. It contains two nibbles (O-F) where the first (highest) nibble defines the field separator and the second nibble the line termination and width-mode.

The following field separator options are available:

Nibble Value	Separator	Comment
0	<none>	No separator (only available in fixed width mode)
1	,	Comma
2	;	Semicolon
3	~	Tilde, also used as separator in the socket protocol
4		Pipe
5	<tab>	Tab
6	<space>	Only available in fixed width mode

The second nibble can be calculated from the following bit options:

Bit	Option
1	<Cr>
2	<Lf>
3	<null>
4	fixed width mode

Using the bit-option table, the following nibble values can be calculated:

Nibble Value	Terminator	Width Mode	Comment
0	-	-	Not available
1	<Cr>	Variable	Carriage return \r Mac OS 9-style line termination
2	<Lf>	Variable	Line feed \n UNIX/BSD-style line termination
3	<Cr><Lf>	Variable	Carriage return + line feed \r\n MS Windows-style line termination and preferred line termination for Internet protocols
4	<null>	Variable	Null character \0 C-style string termination
5	<Cr><null>	variable	
6	<Lf><null>	Variable	
7	<Cr><Lf><null>	Variable	
8	<none>	Fixed	No line terminators; calculates fields and lines by size of fixed width fields and, if used, the amount of field separators.
9	<Cr>	Fixed	
A	<Lf>	Fixed	
B	<Cr><Lf>	Fixed	
C	<null>	Fixed	
D	<Cr><null>	Fixed	
E	<Lf><null>	Fixed	
F	<Cr><Lf><null>	Fixed	

Examples:

Format description:

CT01_13 = Variable width, comma-delimited, carriage return + line feed terminated

Example:

CT01_13,1,start,12,06:08:32.02,1,0FA22E,4<Cr><Lf>

CT01_13,2,start,69,06:38:31.86,1,04BE82,2<Cr><Lf>

Format description:

CT01_0C = Fixed width, no field delimiter, null terminated

Example:

```
CT01_0C      1start          12 06:08:32.02    10FA22E 4<null>
CT01_0C      2start          69 06:38:31.86    104BE82 2<null>
```

10.2.3 Fixed Width Size Considerations

A default line without field separators and without a line terminator is 60 characters wide. If a field separator is used, the size increases by 7 (field count -1) to 67 characters. Line termination adds one to three bytes depending on the termination used. This allows the following line sizes.

Format Settings	Line Size	Comment
CT01_08	60	No field separators No line terminators
CT01_09 CT01_0A CT01_0C	61	No field separators Single byte line terminators
CT01_0B CT01_0D CT01_0E	62	No field separators Double byte line terminators
CT01_0F	63	No field separators Triple byte line terminators
CT01_18 – CT01_68	67	Field separators No line terminators
CT01_19 – CT01_69 CT01_1A – CT01_6A CT01_1C – CT01_6C	68	Field separators Single byte line terminators
CT01_1B – CT01_6B CT01_1D – CT01_6D CT01_1E – CT01_6E	69	Field separators Double byte line terminators
CT01_1F – CT01_6F	70	Field separators Triple byte line terminators

11 Index

- acknowledge alerts, 5-17
- Alert on Change, 5-5
- announcer line, 7-6
- antennas
 - connecting, 3-3
 - checking connection, 5-13
- Auto Save, 7-4
- auxiliary battery, 4-4
- bib file, 7-6
- BoxScore, 5-1
 - updating, 5-17
- CCSLite, 6-1
 - configuration, 6-1
 - controller connections, 6-2
 - firewall, 6-2
 - raw mode, 6-2
- cellular connection, 5-14
- charging, 4-4
- clear connection log, 5-13
- Config menu, 5-2
- Controller
 - charging, 4-4
 - interface, 4-2
 - setup, 4-1
- copy files, 5-6
- dead zone, 3-3
- direct socket, 7-7
- Dry mode, 5-10
- fast-charging, 5-10
- file format specs, 10-1
- file formats, 7-4
- filter data, 7-4
- firewall exceptions, 6-2
- Gator setup, 3-1
- GPS time, 5-9
- gun start, 5-2
- Immediate mode, 5-16
- Internet server mode, 7-1
- invalidated tags, 7-3, 7-10
- LAN connection, 5-15
- LEDs, 4-3
- linking Gators, 3-3
- load controller files, 7-7
- local network mode, 7-1
- Maintenance Menu, 5-10
- marker, 5-2
- memory, 5-11
- Messages Menu, 5-16
- networking controllers, 4-3
- Numeric Entry screen, 5-5
- Operational Status, 5-15
- participant data file, 8-19
- play, 7-3
- Point Configuration, 5-4
- power OFF, 5-8
 - internal components, 5-4
- power ON, 4-3
 - internal components, 5-4
- pre-event config, 4-4
- PrintDTag, 8-14
 - settings, 8-15
- printing D-Tags, 8-18
- printing system, 8-1
- raw mode, 6-2
- read tag data, 8-22
- reader commands, 5-12
- Reader Status, 5-12
- re-encode D-Tag, 8-21
- rename event, 7-9
- rename point, 7-9
- rewind, 7-3
- RFID readers, 4-1
- save print job, 8-19
- saving files, 7-4
- server address, 5-3
- Setup Wizard, 5-7
- shutting down, 5-8
- SimpleClient, 7-1
 - Internet server mode, 7-1
 - local network mode, 7-1
 - server connection, 7-1
- Status Menu, 5-11
- stop, 7-3
- streaming data, 7-3
- synchronizing time, 5-9
- System Menu, 5-7
- system specifications, 10-1
- System Status screen, 5-11
- tag ranges, 7-5
- time and date, 5-8
- time interval, 7-8
- time shifts, 7-8
- troubleshooting, 9-1
- Upload Status screen, 5-13
- USB (copy files), 5-6
- view gun times, 7-9
- virtual points, 7-5
- wired (LAN) connection, 5-15
- wireless connection, 5-15
- zero counts, 5-16

