Remote Control System
RC-100

_____

Operational Overview

ED-15133   *Rev 0—18 March 2005*

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3. Note: The first page, Cover Page, uses the front of the page (blank on back). Section heading pages always start on a new page; they never start on the back of another page.

4. Insert drawings, listed below, in alphanumeric order in **Appendix A: Reference Drawings**. Print A drawings back-to-back. Print B drawings as A-size.

    A-230530
    A-230608
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5. Use a blue window cover and a blue back. Punch all pages, window cover, and back cover along the left edge and bind with a binder.

6. Please direct questions and suggestions to Engineering Support.

Table of Contents

Section 1:   Introduction

1.1 How To Use This Manual

This manual explains the operation and maintenance of the Daktronics RC-100 Remote Control System. For other questions regarding the safety, installation, operation, or service of these systems, contact Daktronics. Customer Service Help Desk telephone numbers are listed on the cover page of this manual.

DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: BASKETBALL	
TITLE: SEGMENTATION, 7 SEG BAR DIGIT	
DES. BY: BPETERSON DRAWN BY: TNELSON DATE: 8 JUL 02	
APPR. BY: AVB	7087-P08A-69945
SCALE: 1 = 4	

Figure 1: *Daktronics Drawing Label*

Figure 1 illustrates the Daktronics drawing numbering system. Daktronics identifies individual engineering drawings by the drawing number (7087-P08A-69945 in the example), which is located in the lower right corner of the drawing. This manual refers to drawings by their last set of digits and the letter preceding them. The example would be **Drawing A-69945**.

Reference drawings are grouped and inserted in alphanumeric order in the **Appendix**.

Listed below are a number of drawing types commonly used by Daktronics, along with the information that each is likely to provide.

Schematics: power wiring, signal wiring, panel board or power termination panel assignments, signal termination panel assignments, and transformer assignments. **Final Assembly:** component locations, part numbers, display dimensions, and assembly/disassembly instructions.

All references to drawing numbers, appendices, figures, or other manuals are presented in **bold** typeface, as in this example: "Refer to **Drawing C-209144** for information on the clip angle." Additionally, any drawings referenced within a particular subsection are listed at the beginning of that subsection in the following manner:

Reference Drawing:

    Shop Dwg, Football SCBD w/ AF-3160 Video .... **Drawing C-209144**

Daktronics identifies each manual by assigning an engineering document, or ED, number, which is located on the cover page. This manual, for example, would be referred to as **ED-15133.**
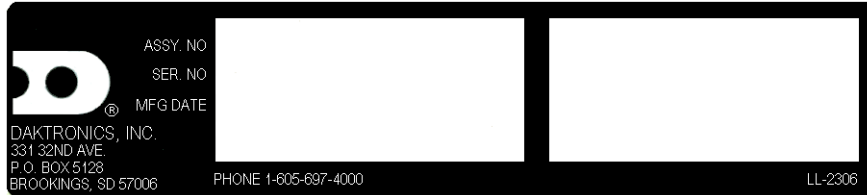
Figure 2: Daktronics Identification Label

The serial and model numbers of a Daktronics scoreboard or equipment can be found on the ID label on the display. The label will be similar to the one shown in **Figure 2**. When calling Daktronics Customer Service, please have this information available to ensure that your request is serviced as quickly as possible. For future reference, note your scoreboard model number, serial number, and installation date on the front page of this manual.

1.2 Daktronics Overview

To fully understand some Daktronics drawings, such as schematics, it is necessary to know how various components are labeled in those drawings. You will find this information useful when trying to communicate maintenance or troubleshooting efforts.

The label "A" on a drawing item typically denotes an assembly. An assembly can be a single circuit board or a collection of components that function together, usually mounted on a single plate or in a single enclosure.

In addition, the following labeling formats might be found on various Daktronics drawings:

- "TB__" denotes a termination block for power or signal cable.
- "F__" denotes a fuse.
- "E__" denotes a grounding point.
- "J__" denotes a power or signal jack.
- "P__" denotes a power or signal plug for the opposite jack.

Finally, Daktronics part numbers are commonly listed on drawings. Those part numbers can be used when requesting replacement parts from Daktronics Customer Service. Take note of the following part number formats. (Not all possible formats are listed here.)

- "0P-__-__" denotes an individual circuit board, such as a driver board.
- "0A-__-__" denotes an assembly, such as a circuit board and the plate or bracket to which it is mounted. A collection of circuit boards working as a single unit may also carry an assembly label.

- "W-__" denotes a wire or cable. Cables may also carry the assembly numbering format in certain circumstances. This is especially true of ribbon cables.
- "F-__" denotes a fuse.
- "T-__" denotes a transformer.
- "PR-___-_" denotes a specially ordered part.
- "M-__" denotes a metal part, and "0M-____" typically denotes a fabricated metal assembly.

1.3 Manual Overview

The RC-100 Remote Control System is used in several applications where a wireless Hand-held terminal is used to configure or control displays or systems.
This manual describes the configuration of the RC-100 Hand-held and RC-100 Base station

Section 2:   RC-100 System Overview

The RC-100 System is a system that allows wireless control of multiple applications. The RC-100 system is made up of two different hardware components, the RC-100 Wireless Hand-held and the RC-100 Wireless Base Station.

The RC-100 Wireless Hand-held includes a 4x4 keypad and graphical LCD as shown below. The RC-100 Wireless Hand-held is used to enter information to be displayed on a scoreboard or display. There may be multiple RC-100 Wireless Hand-held controllers in a single RC-100 system.

Figure 3: RC-100 Wireless Hand-held

The RC-100 Wireless Base Station processes information received from RC-100 Wireless Hand-held units and displays this information on the scoreboard or passes it out another external controller. The RC-100 wireless base station may be mounted inside the display, or placed in a tabletop enclosure, based on the application.
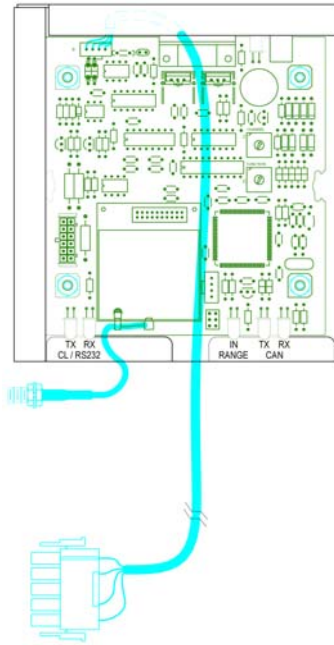
Figure 4: *RC-100 Scoreboard Receiver*   ***Figure 5*** *:RC-100 Base Station Table-Top Enclosure*
(Scoreboard Installation)

Section 3: RC-100 Wireless Base Station Operation

This section provides an overview of the RC-100 Wireless Base Station operation. The RC-100 Wireless Base Station is used to communicate with all RC-100 Wireless Hand-helds on the same channel setting. The RC-100 Wireless Base station also is used to update connected displays based on information entered on the Wireless Hand-held controller.

The Wireless Base Station includes two switches that must be set to specify the function number and channel of operation. See the "Function Setting" and "Channel Setting" sections for more information. In addition, the Wireless Base Station includes a server/client jumper that must be set to "client" in some multiple wireless display scenarios. Refer to the "Server/Client Setting" section.

3.1 Important Installation Range Considerations

Due to limitations of the RF Module in the wireless base station, the Base station must be located at a distance of AT LEAST 10 feet from the Wireless Hand-held controller. If the Wireless Hand-held is used at a distance of less than 10 feet from the base station, the wireless Hand-held may drop out occasionally (See for more information.)

3.2 Server/Client Mode Setting

The RC-100 Wireless Base Station can operate in either Server mode or Client Mode, depending on application requirements.

In Server mode, the Wireless Base Station controls all Wireless Hand-held devices, either through a program stored on chip (ie Baseball, DataTime®) , or by acting as a router to pass data back and forth between wireless Hand-held devices and an external control system (ie OmniSport® 2000 Judges' Console, For DataTime and All Sport® applications), the Wireless Base Station Server will typically reside inside a scoreboard. An RC-100 network (on a single channel) must contain **1 and only 1** Wireless Base Station Server device.

In client mode, the Wireless Base Station relies on another Wireless Base Station Server to supply it with data. This client base station, as referred to in figure 6 will typically provide a second wireless scoreboard or display, as needed for All Sport or DataTime functions. Since the Function select switch is not needed to select a function when the base station is in client mode, the function switch selects display group instead. For more information see the section .

Wireless Base Station server/client mode is selected via the Server/Client Jumper. Insert the jumper over the top two posts as shown in the "Client" label on the PCB to put the wireless base station in Client mode. For Server mode, leave the jumper over the bottom two posts or remove. For most applications , the Wireless Base station will operate in server mode, and no change from the default setting will be necessary.
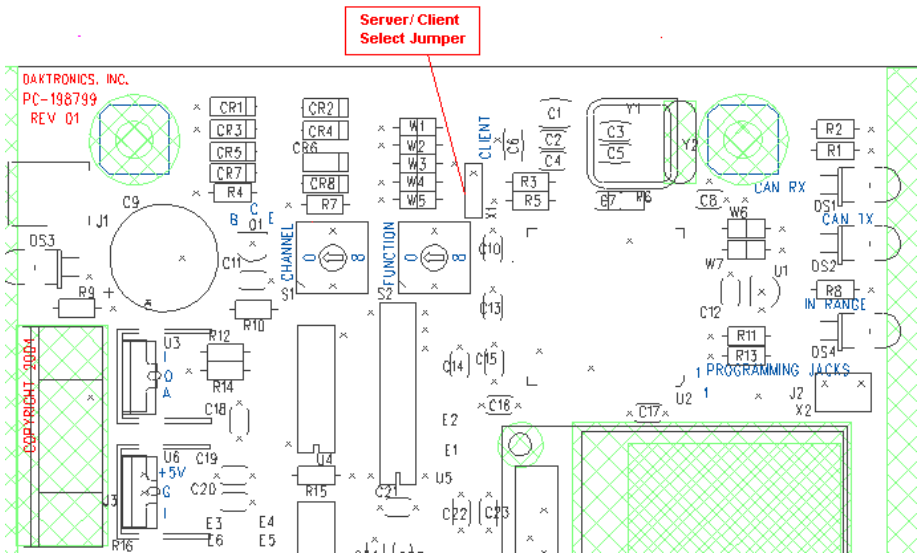
Figure 6: Server/Client Select Jumper

3.3 Channel Setting

The wireless base station and wireless Hand-held device use internal radio modules to communicate. The radios on both the Wireless Hand-held and Wireless base station device can be set to any channel ranging from 1-15. To select the base station channel, use the rotary switch labeled "CHANNEL" "S1" (see the figure below.) To select the channel in the Wireless Hand-held controller, see respective section in the Wireless Hand-held Controller Operation Section. The wireless Hand-held and wireless base station must be set to the same channel in order to communicate.

Two Wireless Base Station Servers (See Server/Client Section) cannot be powered up in the same area with the same channel setting, or they will interfere with each other. To avoid this, on power-up the Wireless Base Station Server checks to see

if there are any other servers located nearby. If another server is detected, the "In Range" LED on the server will flash quickly to indicate interference, and continue to flash until the channel is changed or the conflicting base station is turned off.

If two wireless base station server units need to operate at the same time in the same location, set each to an independent channel.
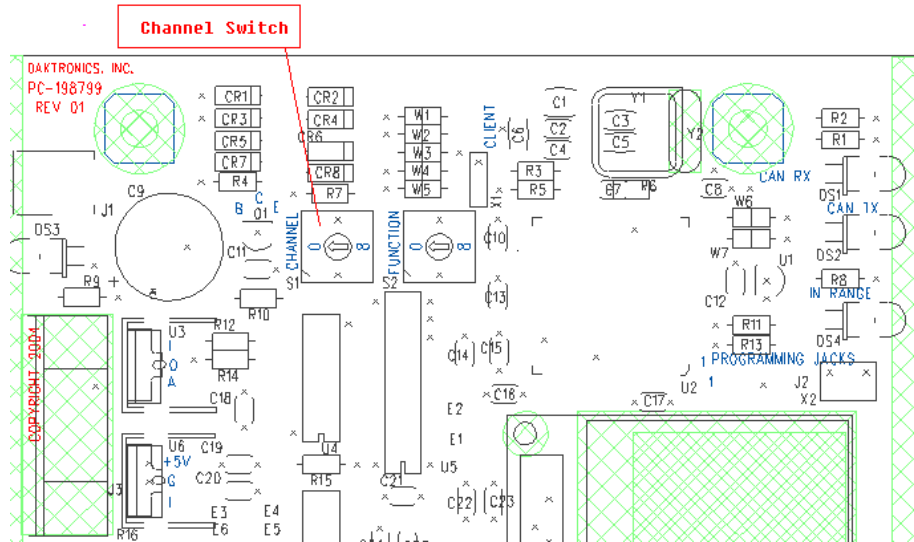
Figure 7: Channel Select Switch

3.4 Synchronizing Multiple Base Stations and Channel Selection

Channel one is the default channel used by Daktronics for single base-station installations. When multiple base stations are installed in a single location, additional consideration must be given to channel number selection.

The RC-100 wireless system uses frequency hopping technology to maximize range and minimize interference from other systems. When multiple base stations are installed within range of each other (approx 2000 feet) base stations must be able to synchronize with one another so that their hop sequences do not interfere with each other.

This is accomplished by the use of synch groups. A list of the synch groups and their corresponding channel numbers and channel groups are shown in the table below.

Sync Group	Channel Number	Primary Channel Group	Extended Channel Group
1	0	All	
2	1	2,3,4,5	7,8,9,10,12 (C), 13 (D), 14 (E), 15 (F)
3	6	7,8,9,10	12 (C), 13 (D), 14 (E), 15 (F)
4	11 (B)	12 (C), 13 (D), 14 (E), 15 (F)	

The "Channel Number," "Primary Channel Group," and "Extended Channel Group" entries correspond to the switch settings on the rotary channel switch and hand-held settings that pertain to the Sync Channel shown on the same line. Each "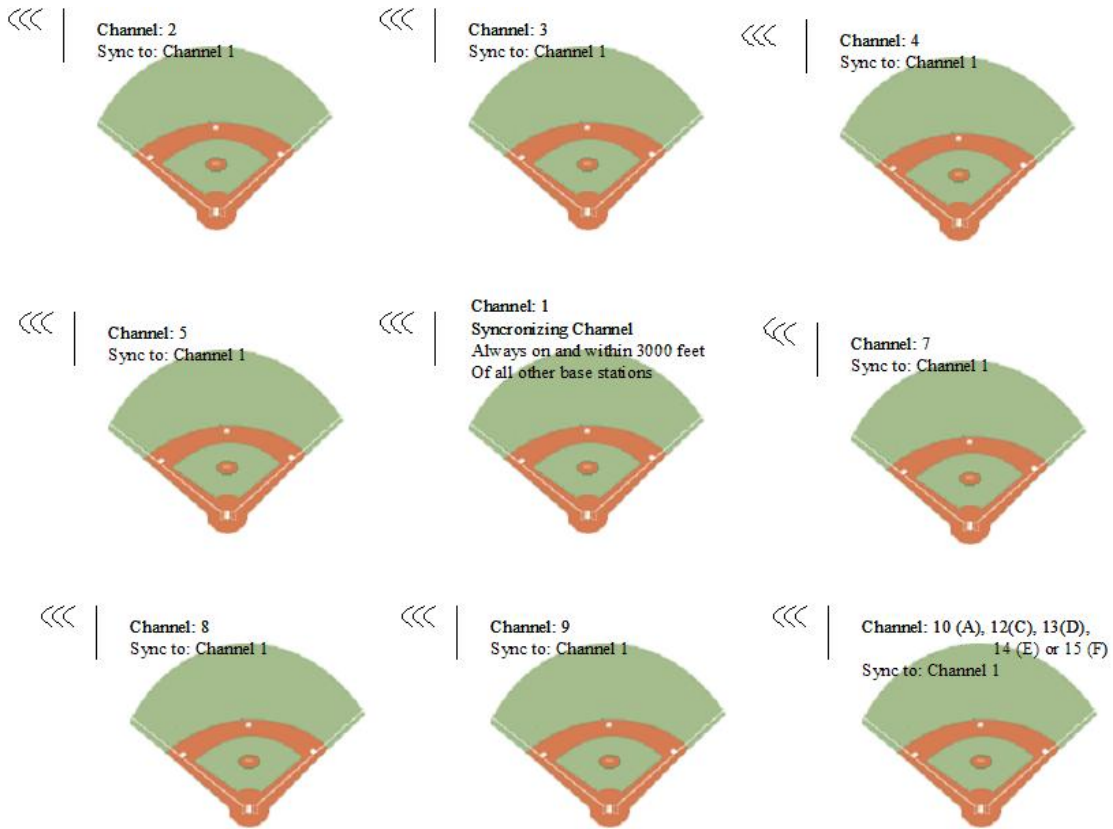Primary Channel Group" lists the channels that will attempt to synchronize to this synch channel as a first-choice. If any base stations set to these "Primary Channels" are within range of a base station set to the corresponding sync channel number, the primary channel base station will sync to the corresponding sync channel. The "Extended Channel Group" lists channels that attempt to synchronize to the corresponding sync channel as a second or third choice. When these channels are not within range of their primary sync channel, they will attempt to synchronize to the corresponding sync channel.

When a base station is synchronized to a Sync Channel, the In Range LED will flash briefly approximately every 5 seconds with the number of times flashed corresponding to the sync group (1 = Channel 0, 2= Channel 1, 3=Channel 6, 4= Channel 11 (B).)

Any base stations set to channels in the "Channel Groups" section will continuously scan for sync base stations whenever no hand-held controllers are connected. This will allow these boards to be powered up in any sequence and still obtain network synchronization.

If your installation includes a central base station installation location approximately 3000 feet or less from all other base stations which will remain on at all times during operation on any base station, a base station set to channel 1 may be installed in this location and all other base stations may be set to values in the primary and extended channel groups for this channel number. An example is shown below for the case of a baseball diamond.

Channel: 2
Sync to: Channel 1

Channel: 3
Sync to: Channel 1

Channel: 4
Sync to: Channel 1

Channel: 5
Sync to: Channel 1

Channel: 1
Syncronizing Channel
Always on and within 3000 feet
Of all other base stations

Channel: 7
Sync to: Channel 1

Channel: 8
Sync to: Channel 1

Channel: 9
Sync to: Channel 1

Channel: 10 (A), 12(C), 13(D),
14 (E) or 15 (F)
Sync to: Channel 1

If your installation does not include a central location as described previously, or if groups of base stations will be powered down at times other groups will need to be active, you will need to use sync groups 3 and 4 (channels 6 and 11.)

You may use sync groups 3 and 4 (channels 6 and 11) as synchronizing channels for two other independent groups of scoreboards that may or may not be in range of any other groups. An example is shown below for a 3 independent group system.

Channel 2
Sync to Chan: 1

Channel: 3,4 or 5
Sync to Chan: 1

Channel: 1
On whenever base stations
With channels 2-5 are on

Group 1

Channel 7
Sync to Chan: 6

Channel: 8,9,10(A)
Sync to Chan: 6

Channel: 6
On whenever base stations
With channels 7-10(A) are on

Group 2

Channel: 12(C)
Sync to Chan: 11 (B)

Channel:13(D), 14(E), 15(F)
Sync to Chan: 11 (B)

Channel: 11 (B)
On whenever base stations
With channels 12(C)-15(F) are on

Group 3

An important limitation exists for channels 1,6, and 11. Since other channels use these channels for synchronization purposes, base stations on these channels cannot scan during normal operation, only at power-up. For this reason, these base stations must be powered up in-order (1 first, then 6, then 11) in order to maintain overall network synchronization in the case where Channels 1, 6, and 11 all need to be powered up at the same time.

3.5 Function Setting

To configure the function of the RC-100 system, the desired system function must be configured in the Wireless Base Station. A list of possible current functions are listed below along with the "function setting" used to reference the function.

Table 1: Function Setting

Function Setting	Function (Base Station Server Mode)	Function (Base Station Client Mode)
0	Default Function (last power up function)	All Display Groups
1	CAN Hand-held (Judges') Console	Display Group 1
2	Baseball/Tennis Scoreboard Controller (All Sport)	Display Group 2
3	DataTime/Data Master Display Control	Display Group 3
4	Reserved	Display Group 4
5	Reserved	
6	Reserved	
7	Reserved	
8	Reserved	
9	Reserved	
A	Reserved	
B	Reserved	
C	Reserved	
D	Reserved	
E	Reserved	
F	Reset Memory/Test	Reset Memory/Test

Note that the function of the base station depends on whether the base station is in Server or Client mode (see the Server/Client Section for more details.)   For a Wireless Base Station Server, the function switch sets up the desired application. For a Wireless Base Station Client, the Function switch sets up the display group to which this display belongs.

Function setting "0" on a Base Station Server is a special setting that defers function selection to the Wireless Hand-held. The Wireless Base Station Server will retain the last function specified by the Wireless Hand-held and use this as the default the next time power is cycled.   All other Function settings will set the selected function as the default on power up, regardless of any function change done by the Wireless Hand-held during the last power up.

Function setting "F" is a special setting which resets all saved memory parameters back to defaults. This can be used for situations such as when a password needs to be reset. To use this function, cycle power to the Wireless Base station with the switch in this position and leave on for 10 seconds. Remove power, change to the desired function and continue. All saved memory parameters will be set back to default.

There are two methods by which to set the function of the wireless base station, either by rotary switch setting or by configuration through the wireless Hand-held controller. Either method may be used. Some applications may only use one of the two methods.

Function Selection Via Switch Setting

Refer to the drawing of the Wireless Base Station PCB assembly drawing shown below. The rotary switch labeled "FUNCTION" "S2" is used to set the function of the wireless base station

Turn the rotary switch until the setting value of the desired function is displayed on the switch (See Table 1 for a list of function setting values.) After 5 seconds, the Wireless Base Station Server will change its function to match the new switch setting (any connected Wireless Hand-held Controllers should change as well.) When the Wireless Base Station Server is turned off and back on, it will always default to the function set on the switch, (even if another function was set during run-time by the wireless Hand-held.) To allow the wireless Hand-held control over the function setting for the next power-up, set the function switch to 0.

The function setting may also be set in hardware via the loading of Jumpers W1-W4 to select the correct setting value.   In this case, switch S2 may not be loaded on the PCB.
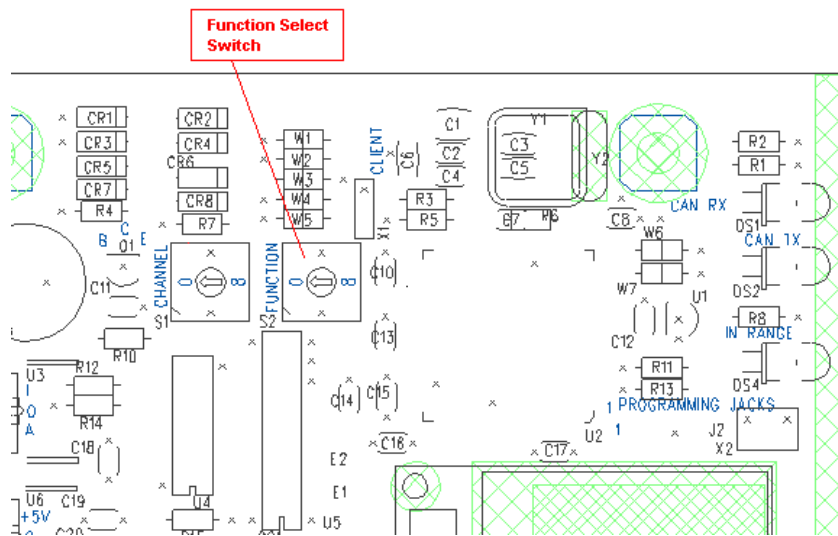

Figure 8: Function Select

Function Selection Via Wireless Hand-held

The wireless Hand-held controller may also be used to set the function of the RC-100 system. The function of the base station may be changed DESPITE the setting of the Function Select Switch, HOWEVER, if the function select switch is set to any value other than 0, the switch-selected function will be restored at the next power on.

To change the function of the wireless base station using the Wireless Hand-held Controller, the Wireless Hand-held must be in Configuration mode. See the "Configuration Mode" section of the Wireless Hand-held operation section for more information about changing the function of the wireless base station.

Base Station Operation

3.6 Wireless Base Station LED's

The wireless base station PCB includes several LED's for diagnostic purposes. These LED's and corresponding locations are shown in the figure 9.
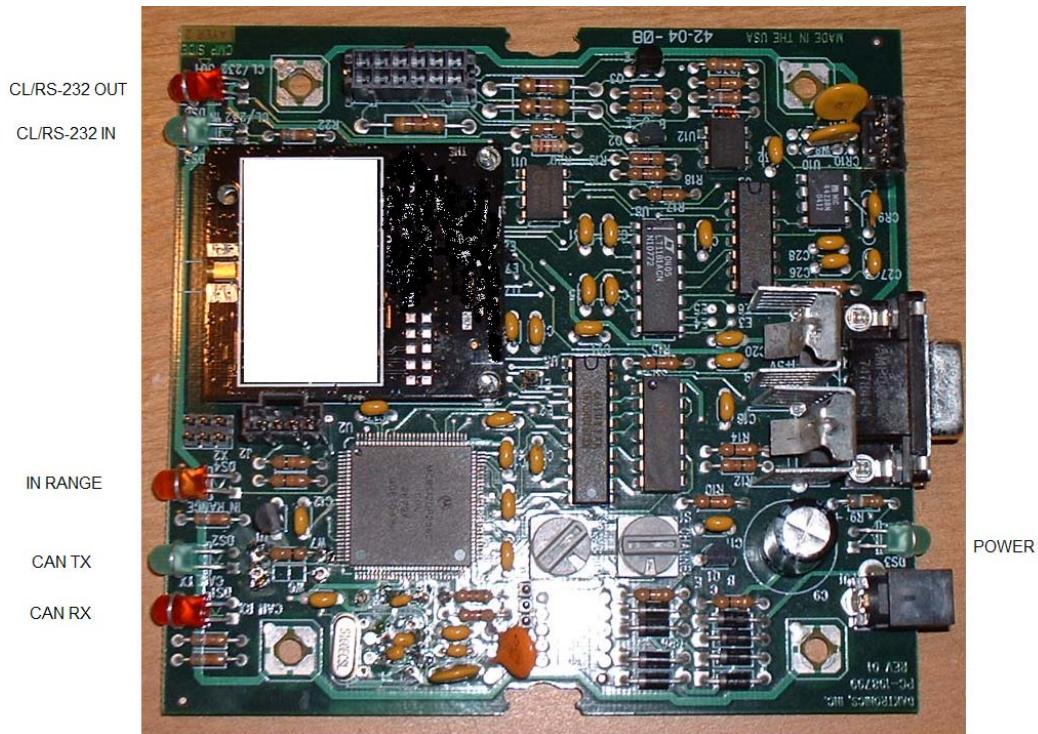

Figure 9: *Wireless Base Station LED's*

Power

This LED is illuminated when an external power source is connected to the Wireless Base Station.

CL/RS-232 Out

This LED flashes when Current Loop (scoreboard) or RS-232 data is transmitted out of the base station to a wire-connected device. The Current Loop output is used to drive a connected scoreboard. The RS-232 output is used to communicate with external devices such as a DakTennis PC.

CL/RS-232 In

This LED flashes when the Base Station receives Current Loop or RS-232 data from another wire-connected device.

In Range

On a Base Station Server, this LED flashes several times at startup to show that the base station is searching for other base station servers on the same channel within range. If another base station server is found, this LED will flash continuously, indicating that only one base station server is allowed on a given channel.

Once the Base Station server has entered operation mode, this LED indicates whether or not a Hand-held device is currently connected. When one or more Hand-held devices are connected, the In Range LED will be on. When no Hand-held devices are connected, the In Range LED will be off.

On a Base Station Client, this LED is on whenever the client is connected to a Base Station Server.

In addition, the In Range LED is also used to show base station synchronization status. When the base station is synchronized to another base station using a synch group, the sync group number is flashed on the LED approximately once every 5 seconds. For more information, refer to the Synchronizing Multiple Base Stations and Channel Selection Section.

CAN TX

The CAN TX LED illuminates (flashes) when CAN (Controller Area Network) data is transmitted to a connected CAN device such as the Omnisport 2000.

CAN RX

The CAN RX LED illuminates (flashes) when CAN (Controller Area Network) data is received from a connected CAN device such as the Omnisport 2000.

LED Error Diagnostics

The CAN TX, In Range, CL/RS-232 Out and CL/RS-232 in are also used to display errors that occur in Wireless Base Station Operation. Please refer to Wireless Base Station Errors for more information.

Base Station Operation

Section 4: RC-100 Wireless Hand-held Controller Operation

4.1 Fundamental Operations: Config or Connect Mode

The Wireless Hand-held Controller always operates in one of two modes, Connect Mode or Config Mode.

Connect mode is used when the Wireless Hand-held is Connected to a Wireless Base Station Server. In Connect mode, the operation of the Hand-held is determined by the Wireless Base Station, and all operation is specific to the Wireless Base Station Function selected.

Config (short for "configuration") mode is used when a Wireless Hand-held is not being controlled by a Wireless Base Station Server. Config mode is used to setup operational parameters in the Wireless Hand-held controller, such as which channel to use or the amount of time to run idle before turning off.

The icon below is shown on the LCD when the controller is in Connect mode:

Figure 10: Connect Mode LCD Icon

The following icon is shown on the top left of the LCD when the controller is in Configuration mode:

Figure 11: Config Mode LCD Icon

Refer to the following sections for more information about each of these modes.

4.2 Keypad:

The default layout of the wireless Hand-held keypad is shown below. This drawing will be referenced in the following operational sections. Note that the actual keypad for the user-connected application will vary, and will include any text specific to that application. However, all applications will have this default keypad layout in configuration mode.
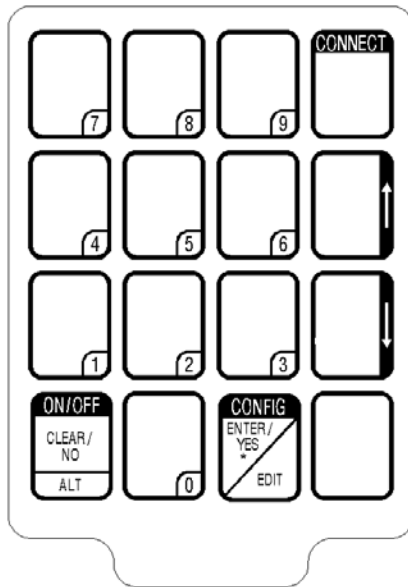
4.3 Wireless Hand-held Common Key Overview

Figure 12: Common RC-100 Keys

Several keys on the default keypad layout may be common to multiple Wireless Hand-held applications. These keys are described in the following section. For a description of the function of keys for a specific application, please see the Application specific section of the manual.

Wireless Hand-held Control Keys

Some keys on the keypad are included on all keypads specifically for the purpose of controlling Wireless Hand-held configuration. These keys are marked by inverted text, such as "ON/OFF" "CONFIG" or "CONNECT." These keys may or may not be used during wireless Hand-held connect mode operation (see the application specific section for more information.)

On/Off Key

This key is used to turn the Wireless Hand-held Controller On or Off. See the section "Powering the Controller On and Off" for more information.

Config Key

This key is used to switch to configuration mode and enter the configuration menu for the Wireless Hand-held. See the "Configuration Mode" section for more information.

Connect Key

This key may be used to connect to a Wireless Base Station, after the correct channel number has been configured. See the "Configuration Mode" section for more information.

This key may be used to connect to a Wireless Base Station, after the correct channel number has been configured. See the "Configuration Mode" section for more information.

Pressing "Alt" followed by the "Connect" key when a connection is made to a wireless base station will show base station synchronization and revision information. See Troubleshooting: Obtaining Base Station Status Information for more details.

Arrow Up/Down Keys

These keys are used to navigate through the configuration menu in Configuration Mode. These keys may also be used in applications for specific functions. See the Configuration Mode or application specific sections for more information.

Alt Function Keys

The Bottom Left key on the keypad labeled "ALT" is used to run alternate functions on a specified key. The Alternate key function, if applicable, will be shown on the key in the bottom half of the key below a horizontal line. See the Example below for the "Set Time/Up/DN" key.

Figure 13: Set Time Up/Dn Key

The Horizontal line separating <SET TIME> from <UP/DN> indicates that the alternate function for this key is <UP/DN> Which sets the clock direction as count up or count down. If the <ALT> Key is pressed before pressing this key, the "UP/DN" key function will be run. If the <ALT> key was not pressed, pressing this key selects the "Set Time" function.
See the Application Specific section for your product for more information about the use of <ALT> function keys.

The Edit Key

The Edit key is used to edit data associated with a specific key. An example is shown below for the "Out +1" key (Baseball specific.)
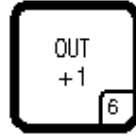

Figure 14: Out+1 Key

Normally when the Out+1 Key is pressed, the number of outs will increment by one. However, in the case it is desired to change the value using the number key, press <EDIT> <OUT+1>. An LCD display will allow you to edit the current out value using the number keys on the keypad.

See the Application specific section for more information about the use of the <EDIT> key.

Number Keys

Number keys are used for numeric entry functions. The key itself may be used for other key functions normally, but when in an edit routine, this key may be used to enter the number shown in the bottom right corner of the key.
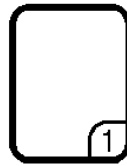

Figure 15: General Number Key

ON/OFF Clear/No Alt Key

This key has several functions. The ON/OFF function is described in the section "Powering the Controller ON and OFF

The ALT function is described in the "ALT Function Keys" section. This is the key that selects Alternate functions for application keys. Press this key before pressing the alternate function key to select the alternate function for that key.
The <NO> operation of this key pertains to editing and data entry routines. When a question prompt is shown on the LCD with a Question mark, The <NO> key answers this question with a "NO."
The <CLEAR> operation of this key pertains to editing and data entry routines. When editing a value, pressing the <CLEAR> key clears that value. This key can be used to blank items on the display, by entering an edit routine for that

Handheld Controller Operation

item, pressing the <CLEAR> key, and pressing the <ENTER> key to accept the cleared state.

The <CLEAR> key may also be used to escape out of an editing function. If a key was pressed inadvertently, or if you would not like to change the value

Figure 16: ON/OFF Clear/No Alt Key

being edited, pressing <CLEAR> twice exits the editing routine without modifying the value.

Config Enter/Yes Edit

This key has several functions. The <CONFIG> function is described in the "Wireless Hand-held Control Keys" section.
The <EDIT> key is described in the "Edit Key" section. Use this key to edit the data associated with a particular key (see application section for more information.)

The <YES> function of this key pertains to editing and data entry routines. When a question is shown on the LCD with a question mark, this key answers this question with a "YES."

The <ENTER> function of this key pertains to editing and data entry

Figure 17: Enter/Yes Key

routines. When you have completed editing a value, press the <ENTER> key to accept the change and update on the display (if applicable.)

4.4 Powering the Controller On and Off

The wireless Hand-held controller is a battery-powered device. When using battery power, the controller shuts itself off or "sleeps" automatically after a period of inactivity. Two methods may be used to "wake up" the Hand-held controller.

Using External Power

Plugging the unit into an AC or DC power source via the power connector will turn on the wireless Hand-held controller and charge its internal batteries (see Battery Operation.)

Using the Keypad to Power On/Off

The bottom-leftmost key is labeled <**ON/OFF>** Press and hold this key momentarily to turn on the controller. If the controller LCD does not display initialization text within a few seconds, the internal battery is most likely dead (see Battery Operation.)

The controller may be turned off by either waiting for an inactivity timeout to turn the device off automatically, or by pressing and holding the <**ON/OFF**> key for 5 seconds. The LCD will display a power down message after the key has been held for five seconds. Release the <**ON/OFF>** key to turn the controller off.

Note, the Wireless Handheld will not turn off if connected to external power. When connected to external power, the Wireless Handheld controller will remain on to monitor battery charging. When external power is removed and charging is complete, the handheld will power down after a 5 second prompt to conserve battery power. Press a key during the prompt after disconnecting external power to keep the handheld controller powered on.

4.5 Battery Operation

A charger is contained inside the unit for re-charging the batteries. To recharge the batteries when not in use, simply connect a 12V AC or DC power source to the power connector on the wireless Hand-held controller

A charger is contained inside the unit for re-charging the batteries. To recharge the batteries when not in use, simply connect a 12V AC or DC power source to the power connector on the wireless Hand-held controller.

Figure 18: power source to the power connector

If desired, the wireless Hand-held controller may be run on external power. Simply continue operation with external power connected.

The current external power detect status is shown by the indicator on the top left corner of the LCD. When external power is connected, a power plug will be shown to the right of the battery.

The indicator on the top left center of the LCD shows the battery status. When the battery status indicator cycles from low to high and back to low again, the charger is in fast charging mode. A completely discharged battery will take approximately 1 ½ hours of fast charging to completely recharge.

4.6 Range Indicator

The top line of the LCD is used to show a range indicator, to determine the approximate signal strength of the network connection.   The antenna indicator on the left is shown when a base station is detected in range of the handheld. Each successive bar indicates an additional level of signal strength between the handheld and base station. When 0 or 1 bar is shown, the connection to the wireless network is likely to be limited, and the console may occasionally fail to respond. To improve signal strength, move within range of the base station and remove any line-of-sight obstacles located between the base station and handheld controller. Ideally, the handheld controller should have a clear line-of-sight to the base station antenna. For more information see, **Section 11 Troubleshooting**

Figure 19: Signal Strength

4.7 Configuration Mode

The wireless Hand-held controller operates in one of two different modes at all times, Configuration (Config) mode or Connect Mode. When in Configuration Mode, the Wireless Hand-held is not being controlled by a Wireless Base Station Server. This mode can be used to set Wireless Hand-held parameters such as function and power on time.

The current controller mode (Configuration or Connect) is shown on the top left corner of the LCD at all times.

Configuration mode may be entered from Connect mode by pressing and holding the <CONFIG> key for 5 seconds.

Figure 20: External Power Detect Status

If the Wireless Hand-held has not yet been configured for a specific channel, the Configuration mode will automatically when the device is first powered on. Otherwise, the Wireless Hand-held will attempt to connect at the last connected channel.

When in Configuration mode, a connection may be made to a specific wireless Hand-held controller via the <CONNECT> key, or Hand-held configuration items may be set by navigating through the Configuration Menu (See The Configuration Menu section.)

Pressing the <CONFIG> key when the controller is in Connect mode will display configuration options. Use the up or down arrow keys to move through the possible configuration items. Press the <ENT> key to modify a configuration item.

4.8 Configuration Menu

A list of the Configuration Items in the Configuration Menu and their description is shown below, in the order in which they occur in the configuration list. The Configuration Menu is accessed by entering Config mode (Holding the <CONFIG> key down for 5 seconds.)

Setting a default channel Number

LCD Display	Action
PRESS ENT TO SET CHANNEL	Press <ENTER> to set the default connect channel number. Press the Arrow Up or Arrow Down key to move to a different configuration selection. Use the number keys to enter the desired channel number. The channel number should match the setting on the wireless base station for which you would like to connect to on power-up.
RADIO CHANNEL DEFAULT: NN* NN = Channel Number Default : 1	Use the number keys to enter the desired channel number. The channel number should match the setting on the wireless base station for which you would like to connect to on power-up. Press <ENTER> when complete to save the setting.

Adjusting LCD Contrast:

LCD Display	Action
PRESS ENT TO SET CONTRAST	Press <ENTER> to modify the default LCD contrast. Press the Arrow Up or Arrow Down key to move to a different configuration selection.

LCD Display	Action
CONTRAST UP - ↑ CONTRAST DN - ↓	Use the up or down arrow keys on the keypad to set the desired contrast. Press <ENTER> when complete to save the setting.

Setting the Power On When Idle Time

LCD Display	Action
PRESS ENT TO SET PWR ON TIME	Press <ENTER> to modify the default LCD Power On When Idle time. This is the amount of time (in minutes) the wireless Hand-held will remain on when not in use. Decrease this value for longer battery life. Increase this value if the console needs to be inactive for longer periods of time without turning off.
IDLE PWR ON TIME CURRENT NN* NN = Channel Idle Power On Time. Default: 20 minutes	Use the number keys to edit the idle power on time. Press <ENTER> when complete to save the new setting.

Scanning Channels

LCD Display	Action
PRESS ENT TO SCAN CHANNELS	Press <ENTER> to scan channels in search of Wireless Base Station Controllers that are currently functional. This function is useful when one or more Wireless Base Station controllers are set to unknown channels.
CHANNEL SCAN CHANNEL NN NN = current channel	When in the scan channels function, the Hand-held scans each channel one-by-one to determine the presence/absence of an RC-100 controller. The current channel being scanned is shown on the bottom line of the LCD. Please allow several seconds for each channel to be scanned.
N NETWORKS ↑↓ CH: CC SS: SS N= the # of networks found CC = the Channel number of the current network SS = The signal strength of the current network (0 = none, FULL = full signal	If the channel scan found wireless networks, the Hand-held will show each network found with a corresponding channel number and signal strength. Use the up or down arrow keys to move through the different networks found during the channel scan.

LCD Display	Action
strength.)	
ENT TO CONNECT ↑↓ NEXT NETWORK	If the channel scan found wireless networks, this message will flash on the LCD after showing the channel and signal strength for the current network. You may direct the Hand-held to connect to the current network by pressing the <ENTER> key.
NO NETWORKS FOUND PRESS ENT TO RE-SCAN	If no wireless networks were found by the scan, you may press the <ENTER> key to re-scan the network. Make sure you have a base station powered up and within range limits. Please see **Section 11** Troubleshooting

Set Wireless Base Station Server Function

LCD Display	Action
PRESS ENT TO SET FUNCTION	Press <ENTER> to set the function of the Wireless Base Station Server for the current power-up. If the Wireless Base Station Server is set to Function Switch setting "0," the function set by the Hand-held will be restored on the next power up. Otherwise, the Base Station will use the function set on the switch as the function to use on the next power cycle.
ERROR – MUST BE CONNECTED	This prompt is shown when the function was attempted to be changed without being connected to a Wireless Base Station. A Connection must first be made to the Wireless Base Station using the <CONNECT> key.
CHANGE FUNCTION XXXXXXXXX ↑↓ XXXXX – New Function	Use the up or down arrow keys to select the new function. Press <ENTER> to confirm the selection and set the base station operation to this selected function.

FUNCTION CHANGED **WAIT FOR BASE STATION RESTART** **FUNCTION CHANGED CONNECT?**	If the Function was able to be changed on the base station, the following LCD prompts are shown. After the Function is changed, the base station must restart. When the base station has re-started, press <YES> to re-connect to the base station.

4.9 Switching to Connect Mode

After all initialization is complete, Press the <CONNECT> key to attempt to connect to a Wireless Base Station Server and switch to connect mode. The LCD shows the current connection status. The wireless Hand-held will attempt to connect to an RC-100 network at the channel setting selected by the default channel (set in the Configuration Menu.)

LCD Display	Action
INITIALIZING RADIO CONNECTING VIA CHANNEL NN* NN = Current Channel setting	After pressing the <CONNECT> key, the Wireless Hand-held attempts to connect to the Wireless Base Station on the channel shown. The Wireless Base Station must be powered on and must be set to the specified channel. If a connection was made, the Wireless Hand-held will now be operating in Connect mode. Refer to the application section for connection specific operation details. If a connection could not be made, refer to **Section 11**: Troubleshooting for information about how to resolve the problem.

Section 5:   Application Specific Overview – All Sport Applications

This section describes information specific to All Sport applications. The "All Sport" function is one of the functions provided by the RC-100 Wireless Base Station Server.

All sections following this section describe All Sport Specific Applications

5.1 Selecting All Sport Applications (Code Numbers)

To select a specific All Sport application (such as Baseball, Tennis, etc) the "All Sport" function must first be set in the Wireless Base Station Server. For more information about selecting a function in the Wireless Base Station Server, please see Section **3.5** Function Setting" To set or modify the Wireless Base Station Server function using the Wireless Hand-held, see Section **3.3** Server/Client Mode Setting.

Once the All Sport function has been selected, the All Sport Application may be selected by entering a code number on the console. Each application is selected by entering a specific code number. This number may be found either in application specific documentation sections, or typically on the bottom center of the keypad insert.

LCD Display	Action
ENTER CODE NN *XXXXXXXX* NN = Current Code Number XXXXX = Current Application	Enter the code number corresponding to the application you would like to run using the number keys on the keypad. When the code number is correctly selected, the text describing the All Sport Application will be shown on the bottom line of the LCD. Code numbers may typically be found by looking at the keypad insert (bottom center) tab for the sport you would like to run.
ENTER CODE NN *NOT FOUND*	"NOT FOUND" is shown on bottom line of the LCD if the specified code number was not available. This typically means either the code number was entered incorrectly or the Base Station Firmware does not support this sport code. If this is a new code number that your Base Station does not yet support, the Base Station will need to be either replaced or reprogrammed. Contact Daktronics Customer Service.

5.2 Notes about Code Selection

Since the Wireless Base Station Server is typically used with a single application, once the code number has been set the Wireless Base Station server will continue to use the same code number each time power is reset. To change code numbers, use the NEW CODE key on the Wireless Hand-held (see the Common All Sport Application Keys section.)

5.3 Common All Sport Application Keys

Some keys on the keypad, when used with an All Sport Application, provide the same types of features. The following section contains a description of these keys.

Note, for common Wireless Hand-held keys, see the following section:
4.3 Wireless Hand-held Common Key Overview

New Code Key

This key is used to select a new code number in order to change the All Sport Application. This key is typically implemented as an Alternate function
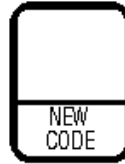
Figure 21

(the <ALT> key must be pressed before accessing.)
For more information about Alternate functions, see Alt Function Keys

This key may also provide an application defined function (a function listed in the top half of the key.) Please see the Application specific section for more information

LCD Display	Action
PRESS ENT TO SELECT NEW CODE N e w G a m e	Press the <ENTER> key to select a new code number. Note, all game data for the current application will be lost. Press <CLEAR> to resume normal operation. If <ENTER> is selected, see the section **5.1** Selecting All Sport Applications (Code Numbers) to select the new code number

e Key

This key is used to reset all current game data for a specific application. This key would be used in preparation for a new game, when all current game data needs to be removed from the display.

Figure 22:

LCD Display	Action
PRESS ENT TO SELECT NEW GAME	Press the <ENTER> key to start a new game. Note, all game data for the current or last game in progress will be lost. Press <CLEAR> to resume normal operation.

Section 6:   Baseball Operations

Sport Insert LL-2605 (Code 03)

Reference Drawings:
>   System Riser Diagram; RC-100 Baseball/Tennis.....................**Drawing A-230530**
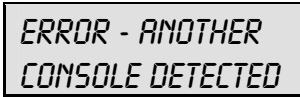
The system riser drawing is located in **Appendix A** and you can view the sport keypad insert drawing at the end of this section .If an insert is lost or damaged, a copy of the insert drawing can be used until a replacement can be ordered.

Refer **Section 2** RC-100 System Overview for information on starting the console and for instructions for use of the sport insert. Read the **Section 2** RC-100 System Overview material carefully to fully understand the following operating instructions.

If you do not know the code number to enter for your scoreboard, refer to **5.1** Selecting All Sport Applications (Code Numbers) in this manual. If you do not know the model number of your scoreboard, refer to the scoreboard installation and maintenance manual provided with the scoreboard.

6.1 Wireless Specific Considerations
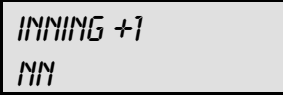
Although Multiple Wireless Hand-held Controllers may be connected to a single Wireless Base Station Server, the Baseball application allows only one Hand-held device to be connected at a time.

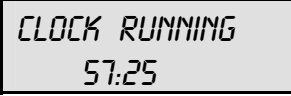| LCD Display	Action
ERROR - ANOTHER CONSOLE DETECTED	This message is displayed if another console is currently connected to the Wireless Base Station Controller.
TURN CONNECTED CONSOLE OFF	This application does not permit multiple Wireless Hand-held controllers to be connected to a single Wireless Base Station Server. Turn off the power to the currently connected device to continue operation.

6.2 Baseball Keys

Out +1, Inning +1

The **<OUT +1>** and **<INNING +1>** keys are used to increment their respective totals.

LCD Display	Action
INNING +1 *NN* *NN* = current setting	Press **<OUT +1>** or <**INNING +1>** to increment their respective totals. **The LCD shows which key was pressed and the new value.** To change values, first press <**EDIT**> and **<OUT +1>** or **<INNING +1>** to display the current setting. Enter the correct number on the number pad and press <**ENTER***>.

Set Time

The **<SET TIME>** key is used to set or adjust the game time.

LCD Display	Action
TIME EDIT SET *CURR 60:00**	Press the **< SET TIME >** key and enter the desired time and then press <**ENTER**>.
CLOCK RUNNING *57:25*	If the **< SET TIME >** key is pressed when the clock is on the LCD will show that status as shown here

UP/DN (Alternate Function)

LCD Display	Action
MAIN CLOCK-DOWN↓ *1-UP 2-DOWN*	Press the **< ALT >** key and then the**< UP/DN >** key. The current direction is shown. Select the direction by pressing 1 or 2 or press <**CLEAR**> to abort.

Start, Stop

Press the **<START>** key to start the game clock. Press the **<STOP>** key to stop the game clock.

DIM (Alternate Function)

LCD Display	Action
DIMMING 1LEVEL (0-3): NONE 0=NONE 1=2/3 2=1/2 3=1/3	Press the **< ALT >** key and then the **< DIM >** key. The current level is shown and can be changed by pressing a number key 0-3.

Ball, Strike, Clear Ball/Strike

The <**BALL +1**> and <**STRIKE+1**> keys increment the ball and strike digits. Pressing the <**CLEAR BALL & STRIKE**>key clears the digits.

🖎 **Note:**

- If the ball count value is 4 when <**BALL +1**> is pressed, the value is blanked out**.**

- If the strike count value is 3 when < **STRIKE +1**> is pressed, the value is blanked out**.**

LCD Display	Action
BALL: +1 N	Press the <**BALL +1**> or < **STRIKE +1**> to increment the ball and strike digits. Press the <**CLEAR BALL & STRIKE**> key to clear the digits to zero.

Hit, Error

The <**HIT**> and <**ERROR**> keys are used to turn on the Hit or Error indicator or digits in the table that follows, <**ERROR**> is used as an example.

LCD Display	Action
ERROR: ON	Press the <**HIT**> or <**ERROR**> key to turn on the hit or error indicator or digits. **This display appears briefly.**

Home/Guest Score +1, -1

The <**HOME SCORE +1**> and <**HOME SCORE -1**> and <**GUEST SCORE +1**> and <**GUEST SCORE -1**> keys are used to increment or decrement their respective totals.

LCD Display	Action
TEAM SCORE: +1 *HOME NN* *NN* = current setting	Press the appropriate home or guest <**SCORE +1**> or <**SCORE -1**> key to increment or decrement the total number of runs for the team. The LCD shows which key was pressed and the new value for the corresponding team. The <**EDIT**> key permits the user to select and edit **Runs +1** or **–1.** First, press <**EDIT**> and the key for the home or guest field to be edited, then enter the correct number on the number pad and press <**ENTER***>.
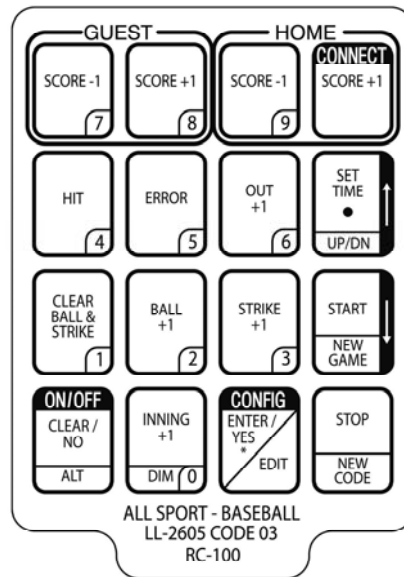
Figure 23*: Baseball Overlay*

Section 7:   Tennis Operations

Sport Insert LL-2607 (Code 08)

Reference Drawings:
    System Riser Diagram; RC-100, Dak Tennis Config................**Drawing A-231298**
    System Riser Diagram; RC-100 Baseball/Tennis....................**Drawing A-230530**
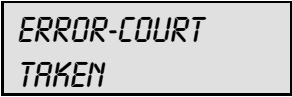   System Riser Diagram; RC-100 SCBD Receiver Base St. ......**Drawing A-233254**

The system riser drawing is located in **Appendix A,** there is also a drawing of the sport keypad insert. If an insert is lost or damaged, a copy of the insert drawing can be used until a replacement can be ordered.

Refer to **Section 2** RC-100 System Overview for information on starting the console and for instructions for use of the sport insert. Read the **Section 2** RC-100 System Overview material carefully to fully understand the following operating instructions.

If you do not know the code number to enter for your scoreboard, refer to **5.1** Selecting All Sport Applications (Code Numbers) in this manual. If you do not know the model number of your scoreboard, refer to the scoreboard installation and maintenance manual provided with the scoreboard.

7.1 Wireless Specific Considerations

Multiple Wireless Hand-held Controllers may be connected to a single Wireless Base Station Server in the Tennis application. Each Hand-held device connected will control a specific court and the court number is selected when powered up
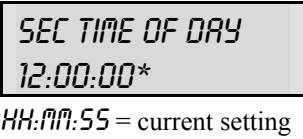
LCD Display	Action
ENTER COURT NUMBER 01	This message is displayed whenever console is powered up and connected to the Wireless Base Station Controller.
ERROR-COURT TAKEN	If the court number entered has already been selected this error message will display

7.2 Tennis Keys

TOD/Game

The <**TOD/GAME·**> key toggles the console between displaying **Game Time** or **Time of Day** (TOD). It also allows the user to change the time of day.
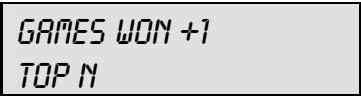
Press <**TOD/GAME·**> to display the **Time of Day** prompt if the display is currently showing **Game Time**. If **Time of Day** is currently displayed on the console, it will change to **Game Time**.

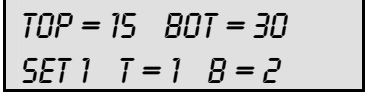| LCD Display	Action
SEC TIME OF DAY *12:00:00** *HH:MM:SS* = current setting	Enter the time of day in hours, minutes, and seconds using the selected format on the number pad and press <**ENTER***>. The time of day clock is now displayed, if the scoreboard has that capability.

Serve

LCD Display	Action
TOP SERVE *ON*	<**SERVE**> turns the serve indicators on or off for the respective player.

Game +1

LCD Display	Action
GAMES WON +1 *TOP N*	Press <**GAME +1**> to increment the number of games won in the current set for the respective player. To change values, first press <**EDIT**> and <**GAME +1**> to display the current setting. Enter the correct number on the number pad and press <**ENTER***>.

Point

LCD Display	Action
TOP = 15 BOT = 30 *SET 1 T = 1 B = 2*	The **<POINT>** key increments the point value for the respective player. If **Tie Break** scoring mode is selected, the points will increment by 1. Otherwise, the points will increment as 15, 30, 40 AD or GA. The current point values will be shown on the LCD.

Tie Break

The <**TIE BREAK**> key sets the mode of scoring to **Tie Break** mode. In **Tie Break** scoring mode, points for each player are incremented by one when the **<POINTS>** key is pressed.

✍ **Note:**

- **Tie Break** scoring mode may only be selected when both player point values are **0**.

- To change scoring mode back to normal, use the <**RESET GAME >** key.

Reset Game

Press <**RESET GAME**> to reset the player points values for the current game.

Reset Match (Alternative Function)

LCD Display	Action
PRESS ENTER TO *START NEW MATCH*	The **<MATCH>** key will reset the current match. Press the **<ALT>** and then the **<MATCH>** key. Press **<ENTER*>** to reset the current match. All set scores and the current game score will be cleared, and the set number will be set to 1.

Set +1

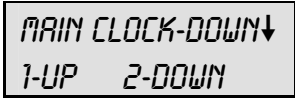| LCD Display	Action

```TOP = 15   BOT = 30```
```SET 2   T = 0   B = 0```
 	
NNN = current setting
	Press <**SET +1**> to increment the current set number. The new set number and new set games won values will be displayed on the LCD.
	
	To change values, first press <**EDIT**> and <**SET +1**> to display the current setting. Enter the correct number on the number pad and press <**ENTER***>.

Team Score (Alternative Function)

LCD Display	Action

```MATCHES WON EDIT```
```TOP N*```
 	
N = current setting
	The <**MATCHES WON**> key will edit the matches for the team. Press the <**ALT**> and then the <**MATCHES WON**> key. Enter the current team score and press <**ENTER***>.

Set Time

The <**SET TIME**> key is used to set or adjust the game time.

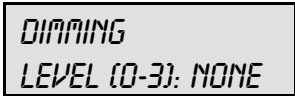| LCD Display	Action
```TIME EDIT SET``` ```CURR 60:00*```	Press the <**SET TIME**> key and enter the desired time and then press <**ENTER**>.
```CLOCK RUNNING``` ```57:25```	If the <**SET TIME**> key is pressed when the clock is on the LCD will show that status as shown here

Alternate Function

LCD Display	Action
MAIN CLOCK-DOWN↓ *1-UP 2-DOWN*	Press the **< ALT >** key and then the **< UP/DN >** key. The current direction is shown. Select the direction by pressing 1 or 2 or press <**CLEAR**> to abort.

Start, Stop

Press the **<START>** key to start the game clock. Press the **<STOP>** key to stop the game clock.

DIM (Alternate Function)

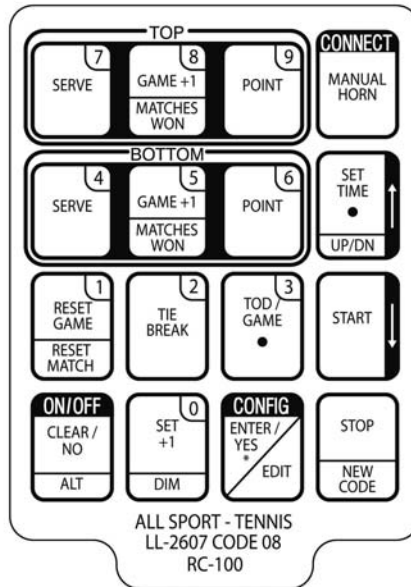| LCD Display	Action
DIMMING *LEVEL (0-3): NONE* 0=NONE 1=2/3 2=1/2 3=1/3	Press the **< ALT >** key and then the **< DIM >** key. The current level is shown and can be changed by pressing a number key 0-3.

Figure 24: *Tennis Overlay*

Section 8: Application Specific Overview – CAN Hand-held

This section describes operation details specific to CAN (Controller Area Network) Hand-held operations. CAN Hand-held functionality is used when Hand-held operation is controlled by a device on the CAN network such as the Omnisport 2000.
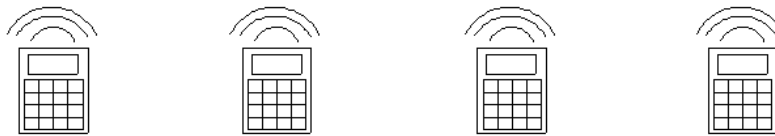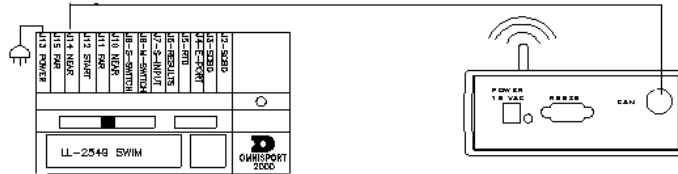

Figure 25: CAN Hand-held Operation Example

For information about how to select CAN Hand-held functionality or for general information about wireless Hand-held or base station operation, see **Section 3** RC-100 Wireless Base Station Operation or **Section 4** RC-100 Wireless Hand-held Controller Operation.

For information about All Sport Applications, see **Section 5** Application Specific Overview – All Sport Applications.

For information specific to specific CAN Hand-held Applications, see the application sections following this section

8.1 Common CAN Hand-held Operation

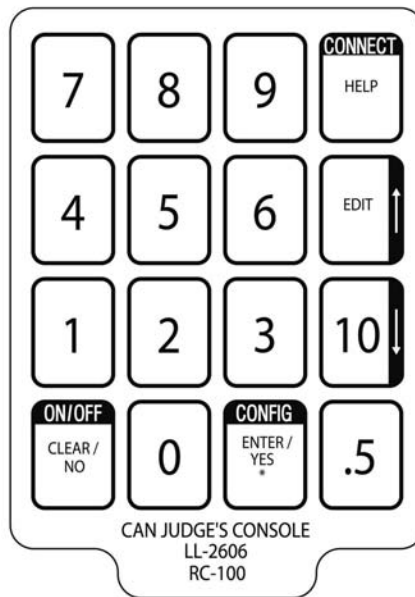| LCD Display	Action
WAITING FOR EXTERNAL CONTROL	When this prompt is shown on the LCD, the base station is waiting to be connected to an external device on the CAN network. When a CAN device is detected, the LCD will update to show application specific information.

Figure 26: CAN Judge's Console Overlay

Section 9: Judges' Console Operations-
Rodeo

Please refer to the Judges' Console section of the Omnisport 2000 Rodeo Timer Operations manual (ED-14843)
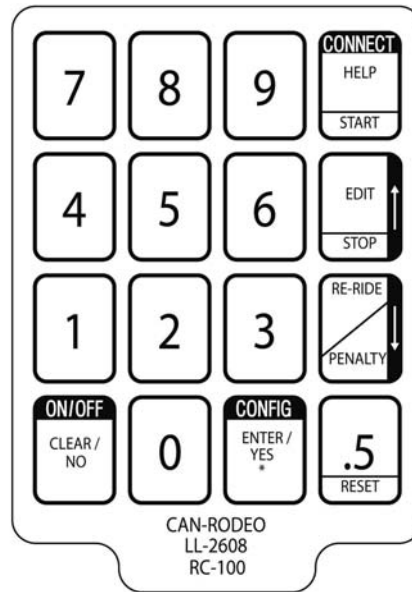

Figure 27: *CAN Rodeo Judges' Console Overlay*

Section 10: Judges' Console Operations- Diving and Synchronized Swimming

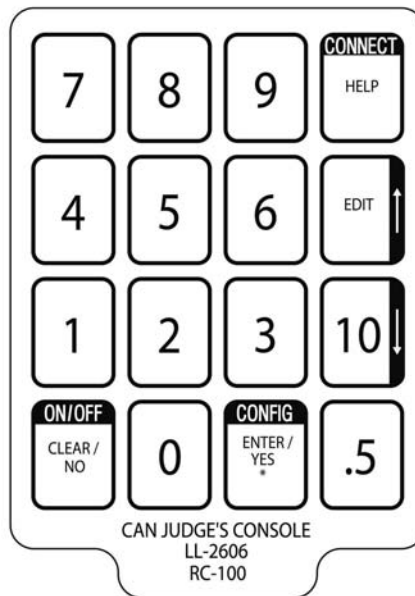**Please refer to the Omnisport 2000 Manual, ED-13312 for more information.**

Figure 28: Diving and Synchronized Swimming Overlay

Section 11: Troubleshooting

11.1 Hand-held Error Messages

When a Wireless Hand-held is unable to connect to a base station, the LCD display will show one of the following error messages. Please refer to the "Action" section for information about how to resolve these errors."

LCD Display	Action
NO SERVER FOUND ON CHANNEL NN NN = Current Channel	The Wireless Hand-held could not find a server on the specified channel. Check to make sure that your Wireless Base Station is powered on, and is set for the specified channel. Please refer to the Wireless Range of Operation section to make sure you are within minimum and maximum range limits.
ENT TO RETRY CLEAR SETS CHAN	Press <ENTER> to retry the connection (if you have just moved in range or correctly configured the Wireless Base Station.) Press <CLEAR> to set the channel number to a different channel and retry.

LCD Display	Action
NO RESPONSE ON CHANNEL NN	The Wireless Hand-held DID find a server on the specified channel, but the server did not respond to the Wireless Hand-held. Please refer to the Wireless Range of Operation section to make sure you are within minimum and maximum range limits. Cycle power to the Wireless Base Station and retry the connection. Make sure that there are no other Wireless Base Stations within range on the same channel. Try a different channel if necessary.
ENT TO RETRY CLEAR SETS CHAN	Press <ENTER> to retry the connection (if you have just moved in range.) Press <CLEAR> to set the channel number to a different channel and retry.

If the Wireless Hand-held was connected to a base station but moved out of range, the following prompt will be shown.

LCD Display	Action
BASE STATION NOT RESPONDING *PRESS CLEAR FOR CONFIG MENU*	The Base Station has stopped responding to the Wireless Hand-held. This could mean any of the following scenarios are true: 1) The base station was turned off or has lost power. 2) The base station was changed to a different channel 3) The base station and Hand-held have moved out of range (see **Section 3.1**: Important Installation Range Considerations) 4) The base station and Hand-held are located to close to one another (see **Section 3.1**: Important Installation Range Considerations) If all of these problems have been checked and the Hand-held still shows that the base station is not responding, cycle power on both the Hand-held and base station.

11.2 Wireless Base Station Errors

In Range LED On Startup

This LED flashes several times at startup while the Base Station server searches for other Base Stations on the same channel within range. If another Base Station server is found, this LED will flash continuously, indicating that only one base station server is allowed on a given channel. For more information, see **Section 3 RC-100 Wireless Base Station Operation**

General Base Station Failures

The Wireless Base Station uses on-board LED's to indicate failure status. When a failure occurs, the CL/RS232 TX, CL/RS232 RX, IN RANGE, and CAN TX LED's all flash in a repetitive pattern to indicate the failure type. The LED's will flash ON for a long period of time, followed by a series of short flashes that give the error type. This sequence will repeat 5 times, after which the base station will reset.

If you see an error sequence displayed on the LED's, first attempt to power cycle the Wireless Base Station by disconnecting power for several seconds and then reconnecting. If the problem persists, please contact Daktronics Customer Service with the specific error type.

Obtaining Base Station Status Information

When connected to a wireless base station in any All Sport function, the Alt->Connect key sequence may be used to obtain Base Station Status information. This information includes the base station channel, firmware revision, and whether or not the base station is synchronized to another base station in the area.

LCD Display	Action
VN.N 8 APR 2002 *NO SYNC CHAN:CC* N.N – Base Station Firmware revision CC – Base station channel number.	Press the Alt key followed by the "Connect" key to display Base Station Status information. If the base station is synchronized to another base station via a synch group, the bottom left corner of the LCD will display "Sync:" followed by the sync group number. See **Section 3.4** Synchronizing Multiple Base Stations and Channel Selection in the Base Station Operation section of this manual.

Section 12: Orderable parts

Part #	Description
0A-1110-0030	RC-100 Base Station CAN Terminal
0A-1110-0033	RC-100 Hand-held
0A-1110-0035	RC-100 Base Station SCBD Rcvr Kit
0A-1110-0037	RC-100 Base Station Serial Com Kit
0P-1110-0020	RC-100 Wireless Hand-held
0P-1110-0017	RC-100 Base Station
EN-1995	Hand-held Glove fit case
W-1823	CAN Cable, 4 Pin Male to 4 Pin Male 30'

This is how to reach us:

> **Mail**:   Customer Service, Daktronics Inc.
>   PO Box 5128
>   331 32nd Ave
>   Brookings SD 57006
>
> **Phone**: Daktronics Help Desk: 877-605-1115 (toll free)
>   or 605-697-4036
>
> **Fax**:   605-697-4444

E-mail: helpdesk@daktronics.com

Appendix A: Reference Drawings

A Drawings