Ad Art VS Sports Controller

VS SPORTS

| Home | | 1st QTR | | Visitor |
| 1 | TOL 0 | 29:55 | TOL 1 | 0 |

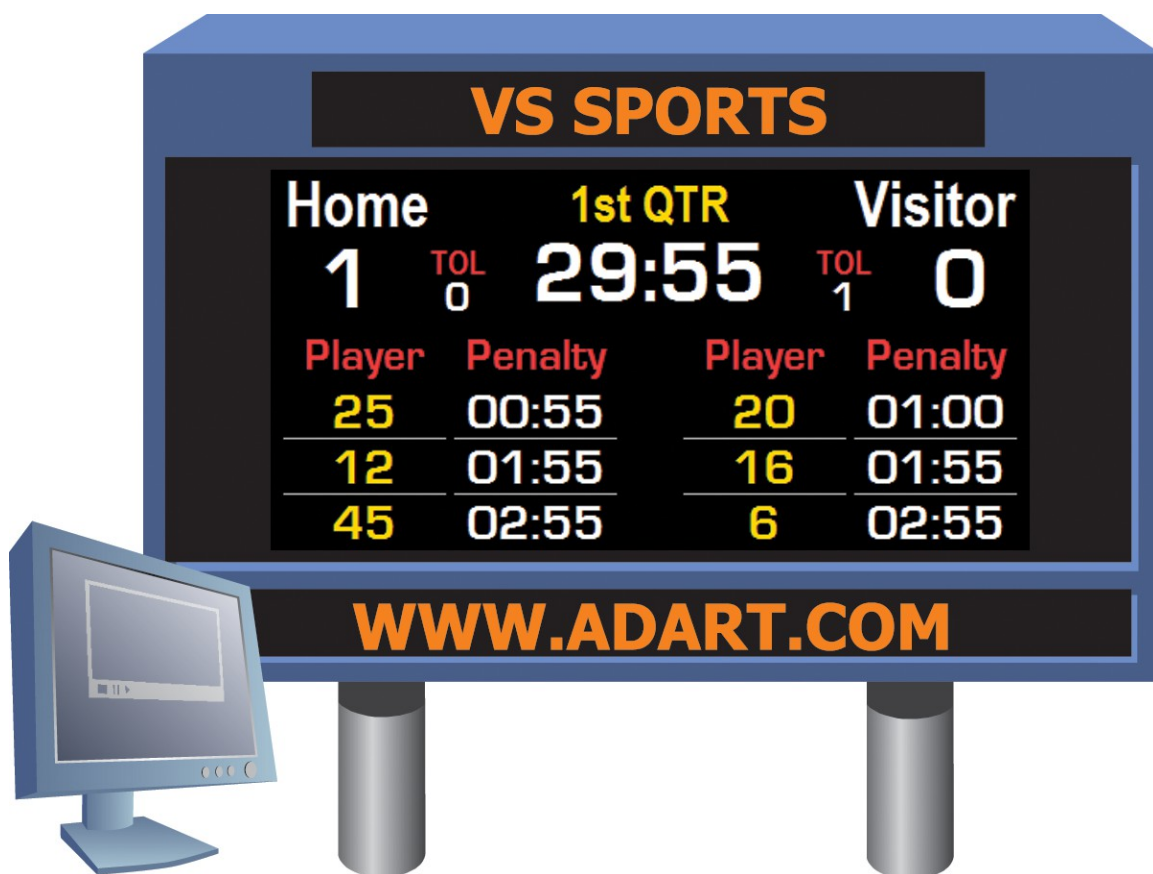| Player	Penalty	Player	Penalty
25	00:55	20	01:00
12	01:55	16	01:55
45	02:55	6	02:55

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Lacrosse Scoreboard Software Manual

Version 1.0

(10/08/2012)

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1. Introduction

1.1 What is Ad Art VS Sports Controller?

The "VS" in Ad Art's VS Sports Controller is an acronym that stands for "Video Scoreboard". Ad Art VS Sports Controller is control software developed to generate and output sports scoring and game tracking information to electronic sign hardware. This manual focuses specifically on *Lacrosse* scoreboards. With Ad Art VS Sports Controller, a scoreboard operator can easily track and enter real time game, team, and time data during a live event. It enables an operator to manage individual team scoring, player penalties, and time-outs left. Control of the game clock and scoring can be provided via a computer or laptop, a remote console, and/or a hand-held remote controller.

Ad Art VS Sports Controller runs on standard computers. Ad Art VS Sports Controller has been fully tested running on the Windows XP, and Windows 7 operating systems. Although officially unsupported, it should also work with other operating systems such as Windows 2000, Vista, and Macintosh/Linux under the WINE emulator.

1.2 Purpose of This Manual

This manual provides a general description and operating instructions. The intent of this manual is to provide general user interaction and setup instructions. It is assumed that personnel using and setting up the Ad Art VS Sports Controller software have a working knowledge of computer hardware and software as well as basic networking skills.

Although not required, some manual editing of ASCII text and INI files can be done to configure the software. These files contain configuration information that adheres to a sensitive structure. It is therefore recommended that only users who already have some experience editing these types of files manipulate them.

This manual follows a consistent format in describing each of the main software windows that comprise Ad Art VS Sports Controller. First, a general description is provided, explaining the purpose and function of the window. Then, an item-by-item explanation of the user interface is provided, detailing the use of components in the graphical user interface. Our intent is to make it easy for a user to gain access to relevant information quickly, without scanning through the whole manual to find it.

1.3 Conventions Used In This Manual

Typographic Conventions
The following conventions will be used throughout this manual.

Directory Structure:

All of the software will be installed in a single subdirectory on the drive you specified during the installation process. The default root directory is C:\AdArtVS. Therefore, subdirectories referred to in this documentation are located in this main directory. The software does not use the Windows registry, so no entries will be added. The installer will add a new font to your windows system, which will NOT be removed if the program is un-installed. The font will be located in the \WINDOWS\FONTS folder.

Typefaces:

ALL CAPS	Computer keys, mouse buttons, directories, (e.g., ENTER, C:\FOLDER\FILES, CTRL+P, etc.).
Bold Names	Names of interface menus, fields, buttons, etc. are set in bold type.

Keystroke Combinations

KEY1 + KEY2	Simultaneous keystrokes. Hold the first key and press the second key.

Mouse Operations

LMB	Left mouse button
RMB	Right mouse button
Selecting	Single-clicking an element with the LMB so that it becomes active or selected.
Deselecting	Single-clicking an element with the LMB so that it becomes inactive or unselected.
Activating	Selecting an option by clicking on its radio button.
Deactivating	Unselecting an option by clicking on its radio button.
Clicking	Placing your mouse pointer over something and then pressing a mouse button. This nearly always means the LMB.
Right clicking	Clicking an element with your RMB.
Double clicking	Rapidly clicking an element twice.
Dragging	Selecting an element with your mouse pointer and continuing to hold the mouse button down as you move your mouse. This nearly always means with the LMB.

Note, Hint, and Warning Symbols

The warning symbol will highlight a discussion that warns the user about something. You should pay special attention to text marked with this symbol.

The note symbol will highlight a discussion that is particularly noteworthy.

The hint symbol will highlight tips and suggestions that are usually of a time saving nature.

Working With The Interface

In no time, you'll find yourself mastering the intuitive graphical user interface. Most user interface functions are listed on the interface panels in plain text. Listed below are a few other conventions involved with the graphical user interface:

Button	A button refers to an area on the screen that you click on with your mouse to cause some function to occur. Generally, only a single click is required. There are also special types of buttons, like toggle, pop-up menu, etc. Some buttons become highlighted, indicating a chosen or active status.
Dialog Box	Dialog boxes appear on the screen for operations like file loading and saving. This term also refers to smaller windows that appear requesting the user to input data into various fields.
Hints	Hints are small text boxes that appear when the mouse cursor or pointer hovers over a button. The hint text will further identify the button or its function, thus helping you navigate the user interface more efficiently.
Information Display	Information Displays are text displays found throughout the different panels. These displays cannot be changed directly and simply provide information and feedback.
Input Field	Input fields (edit boxes) are areas on the screen where you can enter data.
Pop-up Menu	Pop-up menus (sometimes called a "context" menu) offer a convenient way to select program commands or options. To use, right click on an area in the program. The menu will pop up and as you move your pointer over the menu, each item will become highlighted. When the desired selection is highlighted, click the LMB. If you decide not to select an item, simply move the pointer off the menu and click the LMB in an unrelated area of the screen.
Radio Button	A radio button is a small button that becomes highlighted with a dot when clicked. This indicates the adjacent feature is active. These buttons usually operate in together in groups of two or more.
Check Box	A check box is a small box that can be checked or unchecked when clicked. This indicates the adjacent feature is active.
Scroll bar	A scroll bar allows you to navigate a window's contents by dragging the slider's button along the bar. Alternatively, you can click to the right, left, top or bottom of the button or use the arrow buttons at either end to incrementally change the position of the button. The effect is a scrolling of the content of a window within the defined space of that window.

2. System Overview

2.1 The Ad Art VS Sports Controller System - How Does It Work?

How does one get scoring and other game information from the comfort of a control room out to a stadium scoreboard during a live event? Ad Art VS Sports Controller is a software solution that works in harmony with Ad Art provided electronic displays. It is the link between the operator and the scoreboard. The main purpose of Ad Art VS Sports Controller is to generate and format game related data in the comfort of the control room and/or other appropriate locations, and then to send it out to the scoreboard's electronic display in real time.

The lacrosse implementation of Ad Art VS Sports Controller consists of two separate software components, a client-side application and a server-side application. The client-side application is called **Ad Art Lacrosse Controller** and the server-side application is called **AAFieldSportServer**.

AAFieldSportServer runs on a dedicated host computer connected to the actual scoreboard. The server software formats and displays the game state in an Output Display window which is positioned in the LED sign screen capture area. Users of the Ad Art Lacrosse Controller client application will not be able to see this Output Display window on their computer screen during normal operation. AAFieldSportServer also takes care of saving the game state, logging system events and errors, and outputting an audio clip when the game horn is blown (the scoreboard computers audio port is connected to the stadium's sound system). The server communicates with its clients over a TCP/IP network connection, either over a LAN or the Internet. Multiple software clients (controllers) can connect to the scoreboard server simultaneously.

Ad Art Lacrosse Controller software, the client application, communicates with the server over TCP/IP - passing data to the server or sending commands for it to execute. Therefore, the computer running Ad Art Lacrosse Controller must have an Internet or LAN connection. One or more instances of Ad Art Lacrosse Controller software can be run from multiple client computers simultaneously. Each client's state and data will be synchronized automatically by the server when data is entered or changed by any single client. This makes it possible for multiple users to control all or part of the scoreboard from multiple locations.

In addition to Ad Art Lacrosse Controller software, AAFieldSportServer can be remote controlled by two other devices – a **Remote Console**, and a **Hand-held Remote Controller**. These also act as clients, but they do not communicate over a TCP/IP connection. Rather they are hard-wired to the server using the server's serial ports.

SPECIAL NOTE: The Lacrosse implementation of Ad Art VS Sports Controller uses the same architecture as the Soccer implementation. In some cases, a single scoreboard will be used for both events on the same field. For this reason, Ad Art Lacrosse Controller software and Ad Art Soccer Controller software share a feature called Game Modes. Game Modes allow users of Ad Art Lacrosse Controller software or the Remote Console to both *monitor the current mode* the scoreboard is in, as well as *change the mode* of the scoreboard.

2.2 Ad Art VS Sports Controller Software Overview

Ad Art VS Sports Controller is made up of two main windows. One window is only visible on the client software, Ad Art Lacrosse Controller. The other window is only visible on the server software, AAFieldSportServer. These windows are described below:

● **Main Scoreboard Window - Ad Art Lacrosse Controller (Figure 2.1):** The scoreboard operator will use this window during a game to input and update game related information as the game progresses. It also acts as a kind of preview screen, in that most data visible on the form window is updated in real time and stays in sync with data displayed on the scoreboard. Some data field edits will not be seen on the scoreboard until the **UPDATE SIGN** button is manually pressed.

Illustration 1: Screen View of the Main Scoreboard Window (Figure 2.1)

Lacrosse Games can be set to either Men's Lacrosse mode or Women's Lacrosse mode. The only functional differences between the two modes has to do with Game Periods. Men's Lacrosse is divided into four quarters (fifteen minutes each quarter), while Women's Lacrosse is divided into two halves (thirty minutes each half). The length of "Overtime" in Men's Lacrosse is four minutes, while the length of "Overtime" periods in Women's Lacrosse is three minutes. An image of the Main Scoreboard window in Women's Lacrosse mode can be seen in Figure 2.2 below.
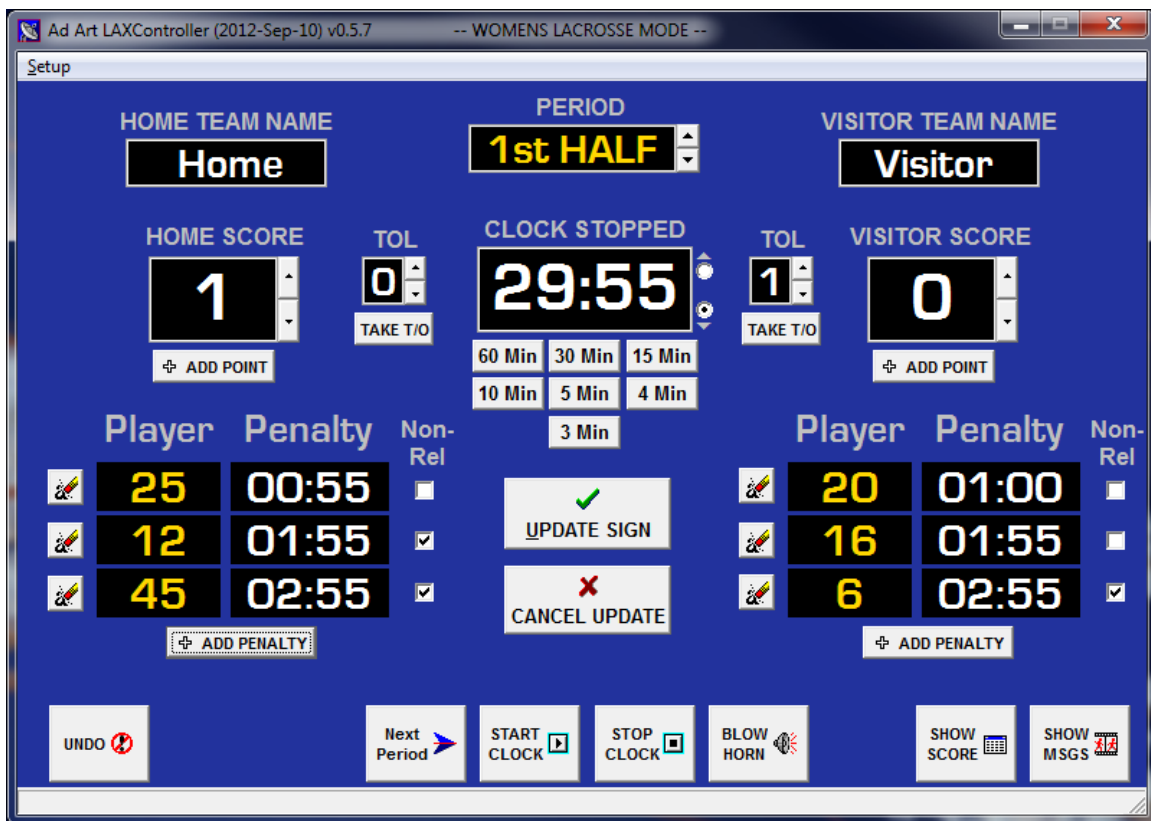
Illustration 2: Women's Lacrosse Mode (Figure 2.2)

● **Output Display Window – AAFieldSportServer (Figure 2.3):** This is the screen capture area used by AAFieldSportServer that gets output directly to the scoreboard's display electronics. It acts as the drawing surface for scoreboard data.
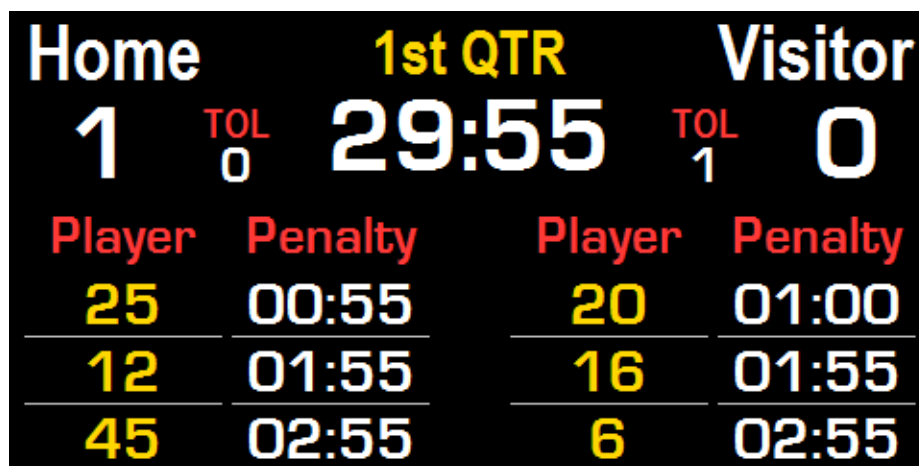

Illustration 3: Screen View of the Output Display Window (Figure 2.3)

3. Main Scoreboard Window

3.1 Main Scoreboard Window Functionality: What Does it Do?

The Main Scoreboard window allows the user to input, delete, and change data fields that correspond with related scoreboard information. Data can be entered in various ways: typing in values, clicking up/down buttons, clicking form buttons, using arrow keys on the keyboard, or using keyboard shortcuts. The window is laid out to resemble the actual scoreboard, so it is immediately familiar and intuitive. Almost all input fields use **Hints**, making this window very user friendly.

> The underlined letter in the label section of input fields indicates the shortcut key on the keyboard. Hold the ALT key on the keyboard in combination with the letter (*i.e.* ALT + U will select the **UPDATE SIGN** button).

> UP and DOWN keys on the keyboard will only adjust values of a numeric input field that currently has focus (is currently selected).

> Hovering the mouse cursor over some buttons and input boxes will display a **Hint** about their function. It will show the hint in the lower left "status" portion of the window, or it will pop up a small "text bubble" where your cursor is if "**Show Bubble Hints**" is selected in the **Setup Menu**.

> A user can tab to each input field in sequence by using the TAB key on the keyboard.

> Double clicking into an input field will select all of the existing text in the field. It is quicker to type over "selected" text because it is automatically replaced and does not need to be manually deleted first. Single clicking will only select the field and give it focus but does not select the existing text.

The Main Scoreboard window will immediately send data to the scoreboard when most buttons are used. When manually editing input boxes, edits will not be updated on the scoreboard until the **UPDATE SIGN** button is clicked. Ad Art Lacrosse Controller is designed to keep the state of the game current, so the Main Scoreboard window may be minimized during operation or even closed completely.

> During a game, if the window is closed, current game information will NOT be lost, nor will the scoreboard go blank. Simply run the program again, and game state will be restored back into the interface.

To completely reset Main Scoreboard Window input fields to their default values, select the **Reset Game** item located in the **Setup Menu**.

> If the Main Scoreboard Window is closed, CLOCKS WILL CONTINUE TO COUNT while the application is closed. Re-start the application if you want to stop or reset clocks.

A major function of the Main Scoreboard window is monitoring and controlling the Game Clock. The Game Clock corresponds with the length of each period, counting down from a standard durations. The operator will start and stop the Game Clock as the rules of the game dictate. The operator can also adjust the values of the Game Clock

quickly and easily by using predefined time interval buttons. If the clock needs to be adjusted manually, it can still be edited by typing a new time into the input field – as long as the clock is stopped.

Input fields cannot be edited by typing while the Game Clock is running. Team Names especially should be typed in and the scoreboard updated before the Game Clock starts.

The Game Clock can also be controlled by a Remote Console and Hand-held Remote Controller. See the Appendix to learn how to use this feature.

As each period ends, the operator will typically select the **Next Period** button which will reset the Game Clock to it's next logical value and reset TOL values (timeouts left) automatically. The sequence of periods in the software interface follow the same sequence as a typical game of lacrosse:

<div style="display:flex; justify-content:space-between;">

MEN'S LACROSSE

1. (Blank)
2. Pre-Game
3. 1st QUARTER
4. 2nd QUARTER
5. HALFTIME
6. 3rd QUARTER
7. 4th QUARTER
8. OVERTIME

WOMEN'S LACROSSE

1. (Blank)
2. Pre-Game
3. 1st HALF
4. HALFTIME
5. 2nd HALF
6. OVERTIME

</div>

Towards the bottom of the Main Scoreboard window is a helpful **UNDO** button. This feature allows the user to "go back in time" and undo a series of actions taken.

Sometimes it may be appropriate to show promotional animations, sponsor advertisements, or other useful information during a lacrosse game. Since the scoreboard screen doubles as a full featured digital display, it is possible to play any media or imagery on the scoreboard, not just scoring information. With that in mind, there are two other buttons towards the bottom of the Main Scoreboard window that allow for the screen capture area on the server to capture either scoring data or other media/messages. **SHOW SCORE** will put the server's Output Display screen in its default scoreboard display mode. **SHOW MSGS** (messages) will allow other applications, like a media player, to display on top of the scoreboard capture area.

Messaging functionality is set up in advance by qualified Ad Art technicians. A media player with messaging content will already be playing and will already occupy the space used by the screen capture area used by the server's Output Display window. Setting up a media player on the server is beyond the scope of this manual.

The remaining functions of the Main Scoreboard Window will be explained further in the next section.

3.2 Main Scoreboard Window User Interface: How Does It Work?

The user interface of the Main Scoreboard Window is a simple form laid out to resemble the actual scoreboard in the stadium. It has a standard Menu area on top, and a customized form layout below. The Menu contains one top level item, "**Setup**"- see figure 3.1.
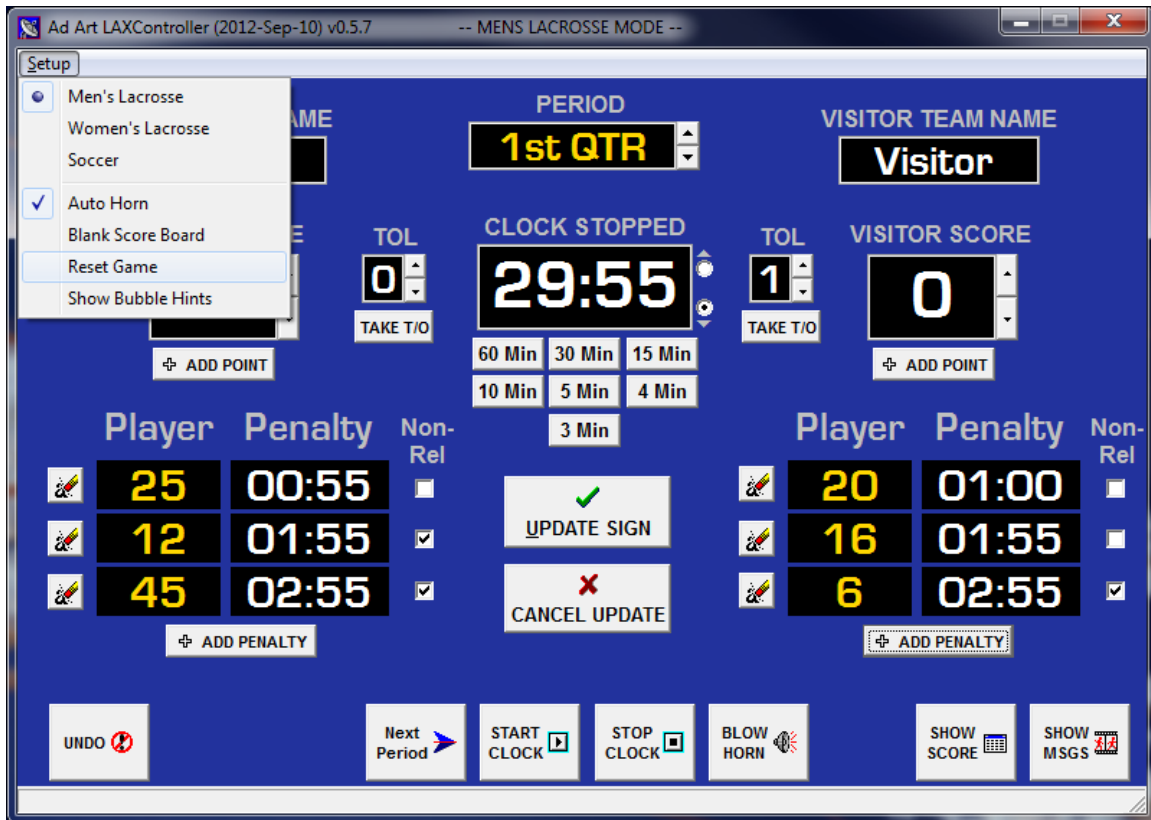

Illustration 4: Setup Menu (Figure 3.1)

Since a single scoreboard may be used for both Lacrosse or Soccer events on the same field, the Main Scoreboard Window allows a user to both monitor and/or change the scoreboard's Game Mode. The first three items in the **Setup** menu will enable the user to determine the current Game Mode the scoreboard is in, and/or select a new Game Mode for the scoreboard – either **Men's Lacrosse, Womens's Lacrosse,** or **Soccer**.

> The current mode of the scoreboard will also be displayed in the Title Bar of the Main Scoreboard Window.

When Ad Art Lacrosse Controller is first run, it will check the current state of the Game Mode on the server. If the Game Mode is not already set for Lacrosse, then a pop-up warning window will appear to allow the user to change modes if desired – see figure 3.2. If it is decided to not change the Game Mode to Lacrosse, then the Main Scoreboard Window will be deactivated, since it is assumed that the scoreboard is in a state where it should not be changed. All fields and buttons will be grayed out and non-editable – See figure 3.3.
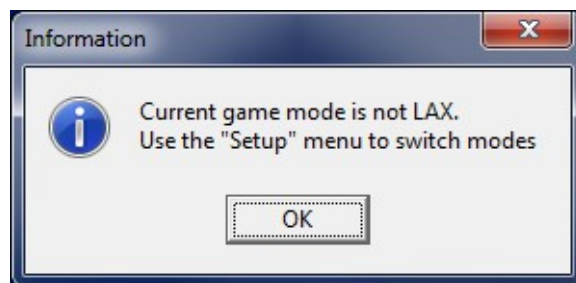
Illustration 5: Change To Lacrosse Game Mode Alert (Figure 3.2)

Be very cautious before changing Game Modes if not on-site during a game. Since there is no way of knowing what is happening with the scoreboard when not in view of it, it may be possible to disrupt a game in progress by changing the mode.
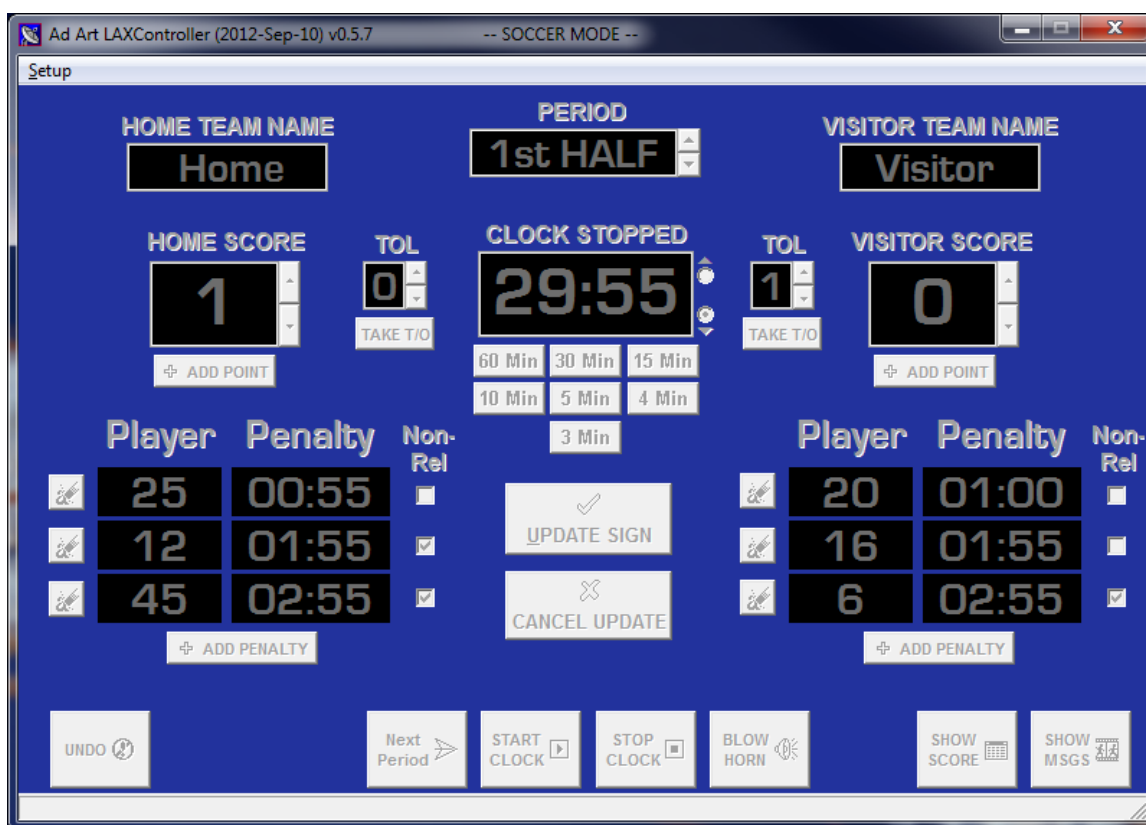

Illustration 6: Deactivated Main Scoreboard Window (Figure 3.3)

If it is desired to switch game modes after running in Lacrosse mode, then choosing an appropriate menu item will change the Game Mode – either **Men's Lacrosse, Womens's Lacrosse,** or **Soccer**.   A pop-up warning window will appear after making a menu item selection to allow the user to confirm whether they really want to change modes – see figure 3.4.
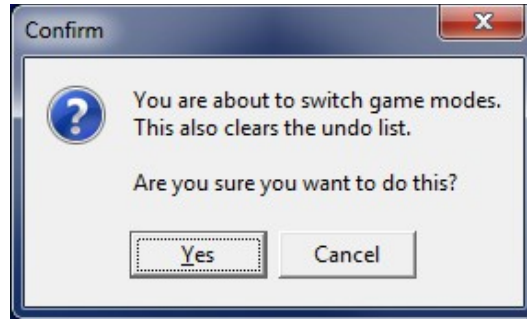
Illustration 7: Change Game Mode Alert (Figure 3.4)

In addition to displaying data visually, the server is tied into the stadium sound system in order to convey information audibly. Hardware in the server computer will make an audible sound of a horn blowing whenever the controller sends it a command to do so. By checking **Auto-Horn**, the horn sound will play automatically when the Game Clock count reaches zero.

The **Blank Score-board** item is a toggle that will switch between showing the scoreboard in its normal scoring mode, or turning it completely black when selected. This toggle may be handy when operators need to change the scoreboard but keep the changes from being visible to the public. It can also be used to blank the scoreboard when there is no game in session.

The user can also select the **Reset Game** item from this menu, which will reset all data fields in the Main Scoreboard Window to their default values. A pop-up warning window will appear if this is selected to allow the user to confirm the selection – see figure 3.5.

Illustration 8: Reset Game Alert (Figure 3.5)

Finally, selecting the **Show Bubble Hints** item from the **Setup** menu will toggle the display of pop-up style on-screen Hints in the Main Scoreboard Window. Hint Bubbles appear when the mouse cursor is hovered over an on-screen item. Not all buttons or other on-screen items will display Hint Bubbles. Some screen items will display hints only in the "Status Bar" in the lower left corner of the window, regardless of whether this option is checked or not.

A primary function of the Main Scoreboard Window is to send data entered by the operator to the scoreboard. All data that use buttons for input is sent to the scoreboard in real time. So when a change is made using a button, the change is reflected immediately on the scoreboard. Typing data into any input field will require the user to press the **UPDATE SIGN** button (ALT + U, keyboard shortcut) in order for the new text to be visible on the scoreboard. A yellow border will toggle between the **UPDATE SIGN** and **CANCEL UPDATE** buttons as a visual cue to remind the user what needs to be done. The yellow flashing border will cease after one of the buttons is selected. If the user decides to cancel the change, selecting the **CANCEL UPDATE** button will reset the edited fields to their prior values.

Illustration 9: Update Sign and Cancel Update Buttons (Figure 3.6)

☞ Multiple input fields can be edited before updating or canceling, if preferred.

📌 If data is *typed* into numeric fields, then the **UPDATE SIGN** button will need to be pressed for the sign to reflect the edit. The buttons associated with numeric fields will typically be used under most circumstances, so changes occur instantly.

UNDO (button). When pressed, this button will conveniently undo the last action performed in the Main Scoreboard window. This makes it easier to recover from some mistakes that may take longer to fix otherwise. There is a limit of 20 sequential actions that can be undone.

Illustration 10: Undo Button (Figure 3.7)

📌 **UNDO** will have no effect on changes to the Game Clock if it is running. If the Game Clock is not running, then changes to the clock can be undone.

📌 Actions can still be undone after a game is reset. Actions can NOT be undone if the Game Mode is changed because the undo history is cleared when the game mode changes.

SHOW SCORE/ SHOW MESSAGES (buttons). These two buttons work together to toggle the screen capture functionality on the server between two modes. When **SHOW SCORE** is pressed, the scoreboard will be displayed. This is the normal mode of the server. Since the scoreboard screen doubles as a full featured digital display, it is possible to play media or messages on the scoreboard, not just scoring information. Pressing the **SHOW MSGS** (messages) button will allow other content to be viewed on the scoreboard's digital display.
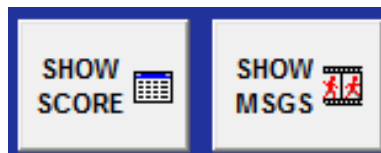

Illustration 11: SHOW SCORE and SHOW MSGS (messages) buttons (Figure 3.8)

The rest of the form layout is broken up into three categories: **Team Information, Game Information,** and **Time Information**. Each category is enumerated below:

Team Information:

TEAM NAMES (Input/ Edit Field – ASCII text). MEANS OF INPUT: The user will type in the names of the two teams playing the game directly into the input field. Each team favors one side of the window or the other. This layout accommodates grouping of other team related information, such as Score, Penalties, and Time Outs Left in a logical way under each team. After editing Team Names, select the **UPDATE SIGN** button as discussed previously.
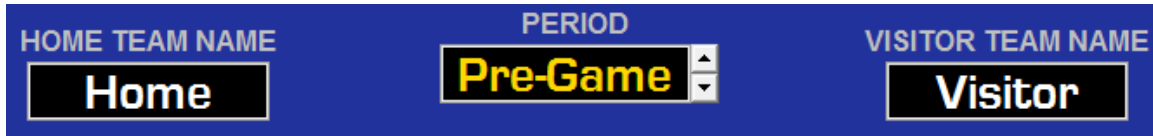

Illustration 12: Team Name Input Fields (Figure 3.9)

The input fields for team names will allow as many characters as can be typed. However, approximately 9 characters will be visible on the scoreboard. Therefore, choose team names carefully.

Use upper and lower case letters to fit more characters in the box. Abbreviations may be necessary.

The default team name values are "Home" and "Visitor". These names will be automatically entered into the fields when **Reset Game** is selected from the **Setup Menu**. The **Remote Console** does not have the capability to change team names.

TEAM SCORES (Input/ Edit Field – Numbers only). MEANS OF INPUT: The user may type numbers directly in the field, use the **+ ADD POINT BUTTON**, use the **UP/DOWN** buttons, or use the UP and DOWN arrow keys on the keyboard in order to adjust the score for each team. **UP/DOWN** buttons and keys increase or decrease the score one point at a time. **+ ADD POINT BUTTON** only *increases* the score by one point. Scores can be manually edited by typing into the input field directly, but this type of edit will require the user to click the **UPDATE SIGN** button.
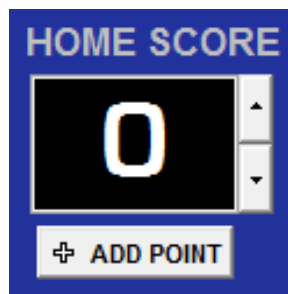

Illustration 13: Team Score Input Field (Figure 3.10)

Use the **+ ADD POINT** button with this input field to save time.

TEAM TOL (Time Outs Left) (Input/ Edit Field – Numbers only). MEANS OF INPUT: The user may type numbers directly in the field, use the **TAKE T/O (time out) BUTTON**, use the **UP/DOWN** buttons, or use the UP and DOWN arrow keys on the keyboard in order to indicate the number of time outs left for each team. **UP/DOWN** buttons and keys increase or decrease the **TOL** value one unit at a time. The range of values for **TOL** are restricted

from 0 to 2, which corresponds with the rules of the game. The **TAKE T/O BUTTON** only *decreases* the TOL value by one.

Illustration 14: Team Time Outs Left Input Field (Figure 3.11)

☞ Use the **TAKE T/O** ("Take Time Out") button with this input field to save time.

PLAYER PENALTY FIELDS (Input/ Edit Field – Numbers only). MEANS OF INPUT: The user may type numbers directly in the field or use the **+ ADD PENALTY** button. Clicking the **+ ADD PENALTY** button will cause a dialogue box and form to appear. The range of values for the player fields are restricted from 0 to 99. The range of values for the penalty time fields are limited to a combination of five characters (numeric characters and colon character permitted). Only three penalties are visible at a given time.

📌 Penalties are designed to count down only while the **Game Clock** is running. As the Game Clock counts down, the penalty times for each player will count down as well (except during Halftime).

📌 Penalties are displayed in sequential order based on *penalty time*. Penalties with shorter times are displayed on the top of the list, while penalties with longer times are displayed at the bottom of the list.

☞ It is good practice to use the **+ ADD PENALTY** button to *add* new player penalties, and use the player penalty fields in the Main Window only to *edit* existing player penalties.

📌 Use the **+ ADD PENALTY** button to *add more than 3 penalties*. Penalties are stored in a "Queue", so more than three penalties can be entered even though only three penalties are visible in the Main Scoreboard window at a time. Penalties that are not visible will not start counting down until they are visible.

Illustration 15: Team Penalty Input Fields (Figure 3.12)

To the left of each Player Penalty field is an **ERASE PENALTY BUTTON**. The button is aligned with the penalty it is associated with. Clicking it will delete penalty records associated with the selected penalty. Penalties that are remaining will "shift up" in position to fill the deleted record's place. A single penalty that is stored in the "Queue" but not visible will "shift up" and become visible.

To the right of each Player Penalty field is a **Non-Releasable Check-box**. Selecting it will make a player non-releasable, meaning the player cannot be released when the opposing team scores and must remain in the penalty box until the penalty time expires.

Penalty time input fields will allow more than 4 numeric characters, thus making it is possible to type incorrect time values. If incorrect time values are entered, the penalty time will not count down in sync with the Game Clock. Exercise caution when typing in these fields.

When values are *typed* into fields, the user must click the **UPDATE SIGN** button for changes to be displayed on the scoreboard.

ADD PENALTY DIALOG BOX (Input/ Edit Field – Numbers only). MEANS OF INPUT: The user may type numbers directly in the fields or use the various **PRE-SET TIME** buttons beneath the fields. The range of values for the player field is restricted from 0 to 99. The range of values for the penalty time fields are limited to a combination of five characters (numeric characters and colon character permitted). Below the **PRE-SET TIME** buttons is a **Non-Releasable Check-box**. Selecting it will make a player non-releasable, meaning the player must remain in the penalty box until the penalty time expires.

Clicking the **OK** button will add the penalty to the "Queue" and close the dialogue box, while clicking the **CANCEL** button will close the dialogue box without making any changes.

Penalty time input fields will allow more than 4 numeric characters, thus making it is possible to type incorrect time values. If incorrect time values are entered, the penalty time will not count down in sync with the Game Clock. Exercise caution when typing in these fields.

Illustration 16: Add Penalty Dialog Box (Figure 3.13)

☞ It is more convenient to use the **PRE-SET TIME** buttons instead of typing in time values.

Game Information:

PERIOD (Input Field). MEANS OF INPUT: The user may use the **UP/DOWN** buttons in order to change the Period of the game. **UP/DOWN** buttons increase or decrease the **PERIOD** value one unit at a time. Text values allowed in the **PERIOD** input field are fixed and cannot be changed by the user. The values are:

- *Women's Lacrosse:*"*blank*" (no output), **Pre-Game, 1st HALF, HALFTIME, 2nd HALF,** and **OVERTIME**.
- *Men's Lacrosse:*"*blank*" (no output), **Pre-Game, 1st Quarter, 2nd Quarter, HALFTIME, 3rd Quarter, 4th Quarter,** and **OVERTIME**.
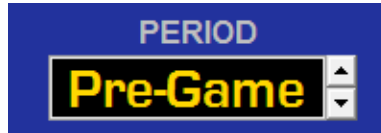
Illustration 17: Game Period Input Field (Figure 3.14)

☞ Only the **UP/DOWN** buttons can be used with this input field.

NEXT PERIOD (button). When pressed, this button will conveniently progress the **PERIOD** field to the next logical value, reset the **Game Clock** to the appropriate time for that period, and reset any **TOL** (time-outs left) to their appropriate values. A pop-up warning window will appear if this button is pressed to allow the user to confirm the selection – see figure 3.15. See figure 3.16 for button appearance.

Illustration 18: Next Period Alert (Figure 3.15)

BLOW HORN (button). When pressed, this button will cause the server computer to make an audible sound of a horn blowing.

Illustration 19: Focus on Next Period and Blow Horn Buttons (Figure 3.16)

☞ When Auto-Horn is selected in the menu, this button only needs to be used in rare instances.

Time Information:

The Game Clock is a stop-watch style timer that counts down or up from a preset time value. Clicking the **START CLOCK** button will begin the count immediately. Clicking the **STOP CLOCK** button 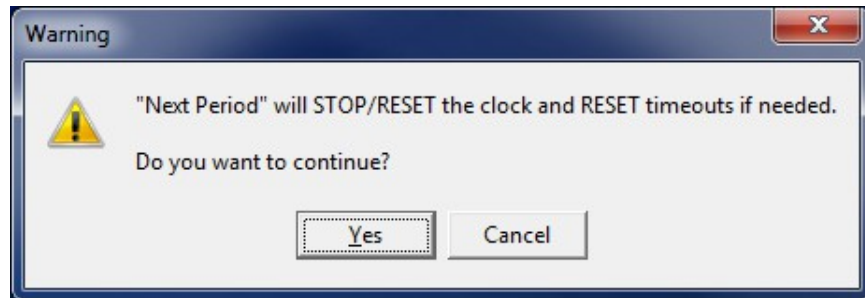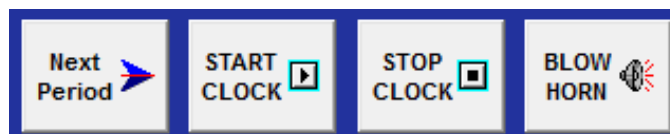will stop the count immediately. For convenience, the Game Clock can be reset to various preset increments using the **PRE-SET TIME** buttons underneath the Game Clock. Clicking one of these will reset the clock to indicated values.

☝ It is faster and less error prone to use the **PRE-SET TIME** buttons associated with the Game Clock rather than manually entering a clock time.

📌 The Game Clock will change to a "tenth of a second" display when counting down below one minute.

💥 The Game Clock displays its values in *real time* and that information is *immediately displayed* on the scoreboard when using the **PRE-SET TIME** buttons. It is therefore advisable to exercise caution when working with the Game Clock.

📌 The Game Clock will automatically stop when the **Next Period** button is pressed and confirmed, or when the countdown reaches a zero value.

GAME CLOCK (Input/ Edit Field – Numbers only). MEANS OF INPUT: The user may use the **START CLOCK** or **STOP CLOCK** buttons or the various **PRE-SET TIME** buttons beneath the field. Time can be manually edited by typing into the input field directly, but only when the clock is stopped. This type of edit will require the user to click the **UPDATE SIGN** button.
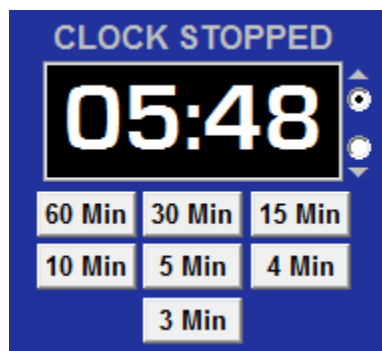
Illustration 20: Game Clock and Preset Time Buttons (Figure 3.17)

📌 The field label above the Game Clock field will change to read in a red box "CLOCK RUNNUNG" when the clock is started, and to read "CLOCK STOPPED" when the clock is stopped.

💥 Input fields cannot be manually edited by typing while the Game Clock is running. Team Names especially should be typed in and the scoreboard updated before the Game Clock starts.
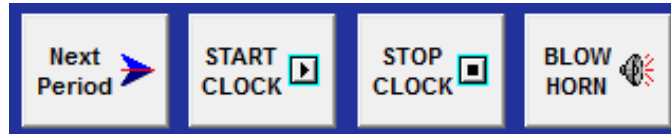
Illustration 21: Focus on Game Clock Start/Stop Buttons (Figure 3.18)

To the right of the Game Clock field are two *count direction* radio buttons. Selecting the **UP radio button** will ADD values to the current Game Clock time (count up). Selecting the **DOWN radio button** will SUBTRACT values from the current Game Clock time (count down).

Selecting these radio buttons will have an *immediate effect if the game clock is currently running*. Therefore use caution when using these radio buttons during a game.

4. Output Display Window

4.1 Output Display Window Functionality: What Does it Do?

As mentioned earlier in this manual, the main function of AfieldSportServer's Output Display window is to format and display the scoreboard in the screen capture area used by the electronic display. AFieldSportServer is the server side software component of the Ad Art VS Sports Controller. AAFieldSportServer runs on a dedicated host computer connected to the actual scoreboard (sometimes referred to as the scoreboard or sign computer). Therefore, users of Ad Art Lacrosse Controller software will not be able to see this screen during operation.

For reference, Figure 4.1 below shows a picture of the Output Display window. All Output Display window items correspond with the Ad Art Lacrosse Controller Main Scoreboard window.

Illustration 22: Output Display Window (Figure 4.1)

The Output Display window is designed to remain on top of all other application windows that may be running on the server computer. This is to ensure nothing but scoreboard information appears in the capture area of the screen, and subsequently on the scoreboard. As mentioned earlier in this manual, the **SHOW SCORE** and **SHOW MSGS** (messages) buttons in the Main Scoreboard Window of Ad Art Lacrosse Controller software will toggle the state of the Output Display Window to allow messages or media to be displayed on top of scoreboard data when desired.

📌 The mouse cursor will disappear when it intersects the Output Display Window. This behavior is intentional by design, so the mouse cursor does not accidentally display on the scoreboard during a game.

The Output Display window can be custom configured. For example, by default, the capture area is designed to be located on the top left corner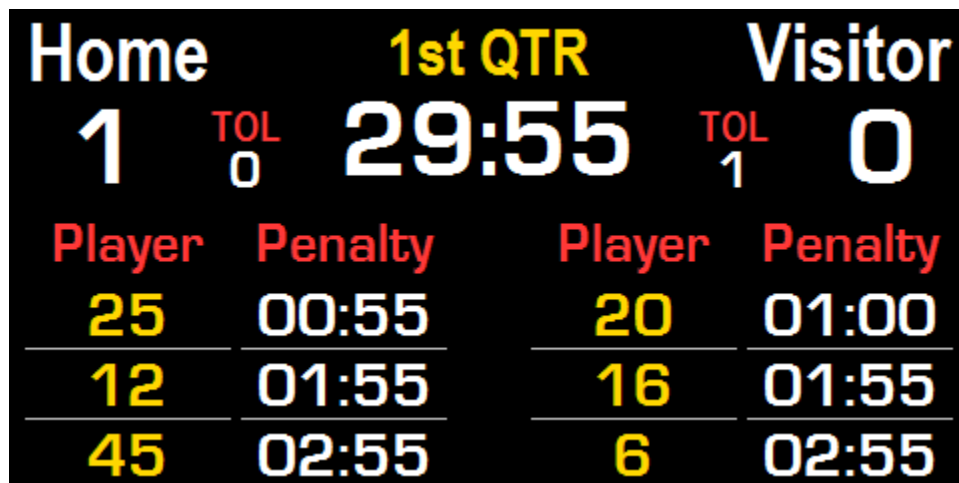 of the computer screen, and set to capture a specific rectangular area (measured in pixels). The position and size corresponds to the "capture area" of the LED display electronics. The Output Display window settings can be changed in the AAFieldSportServer.ini file. This file is automatically generated when the server software is first run, and located in the server program's installation folder. There are many configuration settings that can be modified in this file, but most of these have already been configured by qualified Ad Art technicians. The INI file should generally be left alone after the scoreboard is initially set up.

Appendices

Appendix A: Using the Ad Art VS Sports Controller With a Remote Console and Hand-held Remote Controller

Remote Console Operation:

Some deployments require the scoreboard to be controlled from the field level without the use of a computer. Or there may be instances where the scoreboard will be controlled by more than one person in more than one location. To facilitate this operation, Ad Art provides a **Remote Console** solution that plugs into the server computer running the AAFieldSportServer application. The Remote Console is hard-wired to the server using the server's serial port. This console allows a scoreboard operator located in or near the field to control AAFieldSportServer exclusively for most functions or simultaneously with an operator in the control room during a game.

The Remote Console is programmed by Ad Art technicians, who mapped keys on the console's keypads to various functions that are equally implemented by Ad Art Lacrosse Controller software. The keypad keys are labeled to indicate what function they serve. All keys on the keypad perform identical functionality (except for GAME MODE and UNDO/CANCEL) as their Ad Art Lacrosse Controller counterparts. See the photograph below.

Illustration 23: Remote Console

The console is split into two keypads. The top keypad allows the user to navigate prompts in order to set the Game Clock, change between Game Modes, and set /advance Game Periods by using the included numeric keypad. The user is prompted and given feedback from the included LCD display.   The bottom keypad of the Console allows the operator to control team related functions for each team. Most labeled keys correspond with software buttons in the Ad Art Lacrosse Controller application. Some buttons have an immediate effect while others will prompt the user for more input. For Lacrosse events, the buttons that prompt for input are the **GAME MODE**, **SET CLOCK**, **SET**

PERIOD, **SET SCORE**, **PLAYER PENALTY**, and **PENALTY CLEAR** buttons. A more detailed explanation of these buttons and other keypad features is provided below.

LCD DISPLAY: There is a two line LCD on the top keypad that displays twenty characters per line. When the console is in its default state the, LCD shows the default display of the event name centered in the LCD on line #1 and the current period centered on line #2. See example below:

<div align="center">

MEN'S LACROSSE
1st QTR

</div>

NUMERIC KEYPAD: The numeric keypad works in harmony with the LCD display. It can be used to enter numbers if a prompt asks for number input. During numeric input, the **CE** button clears the current value to 0 allowing a new number to be typed. A numeric value is not accepted until the **ENTER** button is pressed. The **UP ARROW** and **DOWN ARROW** keys on the keypad can be used to select options when prompted.

UNDO/CANCEL BUTTON: While in a *prompt state*, the **UNDO/CANCEL** button can be used to cancel the current state without committing to any changes and the state returns to the default state. When in a *default state* (no prompt), the behavior of the **UNDO/CANCEL** button is identical to that of the Ad Art Lacrosse Controller application's **UNDO** button. There is a maximum of twenty levels of undo.

GAME MODE BUTTON: When executed, this cycles to the next game mode. The order is MEN'S LACROSSE, then WOMEN'S LACROSSE, and finally SOCCER. The order will cycle back to MEN'S LACROSSE after SOCCER mode. Before changing modes, the user is first asked:

<div align="center">

Reset Game? 0
(0 = No, 1 = Yes)

</div>

Use the numeric keypad to make selections. Use the **ENTER** key to accept each action, or select the **UNDO/CANCEL** button to cancel the action and return to default state without changing modes.

> The next Game Mode will be activated when this action is accepted, regardless of whether or not the user resets the game.

> This button also has the effect of "unblanking" the scoreboard display in case it was blank.

> Note that changing game mode clears the undo list and cannot be undone.

SET CLOCK BUTTON: prompts are in order as follows...

<div align="center">

Set Clock Minutes:
00

</div>

Next...

<div align="center">

Set Clock Seconds:
00

</div>

Next...

```
Count Up/Down?: DOWN
(use arrow keys)
```

Or depending on which arrow key was pressed...

```
Count Up/Down?: UP
(use arrow keys)
```

Use the **ENTER** key to accept each prompt entry, or select the **UNDO/CANCEL** button at any time to return to the default state without setting the Game Clock.

SET PERIOD BUTTON: prompt is as follows...

```
Set Period: 1st HALF
(use arrow keys)
```

Values for Periods according to each Game Mode are:

        MEN'S LACROSSE
        ('', 'Pre-Game', '1st QTR', '2nd QTR', 'HALFTIME', '3rd QTR', '4th QTR', 'OVERTIME')

        WOMEN'S LACROSSE
        ('', 'Pre-Game', '1st HALF', 'HALFTIME', '2nd HALF', 'OVERTIME')

        SOCCER
        ('', 'Pre-Game', '1st HALF', 'HALFTIME', '2nd HALF', 'OVERTIME')

UP/DOWN ARROW keys are used to change the desired period (the display changes with each arrow press to show the current period). Use the **ENTER** key to accept, or select the **UNDO/CANCEL** button to return to the default state without changing the period.

SET SCORE BUTTON (Home Team): prompt is as follows...

```
Set Home Score:
00
```

Use the **NUMERIC KEYPAD** to select a two digit numeric value. Use the **ENTER** key to accept, or select the **UNDO/CANCEL** button to return to the default state without changing the score.

SET SCORE BUTTON (Visitor Team): prompt is as follows...

```
Set Visitor Score:
00
```

Use the **NUMERIC KEYPAD** to select a two digit numeric value. Use the **ENTER** key to accept, or select the **UNDO/CANCEL** button to return to the default state without changing the score.

PLAYER PNLTY (Home Team) **-** prompts as follows:

```
Hm Penalty (RL): 30s:
Player #? 00
```

Use the HOME TEAM **30 SEC**, **1 MIN**, **2 MIN**, and **3 MIN** buttons to modify the penalty time duration. Use the HOME TEAM **NON-RELEASE** button to toggle between a non-releasable **(NR)** and a releasable **(RL)** penalty. Use the keypad to enter the HOME TEAM **Player Number** (up to two digits). Use the **ENTER** key to accept, or select the **UNDO/CANCEL** button to return to the default state without adding a player penalty.

PNLTY CLEAR (Home Team) **-** prompts as follows:

```
Clear Home Penalty
Slot 1, 2, or 3?: 0
```

Use the keypad to enter a single numeric digit that corresponds with the HOME TEAM **Penalty Slot** that should be cleared. (slot 1 is the top-most slot). Use the **ENTER** key to accept, or select the **UNDO/CANCEL** button to return to the default state without making any changes.

PLAYER PNLTY (Visitor Team) - prompts as follows:

```
Vis Penalty (RL): 30s:
Player #? 00
```

Use the VISITOR TEAM **30 SEC**, **1 MIN**, **2 MIN**, and **3 MIN** buttons to modify the penalty time duration. Use the VISITOR TEAM **NON-RELEASE** button to toggle between a non-releasable **(NR)** and a releasable **(RL)** penalty. Use the keypad to enter the VISITOR TEAM **Player Number** (up to two digits). Use the **ENTER** key to accept, or select the **UNDO/CANCEL** button to return to the default state without adding a player penalty.

PNLTY CLEAR (Visitor Team) **-** prompts as follows:

```
Clear Vis Penalty
Slot 1, 2, or 3?: 0
```

Use the keypad to enter a single numeric digit that corresponds with the VISITOR TEAM **Penalty Slot** that should be cleared. (slot 1 is the top-most slot). Use the **ENTER** key to accept, or select the **UNDO/CANCEL** button to return to the default state without making any changes.

Hand-held Remote Controller Operation:

In addition to the Remote Console, Ad Art provides a **Hand-held Remote Controller** that is also hard-wired to the server using the server's serial port. It is designed for one or two handed use, agnostic to whether the operator is either left or right handed. This weather proof device has two labeled functions:

1. **Start/Stop the Game Clock** – press a rocker switch on the top of the remote.
2. **Blow the Horn** – press a button on the bottom of the remote.

See photograph below:

Illustration 24: Hand-held Remote Controller

During a game in which the console is used, the game clock and horn will usually be controlled by the Hand-held Remote (it can also be controlled via the Lacrosse Controller software). The Handheld is needed to start and stop the Game Clock and to blow the Horn, which the Console is unable to do. Another mode of operation is to use the Hand-held remote from the field to operate the game clock and horn and use the Lacrosse Controller software from the control room for the rest of the scoreboard functions.

The GAME CLOCK rocker switch on the Hand-held will illuminate when the GAME CLOCK switch is in the "On" position. ON = Illuminated, OFF = Not Illuminated. When the switch is in the "On" position and illuminated, usually the game clock is running. However, there are exceptions when the switch is on but the game clock is stopped:

1. The Game Clock stops because the Game Clock was manipulated by someone other than the Hand-held Remote operator (someone using Ad Art Lacrosse Controller software elsewhere).
2. The Game Clock stops because the Game Clock reached a zero count.

3. The Game Clock stops because the Console operator or Lacrosse Controller operator used the **RESET GAME**, **SET CLOCK**, or **PERIOD ADVANCE** functions.

Under these circumstances the clock will stop even though the Hand-held GAME CLOCK rocker switch is still in the ON position. To start the clock again, the operator must switch the game clock rocker switch to the OFF position and then back to ON when ready to start the game clock again.

☞ It is good practice to always make sure the GAME CLOCK toggle switch is in the OFF position whenever the Game Clock stops. The Hand-held Remote Control operator should pay close attention to the scoreboard's Game Clock during a game.

Appendix B: Ad Art VS Sports Controller Configuration Files

Installation Overview:

The Installation program will place all needed Ad Art VS Sports Controller software files in the default installation folder chosen at the time of install. These files include the application executable files ("LacrosseController.exe" or "AAFieldSportServer.exe"), this software manual document file, log files (in a "logs" sub-folder) saved game files (in a "gamesaves" sub-folder), and an audio file ("buzzer.wav"). Several font files are also installed in the default installation and computer system's "fonts" sub-folder (EurostileLTStd-BoldCn.otf, Euros.TTF, Eurosti.TTF, Eurostib.TTF, ArialN.TTF, ArialNb.TTF, ArialNbi.TTF, and ArialNi.TTF).

Ad Art Lacrosse Controller Configuration:

Ad Art Lacrosse Controller software is a client application that runs on most computers. It is designed to communicate with its server software component (AAFieldSportServer.exe) over the TCP/IP network protocol. The configuration settings for Ad Art Lacrosse Controller software are stored in an INI file (LAXController.ini) located in the same directory as the program.

> When Ad Art VS Sports Controller software is run for the first time, it automatically generates its INI file using default values. It is best to leave this file alone under most circumstances. However, all settings stored in the INI file may be edited manually, as the INI file is merely a text file. Only manually edit the INI file when the software is not running.

Content from a sample INI file with example settings is provided below:

```
[Settings]
FormVersion=0
Flags=0
PixelsPerInch=96
MinMaxPos(1920x1080)=-1,-1,-1,-1
MinMaxPos=-1,-1,-1,-1
NormPos(1920x1080)=561,239,1361,807
NormPos=561,239,1361,807
Scoreboard_Host_Or_IP=LocalHost
ScoreBoardPort=38240
```

Most of these settings should be left alone, however two settings merit special attention. These settings will need to be configured correctly, or Ad Art Lacrosse Controller will not be able to communicate with AAFieldSportServer. These settings are:

1. **Scoreboard_Host_Or_IP=** This setting should be set to the server computer's valid DNS host name or LAN/Internet IP address that is accessible to the client computer.
2. **ScoreBoardPort=** This setting should be set to a valid TCP port that corresponds with the port configured for AAFieldSportServer. The default port number is 38240. This port should also be kept open on any firewall software that may be running on the client computer.

AAFieldSportServer Configuration:

AAFieldSportServer is the server-side software component of the Ad Art VS Sports Controller. This software runs on a dedicated computer connected to the actual scoreboard. The server software formats and displays the game state in an Output Display window which is positioned in the sign's screen capture area.

AAFieldSportServer.exe software is designed to keep the state of the game current, even if the application should accidentally be closed out. After re-starting the application, all game values (including clock timing) will display and resume just as it was before being closed. This is possible, in part, because saved game-state settings are stored in a local sub-folder of the server's install directory named "gamesaves".

AAFieldSportServer.exe software will also keep a log of all major server activity for historical and troubleshooting purposes. Log files are stored in a local sub-folder of the server's install directory named "logs". These are ASCII text files that are human readable in any text editor.

An INI file that contains configuration settings for the server software is located in the same directory as the AAFieldSportServer.exe program. Most of these settings define the graphical layout of the scoreboard – these should be left alone.

🖈 When AAFieldSportServer.exe is run for the first time, it automatically generates this INI file. It is typically not necessary to manually edit this file. Only qualified Ad Art technicians should configure this file, so contact them if there is a need to re-configure AAFieldSportServer.exe.

Content from a sample INI file with examples of the remainder of settings is provided below:

```
[SETTINGS]
ConsoleComPort=
HandComPort=

[frmSignOutput]
FormVersion=0
Flags=0
PixelsPerInch=96
MinMaxPos(1920x1080)=-1,-1,0,0
MinMaxPos=-1,-1,0,0
NormPos(1920x1080)=0,0,480,240
NormPos=0,0,480,240
```

Four settings merit attention. These settings will need to be configured correctly to define the Output Display window and to communicate with the remote Console/Handheld controllers. These settings are:

1. **ConsoleComPort=** This setting should be set to correspond with the serial port used to communicate with the Remote Console Controller.
2. **HandComPort=** This setting should be set to correspond with the serial port used to communicate with the Hand-held Remote Controller.
3. **NormPos(####x####)=** This setting should be set to define the Output Display window pixel area in comma separated notation – the first two values indicate the x and y pixel coordinates defining the upper left corner of the rectangle, while the last two values indicate the x and y pixel coordinates defining the lower right corner of the rectangle.