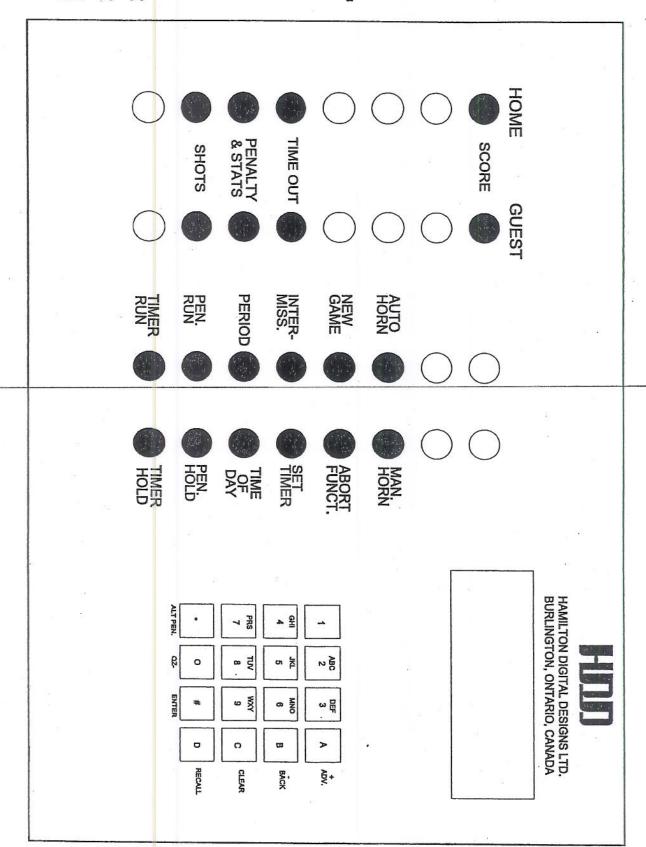# SCORE CLOCK INSTRUCTIONS

Below are the simply instructions. For penalties <u>very important</u> the jersey number must be entered. The display screen also tells you what you need to do as well, but these instructions keeps it simple.   Ie: Period, you need to hit enter (#) button 3 times. The name of the key is on the board. ie: Enter is the # key. Good Luck.

		Number Pad Key to Push
1	**NEW GAME**	
	Clear	C
2	**PERIOD**	
	Enter	#
	Enter	#
	Enter	#
3	**STOP AND START PLAY**	
	Start = Timer Run	
	Stop = Timer Hold	
4	**SCORE**	
	increase by one Home or Guest (push button)	
5	**CORRECT SCORE**	
	recall	D
	Push score button	
	hit Number pad	1 (# of goals to recall)
	Enter	#
6	**ENTER NEW PENALTY**	
	Push Home or Guest - (Color codes for home and guests)	
	Enter	#
	Player number ie: 05	Jersey number of player
	Enter	#
	Penalty Time ie: 2 for 2 minutes.	
	Enter	#
	Enter	#
7	**CANCEL PENALTY**	
	Recall Button	D
	Penalty home or away button	
	Clear	C
	Enter	#
8	**CLEAR GAME DISLAYS WHEN DONE**	
	Recall	D
	time of day display	

HOME   SCORE   GUEST

SHOTS

PENALTY & STATS

TIME OUT

NEW GAME

AUTO HORN

TIMER RUN

PEN. RUN

PERIOD

INTER-MISS.

TIMER HOLD

PEN. HOLD

TIME OF DAY

SET TIMER

ABORT FUNCT.

MAN. HORN.

1	ABC 2	DEF 3	A ADV. +
GHI 4	JKL 5	MNO 6	B BACK
PRS 7	TUV 8	WXY 9	C CLEAR
ALT PEN. •	QZ- 0	# ENTER	D RECALL

HDD

HAMILTON DIGITAL DESIGNS LTD.
BURLINGTON, ONTARIO, CANADA.

Keyboard Layout

1.0 INTRODUCTION

This manual describes the model PR99178A and model PR99297A
scoreboard Controllers. These are used to control the HDD model
PR99177A ice-hockey scoreboard, the HK-200-4PT scoreboard and
other similar boards. An auxiliary box, model PR99176A, can be
used with the PR99178A Controller to control the shots-on-goal
displays. This plugs into the rear of the main Controller. Note
that these Controllers gets their operating power from the
scoreboard and will not function if disconnected from the
scoreboard.

2.0 FEATURES

2.1 Displays Controlled

Main Timer   -   4 digits with 'last-minute-timing'
                    feature. Can also be set to display
                    time of day, or time remaining in an
                    intermission or timeout

Scores   -   to 99 per team (optionally to 199)

Horn   -   5 second horn at the end of the period
               -    2 second horn at the end of a time-out
               -    auto-horn at any repetition rate
               -    manual horn

Period   -   a single numeric digit

Shots-on-goal -   to 99 per team (optional)

Penalty Displays - 2 or 3 lines for each team showing
                    Player number (optional), minutes and
                    seconds.

2.2 Horn

This scoreboard normally sounds the horn for 5 seconds at the end
of each period, and for 2 seconds at the end of a time-out or
warm-up. In addition, the horn can be set to sound (for 2 sec)
at a specified repetition rate during the period (the auto-horn
feature - see section 3.5). The horn can also be operated
manually from the keyboard.

2.3 Keyboard

A keyboard is provided to allow the user to communicate with the controller. The 4x4 calculator-style numeric keypad (on the right) allows the operator to enter data in response to functions started by other keys. The other keys have colour-coded caps. The ones in the centre are used for general functions, such as control of the timer; the ones on the left are used for team-specific functions, such as scores and penalties.

An auxiliary box can be attached to the main Controller console (PR99178A only). This has three push-buttons and provides an alternative way to control the optional shots-on-goal displays.

2.4 LCD Display

A two-line LCD display is provided to allow the controller to communicate with the user. During entry of data, it provides prompts as to what is expected, and displays the new values for inspection before they are displayed on the scoreboard. At other times, a status display is provided.

2.5 Beeper

An audible beep should be emitted every time a key is pressed. A longer than usual beep is used to indicate a possible mistake. The beeper also sounds whenever the horn is activated.

2.6 Timing

Timing for the controller is provided by a high-frequency quartz crystal. This is divided down to give a signal at precisely 1000 times a second which is used for the timer. The timer can be switched On or Off in two different ways:

1) By using the **TIMER RUN** and **TIMER HOLD** keys on the controller. (Note that, due to keyboard limitations, this method is only accurate to 1/50 second at best.)

2) By using an external switch connected to the external switch input on the controller (P9 on PC95061). When this switch is closed, the Run/Hold status of the Controller is immediately toggled. The switch then has to be released and stay open for at least 50 milliseconds (1/20 second) before another closure will be treated as a separate event.

The timer can display either the elapsed time (count-up mode) or the time remaining in the period (count-down mode). Normally,

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minutes and seconds are displayed, but a 'last-minute timing' option can be selected. This changes the display to seconds and hundredths during the final minute of a period in count-down mode. A setup option is also available to blank the last digit of the timer so that only tenths of a second are shown. A period is displayed between the seconds and tenths or hundredths, instead of the normal colon, to show that last-minute timing is in effect.

The controller maintains a time-of-day clock, which can be shown when no game is in progress. This clock is also based on a quartz crystal. A separate crystal in the scoreboard can maintain this time-of-day display even without the Controller being plugged in.

The main timer is updated about 25 times a second. Other displays are updated as required.

The penalty timers always operate in synchrony with the game timer seconds display, but they can be paused without stopping the game timer by using the **PENALTY RUN/HOLD** keys.

2.7 Data Protection

The game timer, time-of-day clock and most of the game data are protected by a 'supercap', which is similar to a rechargeable battery. This should last for 24 hours or more, and regains its charge within a few minutes once power is reconnected. The time-of-day clock will continue running under these conditions, but other functions, such as the game timer, are just frozen at their current value. Fractions of a second in the game time will be lost (set to zero). After a power outage, the game timer will be on hold, but penalty count-downs will be enabled.

The auto-horn duration, period and intermission lengths, time-out reset value and timer direction are stored with the configuration data in the setup memory. This memory is completely non-volatile and should not be affected by a power outage of any duration.

The setup data can optionally be protected by a 4-digit password (P.I.N.). If enabled, this password will also be required before the user can set the time-of-day clock.

If the Controller is disconnected from the scoreboard, the board will switch to time of day display after about a minute (if this is not already being shown). The scoreboard also has an internal clock with supercap backup, and will attempt to display time of day on its own if powered up without the Controller.

3.0 OPERATING INSTRUCTIONS

3.1 New game set up - operating instruction (sequence)

Key to Press: **Display on Readout:**

1.   NEW GAME   New Game: Push CLEAR
     CLEAR   Timer Direction? D
                                                Press 0=Up or 1=Down
     '1' (for Down)   Period # 1
then proceed as for PERIOD below

2.   PERIOD   Period # 1
                                                Correct & push ENTER
     ENTER   Period mins 20 (or as selected)
     ENTER   Period mins 20:00
     ENTER   Game Timer 20:00.00

3.   TIMER RUN/TIMER HOLD   (Timer starts or stops)

4.   SCORE   The score for the selected team is
                                         immediately increased by 1.

5.   (To correct a Score)
     RECALL, SCORE   H-Score   5
     (Enter corrected score, e.g. '4')   H-Score   4
     ENTER   (normal Game Timer display)

6.   (To enter a new penalty)
     PENALTY (Home or Guest)   ~~H-Penalty at (Time)~~
                                               ENTER for Norm Run
     (Press ALT PEN key here for a delayed penalty or misconduct)
     ENTER   H-Player Number 00
     (Player No. eg. 25)
     ENTER   H-Penalty Time 0
     '2' (for 2 min.), ENTER   H-Penalty Time 2:00
     (penalty secs if not zero), ENTER   (penalty displayed)

7.   (To cancel a penalty after a power-play goal)
     RECALL, PENALTY (Home or Guest)   H-Penalty Line 1
                                               PN=25 Norm Run m:ss
     CLEAR   (m:ss goes to 0:00)
     ENTER   (penalty disappears)

8.   (Switch to Time of Day display)
     RECALL, TIME OF DAY   Time-of-Day / hh:mm:ss pm

9.   (Switch back to Game Timer display)
     RECALL, SET TIMER   Game Timer mm:ss.cc