

# **CHRONOS**

Digital Game Clock

*User's Guide*

## **Introduction To The PDF by ChronosDealer.com**

This is a PDF version of the manual for the Chronos Digital Game Clock. The information in this manual is accurate for both the traditional Key Switch (black button) model of the Chronos, as well as the newer Touch Switch model.

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At the end of the manual you will find the extra inserts: Introduction to the Chronos Digital Game Clock, and Chronos Digital Game Clock Tutorial, as well as an insert on new features as of 7/10/03. Updates to this PDF are not expected and should not be necessary for practical purposes.

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ChronosDealer.com also sells wholesale to clubs and schools. Please check online for more information. You may also call us toll free at 888-261-3630 to order or for pre-sales inquiries. If you are checking out the manual before buying a Chronos, please keep in mind that while the Chronos has many modes, setting the clock is rather simple with a little reading and hands-on experience.

Sincerely,

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## Quick Start for Five-Minute Chess

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1. Read below **How to turn the clock on and off**.
  2. Turn the clock on with **no play switches** pressed. **5:00** will appear on the displays.
  3. Press either **play switch** to **start** the clock.
  4. Press the **center button once** to **stop** the clock and **again** to **reset** it.
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## Quick Start for Go Players

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1. Read below **How to turn the clock on and off**.
  2. Turn the clock on with the **left play switch** pressed. **GO - J1, GO - C1** will appear on the displays.
  3. Press the right play switch. **0:20:00** will appear on the displays. This is the starting time for **Canadian byo-yomi mode one**.
  4. Press either **play switch** to **start** the clock.
  5. Press the **center button** once to **stop** the clock and another **four times** to **reset** it.
  6. When the main time runs down to zero you will hear two beeps and the displays will show **25 - 0:15**. You must make the next twenty-five moves within fifteen minutes or you lose on time. If you make the time-control the display will reset to **25 - 0:15** for the next twenty-five moves etc.
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## How to Turn the Clock On and Off

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To turn the clock on simply press the center button. See **Getting Started - How to Select a Mode** on page 5 for details on selecting a mode.

To turn the clock off, press and hold the center button, then press either black play switch five times. This procedure makes it difficult to “accidentally” turn the clock off.

**NOTE:** If no switch is pressed during a four hour period, the clock will automatically turn off.

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## Introduction

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The CHRONOS Digital Game Clock may be used for timing chess, go, or shogi games. This manual shows how to access the different modes, how to change the initial starting times, how to start, stop, or reset the clock, how to program the user modes, and more. No sequence or combination of button presses can damage the clock, so you may freely experiment as you study the features of the clock. If you enter an incorrect sequence, or get confusing information on the displays, just turn the clock off using the procedure above, reread this manual, and try again.

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## A Few CHRONOS Clock Features

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\* **Twelve** user-configured modes. Each easily accessed with **one or two** button presses.

- \* Mode options include: **beep-at-end**, **beep-at-time-control**, **beep-on-move**, **leds on**, and for most modes you can **alter the time of the clock during a game**.
- \* **Beeper pitch** is programmable.
- \* Unique unerasible **serial number**.
- \* **Shuffle chess** position generator

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## Getting Started - Select a Mode

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### TWO IMPORTANT DEFINITIONS:

**LONG PRESS** means to press the center button for MORE than one second. (You will hear two short beeps when you have pressed it long enough.)

**SHORT PRESS** means to press the center button for LESS than one second. (If you hear two short beeps you have pressed it too long.)

### TO SELECT A MODE:

1. Hold down the **black play switches** listed in **column one** of the table below, then press the center red button to turn the clock on. This will select **agroup of modes** as shown in **column two**. The **initial display** is in **column three**.

Switches Pressed	Modes Selected	Initial Display
No switches	User modes 1 to 4	5:00
Left play switch	User modes 5 to 8	GO - C1, GO - J1
Right play switch	User modes 9 to 12	FD - 1, UP - 2
Both play switches	All modes	CH - F1, CH - F2

2. If you selected user modes **1 to 4**, you will see **5:00** on the displays. This is five -minute chess, the factory programmed mode for **user mode 1**. Press the red button repeatedly to see the starting times for **user modes 2, 3, and 4**.

These pre-programmed modes are listed below, and a description of them is in the section **Discussion of the Modes**. It is assumed the user will modify these modes and times, and these factory settings are suggestions only. If you press the red button **four times**, you return to **user mode 1**.

User mode	1	2	3	4
Time	5:00	40 - 6:00	2:00	4:30
Identifier	CH - F1			CH - P3

3. If you selected user modes **5 to 8** or **9 to 12**, you will see two **mode identifiers**, one on the left display and one on the right display of the clock. Press the center red button to see two more **mode identifiers**. Press the red button again to return to the first two modes.

With the mode identifiers on the display you may press **either play switch** to select a mode. The starting times for the mode will appear, and you are ready to play. If later you want another mode, short press the **center button**

6 three times after resetting the mode to return to the **mode identifier** display.

All **modes** and **mode identifiers** are listed on page 12. The modes are described in the section **Discussion of the Modes**.

To summarize: if you selected user modes **5 to 8** or **9 to 12**, just short press the **center red button**, if necessary, to get the **mode identifier** for the mode you want on the display, then press either the **right or left play switch** to start the mode. Thus, after turning on the clock, **you only need to press a play switch, or the center button and a play switch, to select any user mode 5 to 12.**

4. If you selected **All modes**, you may **short press** the center red button repeatedly to cycle through all the **modes** and **mode identifiers** of the clock. You may **long press** the red button to **go backwards** if you went past the mode you want. Press the **left or right play switch** to select a mode. The factory programmed starting time for that mode will appear. You may change this time and copy it to a user mode - see **Set New Starting Times - Illustration** on p 7 and **How to Program the User Modes** on p 11. **Short press** the center button three times to get back to the display of **mode identifiers**.

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## How to Start, Stop, Set, and Reset the Clock

<b><i>Start the clock</i></b>	In all modes: Press either play switch.
<b><i>Stop the clock</i></b>	In all modes: Press the center button. (Press a play switch to start the clock again.)
<b><i>Reset the clock</i></b>	For modes with the <b>quick reset</b> feature ( <i>see feature E, p 18</i> ) Press the center button once to stop the clock. Press the center button again to reset it.  In all other modes: Press the center button to stop the clock. Short press the center button four more times to reset the clock. (This makes it hard to accidentally reset the clock.)
<b><i>Set new starting time</i></b>	In all modes: Put the mode in the starting position or in the reset position. <b>Long press</b> the center button to enter set mode. <b>Short press</b> the center button until the digit you want to change is flashing. Press the <b>play switch</b> on either side until the number you want for that digit appears on the display. <b>Short press</b> the center button to change to the next digit. If you short press the center button enough times you will come back to the first digit.  <b>Long press</b> the center button at any time to exit set mode. You are now ready to start the clock.  <b>The next section illustrates this procedure.</b>

***For modes having feature F (see p 18)***

In addition to setting the starting times, you may also alter the time of a game in progress. Press the center button once to stop the clock. Long press the center button. The first digit will start to flash. Follow the procedure above. NOTE: with this procedure you may only change the current display time, not any other time control.

## OPERATING SUMMARY

### If the clock is running:

Press the center button to stop it.  
(Press either play switch to start the clock again.)

### If the clock is stopped:

Short press the center button to reset the clock.  
(Four times in some modes.)

### If the clock has been reset:

Short press the center button to change modes.  
(Four times if clock has been started.)  
Long press the center button to enter set mode.

### If the clock is in set mode:

Short press the center button to select the next digit.  
(Press either play switch to change the value of the digit selected.)  
Long press the center button to exit set mode.

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## Set New Starting Times - Illustration

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These examples show how to change the times of a go mode and a chess mode.  
**All other modes are changed in the same way.**

1. Turn the clock on with both play switches pressed. This will select **all modes** of the clock. The display will show **CH - F1** and **CH - F2**, mode identifiers for two chess modes. **Short press** the center button **fourteen times** until the display shows **GO - J1**, **GO - J2**. These are **mode identifiers** for two go modes. Press the right play switch. **1:30:00** will appear on the display. This is the initial starting time for the **GO - J2** mode.
2. **Long press** the center button. The first digit will begin to flash. The clock is now in set mode. Press each play switch once. The **1s** will change to **2s**.
3. **Short press** the center button to change to the next digit. The **3s** will begin to flash. Press each play switch three times to change the **3s** to **0s**. **2:00:00** is now the new main time.
4. **Short press** the center button four more times. The byo-yomi time, **05 - 0:30**, will appear on the display with the first digit flashing.
5. **Short press** the center button again and then press each play switch eight times. The flashing **5s** will change to **3s**.
6. **Short press** the center button again and press each play switch once. The **0s** will change to **1s**. **03 - 1:30** is now the new byo-yomi time.
7. **Short press** the center button three more times. The display will show **0 - BEEP 1 - LED** with the digits flash-ing. Press the left play switch to change the **0** to a **1**. This means the "beep-on-move" and the "player-to-move light" features are on.

8. **Short press** the center button again. The display will show **0 - BEEP AT END** with the **0** flashing. Press the left play switch to change the **0** to a **1**. This means the clock will beep if a player's time runs out.
9. **Short press** the center button again. The display will show **1 - BEEP AT TC** with the **1** flashing. Press the left play switch to change the **1** to a **0**. This means the clock will not beep at the end of **atime control**.
10. **Short press** the center button again. The display will show **0 - HALT AT END** with the **0** flashing. Press the left play switch to change the **0** to a **1**. This means **both clocks will stop** if either side runs out of time. Then, since neither side can change, it will be clear which side ran out first and lost on time.
11. **Short press** the center button again. The display will show **3 - BYO BEEPS** with the **3** flashing. Press the left play switch twice and change the **3** to a **5**. This means that the clock will beep at each of the last five seconds of a bye yomi period.
12. **Short press** the center button again. The display will show **1 - DBL BEEPS** with the **1** flashing. You may set the byo-yomi beeps for single or double beeps. Choose **0** for single beep and **1** for double beeps. Single beeps would be suitable in a quiet tournament hall while double beeps are louder.
13. **Short press** the center button again. The display will show **COPY to 0** with the **0** flashing. You could now save your new settings to one of the twelve user modes by changing the **0** to a number from **1** to **12**. See the next two sections for more information about the **user modes**.
14. **Long press** the center button to stop setting the clock. **2:00:00** will appear on the display. You may now start the clock. The time you have just set will remain the new starting time for this mode until you alter it using the procedure above, change modes, or turn the clock off.

## SECOND EXAMPLE:

1. Turn the clock on with both play switches pressed. This will select **all modes** of the clock. The display will show **CH - F1** and **CH - F2**, mode identifiers for two chess modes. **Short press** the center button **nine times** until the display shows **CH - P1**, **CH - P1A**. These are **mode identifiers** for chess tournament modes with move counters. Press the left play switch. **40 - 2:00** will appear on the display. This is the initial starting time for the **CH - P1** mode.
2. Long press the center button. The first digit will start to flash. The clock is now in set mode. Press each play switch once. The **4s** will change to **5s**.
3. Short press the center button to change to the next digit. The **0s** will start to flash. Press the center button again. The **2s** will begin to flash. Press each play switch nine times until the display shows flashing **1s**.
4. Short press the center button again and the play switches three times. The **0s** will change to **3s**. You have set the first time-control for 50 moves in 1 1/2 hours.

5. Short press the center button two more times. The display will show **1:30:00** with the **0s** for the tens digit flashing. You can now set the seconds for the starting time. (You might do this if you were setting the clock for the continuation of an adjourned game.)
6. Short press the center button two more times. **20 \_ 1:00** will appear on the display. This is the second time control for this mode. Press each play switch once. The **2s** will change to **3s**. The second time-control is now set for 30 moves in 1 hour.
7. Short press the center button five more times. You can now set the seconds for the second time-control. You would do this, for example, if you were setting the second time-control for something like **01 - 0:01:30**.
8. Short press the center button two more times. The display will show **0 - BEEP 1 - LED** with the digits flashing. Press the left play switch to change the **0** to a **1**. This means the "player-to-move lights" and the "beep-on-move" features are on.
9. Short press the center button again. The display will show **0 - BEEP AT END** with the **0** flashing. Press the left play switch to change the **0** to a **1**. This means the clock will beep if the time runs down to 0:00:00.
10. Short press the center button again. The display will show **0 - BEEP AT TC** with the **0** flashing. Press the left play switch to change the **0** to a **1**. This means the clock will beep at the end of each time control.
11. **Short press** the center button again. The display will show **0 - HALT AT END** with the **0** flashing. Press the left play switch to change the **0** to a **1**. This means **both clocks will stop** if either side runs out of time. Then, since neither side can change, it will be clear which side ran out first and lost on time.
12. **Short press** the center button again. The display will show **COPY to 0** with the **0** flashing. You could now save your new settings to one of the twelve user modes by changing the **0** to a number from **1** to **12**. See the next two sections for more information about the **user modes**.
13. Long press the center button to stop setting the clock. **50 - 1:30** will appear on the display. You may now start the clock. The time you have set will remain the starting time for this mode until you alter it using the procedure above, change modes, or turn the clock off.

## Summary of Programmable Options

One or more of the following options may be selected when the user sets new starting times.

CLOCK DISPLAY		EXPLANATION OF OPTION
Left	Right	
<b>1 BEEP</b>	<b>1 LED</b>	<p>If BEEP is on the clock will beep each time a black play switch is pressed. This option should be turned off when playing in small tournament rooms, since other players might find the beeps distracting. During informal blitz play, however, this option should be on so a player does not have to look at his clock to be sure he has pressed it.</p> <p>If LED is on the LEDs will show who is on move when the clock is running. Turning this option off increases battery life by 50%.</p>
<b>0 BEEP</b>	<b>AT END</b>	The clock will make four long beeps when the time is out if this option is on.
<b>0 BEEP</b>	<b>AT TC</b>	The clock will make two long beeps at the end of <b>atime-control</b> if this option is on.
<b>0 HALT</b>	<b>AT END</b>	If this option is on, both clocks will stop if one clock goes over the time limit. Therefore it is not possible for both sides to overstep the time limit, and it will be clear which side ran out first and lost on time.
<b>3 BYO</b>	<b>BEEPS</b>	The mode has byo-yomi with the option of byo-yomi beeps. If this option is selected, the clock will beep at each second, from one to nine seconds, just before the end of a byo-yomi period. The initial setting is three byo-yomi beeps. That is, the clock will beep at three, two, and one seconds before the end of a byo-yomi period.
<b>0 DBL</b>	<b>BEEPS</b>	The byo-yomi beeps above may be double or single depending on this option. Since double beeps usually seem louder than single beeps, select this option for a louder sound.
<b>COPY</b>	<b>TO 0</b>	<p>Change the 0 to a number from 1 to 12 to save your settings and options to one of the 12 user modes. If the number is left a zero, nothing will be saved when the clock is turned off.</p> <p>NOTE: The settings of the user modes are NOT LOST if the batteries run down or are removed. They remain unchanged until the user saves new settings.</p>

## How to Program the User Modes

**Follow these steps to program a new user mode.**

1. Select a mode and set it with the times and options of your choice (illustrated in *Set New Starting Times*, p 7).
2. Move to the last option in set mode, which shows **COPY to 0** on the display with the zero flashing, and change the zero to a number from **one to twelve**. (Press right switch to increment number or left switch to decrement.)
3. **Long press** the center button.

The mode you set will be copied to one of the **twelve user modes**. You may repeat this procedure as often as you like.

**Example:**

1. Turn the clock on with **both play switches** pressed. You will see **CH - F1, CH - F2**, mode identifiers for two chess modes.
2. Press the **center button** twenty-three times. You will see the mode identifier **UP - 1** on the left.
3. Press the **left play switch** to select this mode. You will see **0:00:00** on the display.
4. Long press the **center button** to enter set mode. Set the starting time to **4:00:00**, and choose user mode **7** when you get the option **COPY to 0** on the display.
5. Long press the **center button** to leave set mode, then turn the clock off.
6. Turn the clock on again with the **left play switch** pressed. Press the **center button** once. You will see the mode identifier **UP - 1** on the left for your new user mode **7**.
7. Now press the **left play switch**. The display will show **4:00:00**, your new starting time. You are ready to play.

*The initial user modes are shown below. These are suggestions only, and using the procedure above you should change them to the modes and times you most often use.*

1,2,3,4	CH - F1	CH - P3	CH - P4	CH - BY1
5,6,7,8	GO - J1	GO - C1	AD - 1	GO - A1
9,10,11,12	FD - 1	UP - 2	SHO - 4	CH - P2

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## How to Program the Beeper Pitch

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1. Turn the clock on with both play switches pressed. This will select **all modes** of the clock. The display will show **CH - F1** and **CH - F2**.
  2. **Long press** the center button. The display will show **Pitch, Sr-Nr**. Press the **left play switch** to select the beeper pitch. The display will show **Pitch 1800**.
  3. Now **long press** the center button to set a new pitch. Press the **right play switch** to change value of the pitch. **Short press** the center red button to change to the next digit.
  4. Press the **left play switch** to **test the pitch**. **Long press** the center red button when you have the pitch you want.
  5. Experiment with settings between **2915** and **2945** to get the loudest beep. NOTE: the settings are relative and not the actual cycles per second of the sound produced. You may select values between **0000** and **2999**.
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## How to Display the Serial Number

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1. Turn the clock on with both play switches pressed. This will select **all modes** of the clock. The display will show **CH - F1** and **CH - F2**.
2. **Long press** the center button. The display will show **Pitch, Sr-Nr**. Press the **right play switch** to select the **serial number**. Your clock's anti-theft serial number will appear on the display. This number will help you to identify the clock if it gets lost.
3. Please record your serial number in the space below.

**PLEASE DO THIS NOW.**

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## Mode Descriptions and Identifiers

Description	Identifier	
<b>Five-minute chess</b>	CH - F1,	CH - F2
	CH - F3,	CH - F4
<b>Chess - andante modes</b>	CH - A1,	CH - A2
	CH - A3,	CH - A4
	CH - A5,	CH - A6
	CH - A7,	CH - A8
<b>Chess - byo-yomi modes</b>	CH - BY1,	CH - BY2
	CH - BY3,	CH - BY4
<b>Chess - hour glass</b>	CH - H1,	CH - H2

## Mode Descriptions and Identifiers

Description	Identifier	
<b>Chess - progressive</b>	CH - P1,	CH - P1A
	CH - P2,	CH - P2A
	CH - P3,	CH - P4
	CH - P5,	CH - P6
	CH - P7,	CH - P8
<b>Go - Japanese byo-yomi</b>	GO - J1,	GO - J2
<b>Go - andante byo-yomi</b>	GO - A1,	GO - A2
<b>Go - progressive byo-y.</b>	GO - P1,	GO - P2
<b>Go - Canadian byo-yomi</b>	GO - C1,	GO - C2
	GO - C3,	GO - C4
<b>Go - Ing byo-yomi</b>	ING - 1,	ING - 2
<b>FIDE modes</b>	FD - 1,	FD - 2
<b>Count down</b>	DN - 1,	DN - 2
<b>Count up</b>	UP - 1,	UP - 2
<b>Adagio modes</b>	AD - 1,	AD - 2
	AD - 3,	AD - 4
<b>Sudden death modes</b>	SD - 1,	SD - 2
	SD - 3,	SD - 4
<b>Andante modes</b>	AN - 1,	AN - 1A
	AN - 2,	AN - 3
<b>Sudden death and delay</b>	DL - SD1,	DL - SD2
	DL - SD3,	DL - SD4
<b>Delay and move counter</b>	DL - C1,	DL - C2
	DL - C1A,	DL - C1B
	DL - C2A,	DL - C2B
<b>Count down and delay</b>	DL - DN1,	DL - DN2
<b>Shogi modes</b>	SHO - 1,	SHO - 2
	SHO - 3,	SHO - 4
<b>Shuffle chess</b>	SHCH - 1,	SHCH - 2
<b>Beeper pitch, serial #</b>	PITCH,	SrNr

# StartingTimes

(All modes - all time-controls)

<b>CH - F1</b>	5-10:00	<b>CH - P1,1A</b>	0:06
5:00	<b>CH - A7</b>	40-2:00:00	0:15:00
<b>CH - F2</b>	5 - 1:00:00	20-1:00:00	0:06
5:00	5 - 0:30:00	<b>CH - P2,2A</b>	<b>GO - J1</b>
<b>CH - F3</b>	<b>CH - A8</b>	40-1:30:00	03:00:00
5:00_0	5 - 1:30:00	20-0:30:00	5:00
<b>CH - F4</b>	5 - 1:00:00	10-0:10:00	<b>GO - J2</b>
15:00	5 - 0:30:00	<b>CH - P3</b>	1:30:00
<b>CH - A1</b>	<b>CH - BY1</b>	40-6:00	05-0:30
5-90:00	4:30	10-1:00	<b>GO - A1</b>
<b>CH - A2</b>	0:05	<b>CH - P4</b>	0:45:00
5-90:00	<b>CH - BY2</b>	2:00	5-15:00
5-60:00	2:00:00	0:12	<b>GO - A2</b>
<b>CH - A3</b>	0:05	<b>CH - P5</b>	1:00:00
5-90:00	<b>CH - BY3</b>	0:20:00	15-0:30:00
5-60:00	1:30:00	0:06	<b>GO - P1</b>
5-30:00	0:10	<b>CH - P6</b>	2:00:00
<b>CH - A4</b>	1:00:00	0:15:00	25-0:15:00
5-90:00	0:05	0:06	10-0:05:00
5-60:00	<b>CH - BY4</b>	0:10:00	<b>GO - P2</b>
5-30:00	1:00:00	0:06	1:00:00
5-15:00	0:15	<b>CH - P7</b>	0:20:00
<b>CH - A5</b>	0:45:00	2:00:00	0:06
5-90:00	0:10	0:06	<b>GO - C1</b>
5-60:00	0:30:00	1:30:00	0:20:00
5-45:00	0:05	0:06	25-0:15:00
5-30:00	0:15:00	1:00:00	<b>GO - C2</b>
5-15:00	0:05	0:06	25-0:15:00
<b>CH - A6</b>	<b>CH - H1</b>	<b>CH - P8</b>	<b>GO - C3</b>
5-90:00	02:00	1:30:00	0:30:00
5-60:00	<b>CH - H2</b>	0:06	0:05
5-45:00	01:30	1:00:00	25-0:10:00
5-30:00		0:06	0:05
5-15:00		0:30:00	

<b>GO - C4</b>	1:00:00	<b>AN - 2</b>	<b>DL - DN2</b>
0:45:00	00:10	15 - 1:00:00	2:00:00
0:05	<b>AD - 3</b>	10 - 0:30:00	0:05
25-0:10:00	2:00:00	<b>AN - 3</b>	1:30:00
0:05	00:15	15 - 1:30:00	0:05
<b>ING - 1</b>	1:30:00	10 - 1:00:00	1:00:00
1:00:00	00:10	05 - 0:30:00	0:05
0:10:00	1:00:00	<b>DL - SD1</b>	0:30:00
<b>ING - 2</b>	00:05	0:30:00	0:05
1:00:00	<b>AD - 4</b>	0:05	<b>DL - C1,A,B</b>
3-10:00	2:00:00	<b>DL - SD2</b>	40 - 2:00:00
<b>FD - 1,1A</b>	00:15	1:30:00	0:05
40-1:30:00	1:30:00	0:05	1:00:00
0:10	00:10	0:30:00	0:05
<b>FD - 2,2A</b>	1:00:00	0:05	<b>DL - C2,A,B</b>
40-1:00:00	00:05	<b>DL - SD3</b>	40 - 2:00:00
0:15:00	0:30:00	1:00:00	0:05
0:30	00:05	0:05	20 - 1:00:00
<b>DN - 1</b>	<b>SD - 1</b>	0:30:00	0:05
2:00:00	0:30:00	0:05	1:00:00
1:00:00	<b>SD - 2</b>	0:15:00	0:05
<b>DN - 2</b>	1:00:00	0:05	<b>SHO - 1</b>
1:30:00	0:30:00	<b>DL - SD4</b>	01:00:00
0:30:00	<b>SD - 3</b>	2:00:00	<b>SHO - 2</b>
0:15:00	1:30:00	0:05	60-0:30
0:10:00	0:45:00	1:30:00	<b>SHO - 3</b>
<b>UP - 1</b>	0:30:00	0:05	120-30
0:00:00	<b>SD - 4</b>	1:00:00	<b>SHO - 4</b>
<b>UP - 2</b>	2:00:00	0:05	60-1:00:00
0:00:00	1:00:00	0:30:00	30-0:30:00
0:05	0:30:00	0:05	15-0:10:00
<b>AD - 1</b>	0:15:00	<b>DL - DN1</b>	
2:00:00	<b>AN - 1</b>	1:30:00	
00:15	15-1:00:00	0:05	
<b>AD - 2</b>	<b>AN - 1A</b>	0:30:00	
2:00:00	15-5:00	0:05	
00:15			

# Features Summary

(Legend for A, B, C, D, E, F on page 18)

MODE	A	B	C	D	E	F
CH - F1	Off	NA	On	No	Yes	No
CH - F2	Off	NA	On	No	No	Yes
CH - F3	On	NA	On	No	Yes	No
CH - F4	Off	NA	On	No	Yes	No
CH - A1	Off	NA	On	No	No	Yes
CH - A2	Off	Off	On	No	No	Yes
CH - A3	Off	Off	On	No	No	Yes
CH - A4	Off	Off	On	No	No	Yes
CH - A5	Off	Off	On	No	No	Yes
CH - A6	Off	Off	On	No	No	Yes
CH - A7	Off	Off	On	No	No	Yes
CH - A8	Off	Off	On	No	No	Yes
CH - BY1	Off	Off	On	No	Yes	No
CH - BY2	Off	Off	On	No	No	Yes
CH - BY3	Off	Off	On	No	No	Yes
CH - BY4	Off	Off	On	No	No	Yes
CH - H1	Off	NA	On	No	No	Yes
CH - H2	Off	NA	On	No	No	Yes
CH - P1,1A	Off	Off	Off	No	No	Yes
CH - P2,2A	Off	Off	Off	No	No	Yes
CH - P3	On	On	On	No	Yes	No
CH - P4	On	NA	On	No	Yes	No
CH - P5	Off	NA	Off	No	No	Yes
CH - P6	Off	Off	Off	No	No	Yes
CH - P7	Off	Off	Off	No	No	Yes
CH - P8	NA	Off	Off	No	No	Yes
GO - J1	Off	On	Off	Yes	No	Yes
GO - J2	Off	On	Off	Yes	No	Yes
GO - A1	Off	Off	Off	No	No	Yes
GO - A2	Off	Off	Off	No	No	Yes
GO - P1	Off	Off	Off	No	No	Yes
GO - P2	Off	Off	Off	No	No	Yes
GO - C1	Off	On	Off	No	No	Yes

MODE	A	B	C	D	E	F
GO - C2	Off	Off	Off	No	No	Yes
GO - C3	Off	Off	Off	No	No	Yes
GO - C4	Off	Off	Off	No	No	Yes
ING - 1	Off	Off	Off	No	No	Yes
ING - 2	Off	Off	Off	No	No	Yes
FD - 1,1A	Off	Off	Off	No	No	Yes
FD - 2,2A	Off	Off	Off	No	No	Yes
DN - 1	NA	Off	Off	No	No	Yes
DN - 2	NA	Off	Off	No	No	Yes
UP - 1	NA	Off	Off	No	No	Yes
UP - 2	NA	Off	Off	No	No	Yes
AD - 1	Off	Off	Off	Yes	No	Yes
AD - 2	Off	Off	Off	No	No	Yes
AD - 3	Off	Off	Off	No	No	Yes
AD - 4	Off	Off	Off	No	No	Yes
SD - 1	Off	NA	On	No	No	Yes
SD - 2	Off	Off	On	No	No	Yes
SD - 3	Off	Off	On	No	No	Yes
SD - 4	Off	Off	On	No	No	Yes
AN - 1	On	NA	Off	No	No	Yes
AN - 1A	Off	NA	Off	No	No	Yes
AN - 2	Off	Off	Off	No	No	Yes
AN - 3	Off	Off	Off	No	No	Yes
DL - SD1	Off	NA	Off	No	No	Yes
DL - SD2	Off	Off	Off	No	No	Yes
DL - SD3	Off	Off	Off	No	No	Yes
DL - SD4	Off	Off	Off	No	No	Yes
DL - DN1	NA	Off	Off	No	No	Yes
DL - DN2	NA	Off	Off	No	No	Yes
DL - C1, A, B	Off	Off	Off	No	No	Yes
DL - C2, A, B	Off	Off	Off	No	No	Yes
SHO - 1	Off	Off	Off	Yes	No	Yes
SHO - 2	Off	Off	Off	Yes	No	Yes
SHO - 3	On	On	Off	Yes	No	Yes
SHO - 4	Off	Off	Off	No	No	Yes

A. **BEEP-AT-END** Initial setting for the “beep-at-end” feature. If this option is selected, the clock will make four long beeps when the time on the clock runs out.

B. **BEEP-AT-TIME-CONTROL** Initial setting for the “beep-at-time-control” feature. If this option is selected, the clock will make two long beeps at the end of a time-control.

C. **BEEP-ON-MOVE** Initial setting for the “beep-on-move” feature. This feature should be turned off when playing in small tournament rooms, since other players might find the beeps distracting. During informal blitz play, however, this feature should be on so a player does not have to look at his clock to be sure he has pressed it.

D. **BYO-YOMI-BEEPS** The mode has byo-yomi with the option of byo-yomi beeps. If this option is selected, the clock will beep at each second, from one to nine seconds, just before the end of a byo-yomi period. The default setting is three byo-yomi beeps. That is, the clock will beep at three, two, and one seconds before the end of a byo-yomi period.

E. **QUICK-RESET** The mode will reset after just one press of the center button if the clock is stopped. This is the best arrangement for informal blitz games when the clock will be reset many times. Just press the center button once to stop the clock and again to reset it. Four presses are required to reset the clock for modes that are used in tournaments. This makes it difficult to accidentally reset the clock, even if, for some reason, you must stop the clock before the game is over.

F. **CHANGE-RUNNING-TIME** Occasionally an irregularity in the game will require you to change the time of the clock **after** the game has started. This feature makes it easy to do that. Just stop the clock, then long press the center button. Follow the procedure in *Setting New Starting Times* above.

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## Go and Shogi Timing Explained

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The following description applies to professional go in Japan, Korea, Taiwan, and China.

Each player in a professional game is given a time limit for all his moves in the game. A typical time limit is six hours per player, although longer time limits such as nine hours per player are common in championship matches, and shorter times such as three hours per player are used in semifinal matches. A professional game may take two days to finish.

During the game a designated timekeeper keeps track of the time used by each player. When the timekeeper has determined that a player has used all but five minutes of his allotted time, *byo-yomi* (literally, *seconds counting*) begins. The timekeeper will count down aloud the last ten seconds of each minute remaining. (This is understandably nerve-racking to many players.) If the player makes his

move before the end of the minute, no time at all is subtracted from his remaining time. That is, he gets the minute back. But each time the player uses more than a minute, his remaining time is reduced by one minute. After the fifth subtraction of one minute, the timekeeper declares the player the loser on time.

In other words, the player's clock is adjusted up to the nearest minute after each move he makes, if his total time is under five minutes. A timekeeper warns the player when each minute is about to end by counting down aloud the last ten seconds.

A common time limit among professionals for "blitz" or "lightning go" is thirty minutes per player with thirty seconds byo-yomi at the end. A timekeeper counts down the last ten seconds.

Professional shogi games are similar to professional go games with byoyomi and a timekeeper. The time limit for a championship shogi game is typically nine hours per player. No time is subtracted from your main time if you move in less than a minute. That is, your time remaining is adjusted up to the nearest minute. In other words, shogi timing is like go byo-yomi timing except that it lasts for the whole game. The CHRONOS simulates these timing methods in the **GO - J1** and **GO - J2** go modes and **SHO - 1**, **SHO - 2**, and **SHO - 3** shogi modes. See the relevant sections in **Discussion of the Modes** p 20 below for more details on these modes.

Shogi players should also consider the adagio mode **AD - 1**, which has shogi style warning beeps.

The clock also includes go modes with other byoyomi timing methods. See the sections on go in **Discussion of the Modes** p 20 below for more information.

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## Discussion of the Modes - General

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- There are three kinds of delay modes - **andante**, **adagio**, and **delay**. They all feature a **time delay or grace period** at each move before the main time starts to run.
  - The **andante** modes show the delay time **counting down on the display**.
  - The **adagio** modes **add the delay time to the current time** when a player moves.
  - The **delay** modes show the delay time counting down with **alternating or flashing dashes**.
- Modes with a move counter have a dash on the display if the time is given in **hours : minutes**, and a double dash if the time is given in **minutes : seconds**. Of course the clock will show **minutes : seconds** only if the time is less than ten minutes. A flashing dash on the display means the time is given in **hours : minutes** and the clock is running.
- Many chess and go modes can be used in either game.
- Shogi-style warning beeps are an option in adagio mode **AD - 1**.
- It is easier to learn about a new mode if you practice using it with low value settings first. For example:
  1. Set the five-minute mode (**CH - F1**) to **0:02**, then press a play switch. Note the flashing zeros and dashes when the clock runs down to zero.
  2. Set the count-down mode (**DN - 1**) with main time **0:00:10** and second time-control **0:00:05**. Press a play switch and watch the time-control indicators appear as each time-control runs down to zero.
  3. Set the andante mode (**CH - A1**) to **5 - 00:10**. Press each play switch several times to see how the delay timer works, then let the clock run down to zero. You will hear three short beeps at the end if the "beepat-end" feature is on.

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## Discussion of the Modes

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### V *FIVE MINUTE CHESS I*

(CH - F1)

**Description:** Standard five-minute chess. The clock stops when it reaches 0:00.

**Intended use:** Casual five-minute chess.

**Pros:** Easy to reset. Press the red button once to stop the clock and again to reset it.

**Cons:** Not appropriate for tournament play since the clock could be reset by “accidentally” pressing the red button twice if there was a need to stop it before the end of the game. Also, the time of the clock cannot be changed once the clock has been started, so an extra ten seconds or minute cannot be added to the time if that became necessary.

### V *FIVE MINUTE CHESS II*

(CH - F2)

**Description:** Standard five-minute chess. The clock stops when it reaches 0:00.

**Intended use:** Tournament five-minute chess.

**Pros:** It is difficult to “accidentally” reset the clock. You must press the red button four more times after stopping the clock to reset it. Also, the time of the clock can be changed during a game, if that becomes necessary.

**Cons:** The clock is harder to reset so it is less convenient for casual five-minute chess than **CH - F1**.

### V *FIVE MINUTE CHESS III*

(CH - F3)

**Description:** Standard five-minute chess with the time shown in tenths of a second.

**Intended use:** Casual five-minute chess.

**Pros:** You can see the time in tenths of a second.

**Cons:** Few players can make use of this information since it is difficult to move and press the clock in less than a second.

V *FIVE MINUTE CHESS IV* (CH - F4)

- Description:** Standard five-minute chess. The clock stops when it reaches 0:00.
- Intended use:** Casual five-minute chess, but you may set the clock for longer starting times such as fifteen or twenty minutes.
- Pros:** Four digits are used so you may play with longer starting times such as 15:00 or 20:00. It is easy to reset the clock. Press the red button once to stop the clock and again to reset it.
- Cons:** Not appropriate for tournament chess for the same reasons as **CH - F1**.

V *CHESS - ANDANTE MODE I* (CH - A1)

- Description:** There is a delay at each move before the main time starts to run. A player loses no main time if he moves in less than the delay time. The main time and delay time remaining are always displayed. The delay time may be from zero to nine seconds.
- Intended use:** Tournament chess with one time-control and a time delay at each move.
- Pros:** The delay time is always displayed.
- Cons:** The maximum delay time is 9 seconds and the maximum main time is 99:59.

V *CHESS - ANDANTE MODE II* (CH - A2)

- Description:** There is a delay at each move before the main time starts to run. A player loses no main time if he moves in less than the delay time. The main time and delay time remaining are always displayed. The delay time may be from zero to nine seconds. This mode has two time-controls.
- Intended use:** Tournament chess with two time-controls and a time delay at each move.
- Pros:** The delay time is always displayed. The delay time may be different for each time-control. You could have a setting of 60 minutes with 0 delay for the first time-control and 5 minutes with a delay of 5 seconds for the second time-control.
- Cons:** The maximum delay time is 9 seconds and the maximum main time is 99:59 for each time-control.

**Description:** There is a delay at each move before the main time starts to run. A player loses no main time if he moves in less than the delay time. The main time and delay time remaining are always displayed. The delay time may be from zero to nine seconds. This mode has three time-controls.

**Intended use:** Tournament chess with three time-controls and a time delay at each move.

**Pros:** The delay time is always displayed. The delay time may be different for each time-control. You could have a setting of 60 minutes with 0 delay for the first time-control and 5 minutes with a delay of 5 seconds for the second time-control, etc.

**Cons:** The maximum delay time is 9 seconds and the maximum main time is 99:59 for each time-control.

V *CHES - ANDANTE MODE IV*

(CH - A4)

**Description:** There is a delay at each move before the main time starts to run. A player loses no main time if he moves in less than the delay time. The main time and delay time remaining are always displayed. The delay time may be from zero to nine seconds. This mode has four time-controls.

**Intended use:** Tournament chess with four time-controls and a time delay at each move.

**Pros:** The delay time is always displayed. The delay time may be different for each time-control. You could have a setting of 60 minutes with 0 delay for the first time-control and 5 minutes with a delay of 5 seconds for the second time-control, etc.

**Cons:** The maximum delay time is 9 seconds and the maximum main time is 99:59 for each time-control.

V *CHES - ANDANTE MODE V*

(CH - A5)

**Description:** There is a delay at each move before the main time starts to run. A player loses no main time if he moves in less than the delay time. The main time and delay time remaining are always displayed. The delay time may be from zero to nine seconds. This mode has five time-controls.

**Intended use:** Tournament chess with five time-controls and a time delay at each move.

**Pros:** The delay time is always displayed. The delay time may be different for each time-control. You could have a setting of 60 minutes with 0 delay for the first time-control and 5 minutes with a delay of 5 seconds for the second time-control, etc.

**Cons:** The maximum delay time is 9 seconds and the maximum main time is 99:59 for each time-control.

V ***CHESS - ANDANTE MODE VI***

(CH - A6)

**Description:** There is a delay at each move before the main time starts to run. A player loses no main time if he moves in less than the delay time. The main time and delay time remaining are always displayed. The delay time may be from zero to nine seconds. This mode has six time-controls.

**Intended use:** Tournament chess with six time-controls and a time delay at each move.

**Pros:** The delay time is always displayed. The delay time may be different for each time-control. You could have a setting of 60 minutes with 0 delay for the first time-control and 5 minutes with a delay of 5 seconds for the second time-control, etc.

**Cons:** The maximum delay time is 9 seconds and the maximum main time is 99:59 for each time-control.

V ***CHESS - ANDANTE MODE VII***

(CH - A7)

**Description:** There is a delay at each move before the main time starts to run. A player loses no main time if he moves in less than the delay time. The delay time remaining is always displayed and may be from zero to nine seconds. This mode has two time-controls.

**Intended use:** Tournament chess with two time-controls and a time delay at each move.

**Pros:** The maximum main time is 9:59:59. The delay time is always displayed. The delay time may be different for each time control. You could have a setting of two hours with 0 delay for the first time-control and 5 minutes with a delay of 5 seconds for the second time-control.

**Cons:** The maximum delay time is 9 seconds.

V ***CHESS - ANDANTE MODE VIII***

(CH - A8)

**Description:** There is a delay at each move before the main time starts to run. A player loses no main time if he moves in less than the delay time. The delay time remaining is always displayed and may be from zero to nine seconds. This mode has three time-controls.

**Intended use:** Tournament chess with three time-controls and a time delay at each move.

**Pros:** The maximum main time is 9:59:59. The delay time is always displayed. The delay time may be different for each time-control.

**Cons:** The maximum delay time is 9 seconds.

## V *CHESS BYO-YOMI MODE I*

(CH - BY1)

**Description:** Modified go timing. If a player moves when his main time has gone below the byo-yomi time, the clock will set his main time back up to the byo-yomi time. For example: If the byo-yomi time is 0:10 and he moves with just two seconds left, his time will be set back up to 0:10. A player's clock will not run out if he can move in the byo-yomi time when his main time gets close to zero.

**Intended use:** Casual chess

**Pros:** No need to "bang" the clock near the end of the game since you always have at least the byo-yomi time for your next move.

**Cons:** Maximum main time is 9:59.

## V *CHESS BYO-YOMI MODE II*

(CH - BY2)

**Description:** Same as CH - BY1 above. Maximum main time is 9:59:59.

**Intended use:** Tournament chess with sudden death style timing and one time-control.

**Pros:** This timing method may be the best way to avoid the problem of "clock banging" at the end of a game or time-control. Other methods, including adding time or having a time delay at each move, lose the flavor and "psychology" of traditional chess timing. In this method there is no change whatever in the traditional method until a player's time goes below the byo-yomi time, say, for example, 15 seconds. When that happens the player is guaranteed the byo-yomi time (15 seconds), for each of his remaining moves in the game or timecontrol. Because of its simplicity and similarity to traditional chess timing, this method is appropriate for sudden death timing.

**Cons:** None

V *CHESSE BYO-YOMI MODE III* (CH - BY3)

**Description:** Same as **CH - BY2** above but with two time-controls. The maximum time in each time-control is 9:59:59. The byo-yomi times for each time-control can be set for different values, including zero.

**Intended use:** Tournament Chess with sudden death style timing and two time-controls.

**Pros:** Same as **CH - BY2** above.

**Cons:** None.

V *CHESSE BYO-YOMI MODE IV* (CH - BY4)

**Description:** Same as **CH - BY2** above but with four time-controls. The fourth time-control repeats indefinitely. The maximum time in each time-control is 9:59:59. The byo-yomi times for each time-control can be set for different values, including zero.

**Intended use:** Serious Tournament or Sudden Death chess with three or more time-controls.

**Pros:** Same as **CH - BY2** above. Also, you may play a game with an unlimited number of time-controls (with the first four being different).

**Cons:** None.

V *CHESSE - HOUR GLASS I* (CH - H1)

**Description:** One side increases as the other side decreases, just like the two ends of an hourglass or egg-timer. An hourglass was the first timing device used in chess. A player turned it over when he moved, and as the total time for one side decreased, the total time for the other increased, and by the same amount. The CHRONOS simulates this timing method in the hour-glass mode. That is, when it is your turn to move, your opponent's time increases while yours decreases, and by the same amount.

**Intended use:** Casual chess.

**Pros:** This method is good for playing a leisurely casual game while still retaining some timing constraints.

**Cons:** Since both clocks are always running (one up, one down) the display can be confusing.

V **CHES - HOUR GLASS II** (CH - H2)

**Description:** Same as **CH - H1** above except that only one clock runs at a time. When you move, your opponent's clock is adjusted up by the time that you used for your last move, but until that time his clock appears stopped.

**Intended use:** Same as **CH - H1** above.

**Pros:** Same as **CH - H1** above. Also, the displays are easier to read since only one clock is running.

**Cons:** None

V **CHES PROGRESSIVE MODE I** (CH - P1)

**Description:** This is standard chess tournament timing with unlimited repeating time-controls, also called progressive timing. A player must make forty moves in two hours, and if he does an hour is added to his remaining time for the next twenty moves etc. Since the clock has six digits it is not possible to show the move counter and the time in hours, minutes, and seconds at the same time. If the time is less than ten minutes, the clock will show a double dash followed by minutes: seconds, and otherwise the time will be given in hours: minutes. See the remark about modes with a move counter in the *Discussion of the modes - General* section above (p 20).

**Intended use:** Serious chess or shogi.

**Pros:** Number of moves made in the time-control is displayed.

**Cons:** Since only six digits can be displayed, it is not possible to show hours, minutes, and seconds at the same time unless the time remaining is less than ten minutes.

V **CHES PROGRESSIVE MODE II** (CH - P2)

**Description:** This mode is like **CH - P1** above except it has three time-controls. This mode could be used to shorten the average time per move in successive time-controls. For example, a setting of 40-1:30:00, 20-0:30:00, 10-0:10:00 would have 2 1/4 minutes average per move in the first, 1 1/2 minutes average per move in the second, and 1 minute average per move in the third, and succeeding, timecontrols.

**Intended use:** Serious chess or shogi.

**Pros:** Same as **CH - P1** above.

**Cons:** Same as **CH - P1** above.

V **CHES PROGRESSIVE MODE IA,IIA** (CH - P1A, 2A)

**Description:** These modes are just like **CH - P1, P2** above, EXCEPT that the display of a **running** clock will show the time in hours, minutes, and seconds if the time is greater than 10 minutes- i.e. to make room for the full time, the move number will not be displayed. (Of course, the move number on the opponent's clock will still be displayed.)

**Intended use:** Serious chess or shogi.

**Pros:** You get to see the full time when your clock is running. (There is no reason to show the move number on both sides.)

**Cons:** Some players may find the changing displays distracting.

V **CHES PROGRESSIVE MODE III** (CH - P3)

**Description:** This is the same as **CH - P1** above except that the maximum time-control time is 9:59. The mode is designed for blitz play. A player has six minutes to make forty moves. If he does, a minute is added to his time for the next ten moves etc. Use this mode to get more practice playing endgames. The clock shows the number of moves made in each time-control and the time remaining for each side.

**Intended use:** Casual blitz chess.

**Pros:** This mode avoids running out of time early in the game so you can play more blitz chess endgames. Mode has quick reset feature - press the clock once to stop it, and again to reset it.

**Cons:** None

V **CHES PROGRESSIVE MODE IV** (CH - P4)

**Description:** This is the same as **CH - P3** above but with the main time set for 2:00, the second time-control set for 0:12, and the main and second time-control number of moves set for 01. The move number is not displayed since it is always 01.

**Intended use:** Casual blitz chess

**Pros:** Easier to use than **CH - P3** above in the special case that the move counters are set for 01.

**Cons:** Maximum time is 9:59.

V ***CHESS PROGRESSIVE MODE V*** (CH - P5)

**Description:** This is the same as **CH - P4** above, but the first time-control time can be as large as 9:59:59 so you can play longer games.

**Intended use:** Serious chess, go, or shogi.

**Pros:** This timing method avoids “clock banging” at the end of a game. It could be used for sudden death timing with one time-control.

**Cons:** None.

V ***CHESS PROGRESSIVE MODE VI*** (CH - P6)

**Description:** This is the same as **CH - P5** above, but repeated twice. This method could be used for sudden death timing with two time controls. A dash appears in front of the time when the second time control begins.

**Intended use:** Serious chess, go, or shogi.

**Pros:** Same as CH - P5

**Cons:** None.

V ***CHESS PROGRESSIVE MODE VII*** (CH - P7)

**Description:** This is the same as **CH - P5** above, but repeated three times. This method could be used for sudden death timing with three time controls. Special symbols appear in front of the time when the second and third time-controls begin.

**Intended use:** Serious chess, go, or shogi.

**Pros:** This timing method avoids “clock banging” at the end of a game. It could be used for sudden death timing with three time-controls.

**Cons:** None.

V **CHESSE PROGRESSIVE MODE VIII** (CH - P8)

**Description:** This is the same as **CH - P5** above, but repeated four times. The fourth time-control repeats indefinitely. Special symbols appear in front of the time when the second, third, and fourth time controls begin.

**Intended use:** Serious chess, go, or shogi.

**Pros:** This timing method avoids “clock banging” at the end of a game. It could be used for sudden death timing with four, or more, time-controls.

**Cons:** None.

V **GO - JAPANESE BYO-YOMI I** (GO - J1)

**Description:** When the main time runs out byo-yomi begins. Dashes will appear on the display to show that the player is in byo-yomi. After each move the player's time will be adjusted up to the nearest minute. He loses no time if he moves in less than a minute, but he loses a minute if he takes a minute or more to move. If the “beep-at-time-control” feature is on, the clock will beep:

1. when the main time ends and byo-yomi starts,
2. at ten seconds before the end of each byo-yomi period, and
3. at the end of each byo-yomi period.

If you select from one to nine byo-yomi beeps for the byo-yomi periods, the clock will beep at each second, from one to nine seconds, just before the end of each byo-yomi period. The default setting is three byo-yomi beeps. That is, the clock will beep at three, two, and one seconds before the end of the byo-yomi period. This mode simulates the **professional go** timing method described above (p. 18).

**Intended use:** Serious go

**Pros:** Simulates professional go timing method.

**Cons:** None.

V **GO - JAPANESE BYO-YOMI II** (GO - J2)

**Description:** This mode is the same as **GO - J1** above except that you have more variety for the byo-yomi parameters. For example, you could set the byo-yomi time for three thirty second periods. Then the total byo-yomi time is one minute and thirty seconds, and your time is adjusted up after each move to the nearest thirty seconds.

This mode could also be used for slow chess. Set the primary time for 2:30:00 and the byo-yomi time for 01-0:15 (that is, one fifteen second byo-yomi period). When your primary time runs out you must play the rest of the game at fifteen seconds per move. The display flashes "forfeit" if you run out of time.

**NOTE:** The "beep-at-time-control" and "byo-yomi-beeps" features do not take effect in this mode until the number of byo-yomi periods is five or fewer.

**Intended use:** Serious go , shogi, or chess.

**Pros:** Simulates professional go timing method.

**Cons:** None.

#### V *GO - ANDANTE BYO-YOMI I* (GO - A1)

**Description:** When your main time runs out the byo-yomi timing method switches to the **andante mode**. That is, there is a delay at each move before your byo-yomi time starts to run. If you move in less than the delay time, you lose no byo-yomi time. If you take more than the delay time your byo-yomi time starts to count down. Of course, if your byo-yomi time comes to zero, you lose the game on time. The delay time and byo-yomi time is always displayed. The maximum delay time is 9 seconds, and the maximum byo-yomi time is 99:99.

**Intended use:** Serious or casual go.

**Pros:** Simpler than standard byo-yomi.

**Cons:** None.

#### V *GO - ANDANTE BYO-YOMI II* (GO - A2)

**Description:** This is like **GO - A1** above except that the range for the byo-yomi and delay times are increased. The maximum delay time is 99 seconds, and the maximum byo-yomi time is 9:59:59.

Assume the byo-yomi delay time for this mode and the byo-yomi time for **GO - J2** mode above is set for thirty seconds, and assume a player takes thirty-one seconds to move. In this mode he loses just one second from his base byo-yomi time - in the **GO - J2** mode he loses the whole byo-yomi time of thirty seconds. This byo-yomi timing method seems simpler and more reasonable than the standard Japanese style byo-yomi.

**Intended use:** Serious or casual go.

**Pros:** Simpler than standard byo-yomi.

**Cons:** None.

V *GO - PROGRESSIVE BYO-YOMI I* (GO - P1)

**Description:** When your main time runs out the byo-yomi timing method switches to the **progressive mode (CH - P1)** described above. That is, you must make twenty-five moves in fifteen minutes, and if you do five minutes are added to your remaining time for the next ten

**Intended use:** Serious or casual go.

**Pros:** Moves are automatically counted by the clock.

**Cons:** None.

V *GO - PROGRESSIVE BYO-YOMI II* (GO - P2)

**Description:** The byo-yomi period in this mode is just like **CH - P5** above.

**Intended use:** Serious or casual go.

**Pros:** Very simple byo-yomi method.

**Cons:** None.

V *GO - CANADIAN BYO-YOMI I* (GO - C1)

**Description:** When your main time runs out in this mode you are required to make a specific number of moves within the secondary time limit. If you do, your clock is reset with the secondary time and again you must make the specific number of moves within the secondary time limit. This continues until the game is over. The secondary time remaining and the number of moves made are always displayed. This mode simulates what is called Canadian byo-yomi. When your primary time runs out in this byo-yomi method you are given a number of stones, say twenty, and required to play them within a specific time, say five minutes. If you do, your clock is reset to five minutes and you are given another twenty stones to play etc. This method is often used with mechanical clocks.

**Intended use:** Casual go or in tournaments that use Canadian byo-yomi.

**Pros:** Simpler than using a mechanical clock since the stones are automatically "counted" for you by the clock. The clock will flash "forfeit" if you overstep the time limit.

**Cons:** None.

V *GO - CANADIAN BYO-YOMI II* (GO - C2)

**Description:** This is like **Canadian byo-yomi I, GO - C1** above except that there is no main time. You are required to make twentyfive moves in fifteen minutes. If you do, you get another fifteen minutes for the next twenty-five moves etc. If the time is less than ten minutes, the clock will show an upper dash followed by minutes: seconds. Alternating dashes mean the time is in hours: minutes and the clock is

**Intended use:** Casual go.

**Pros:** Game is faster.

**Cons:** None.

V *GO - CANADIAN BYO-YOMI III* (GO - C3)

**Description:** This is the same as **GO - C1** above except that there are optional delay times, which may be different, before the main time and/or byo-yomi times start to count down.

**Intended use:** Same as **GO - C1** above.

**Pros:** Same as **GO - C1** above.

**Cons:** None.

V *GO - CANADIAN BYO-YOMI IV* (GO - C4)

**Description:** This is like **GO - C3** above, except the display will not flash “forfeit” if your clock runs down to 0:00, and the byoyomi time is reset if you make the specified number of moves for the byoyomi period. Therefore, to win on time against an opponent whose time has run out, this method requires that you call a time forfeit **before** your opponent makes the specified number of moves and resets his byoyomi time.

**Intended use:** Same as **GO - C1** above.

**Pros:** Same as **GO - C1** above.

**Cons:** None.

V *GO - ING BYO-YOMI I* (ING - 1)

**Description:** In this timing method you are required to complete your game within the main time. If you do not, you lose a specific number of points, say two, for each additional byo-yomi period you use. If you use three additional byo-yomi periods you lose the game on time. The theme of the mode is “time is money”. The byo-yomi period is typically set for 1/6 main time.

**Intended use:** Tournaments which require ING byo-yomi.

**Pros:** The time used by a player can directly affect his score.

**Cons:** There is no tradition for changing a player's score based on the time he has used.

V **GO - ING BYO-YOMI II**

(ING - 2)

**Description:** Same as **ING - 1** above, except that the byo-yomi time has an optional delay time of up to nine seconds. The delay time and byo-yomi time are always displayed.

**Intended use:** Same as **ING - 1** above.

**Pros:** Same as **ING - 1** above.

**Cons:** Same as **ING - 1** above.

V **FIDE MODE I, IA**

(FD - 1) (FD - 1A)

**Description:** These are the same as **CH - P1, P1A** above but with the move counter for the second time-control set for 01. These modes are compatible with the **FIDE rapids** mode. Note: the clock will not display move numbers if the number of moves in the second time-control of **CH - P1, P1A** is 01 since, unless your time runs out, you make the time-control with every move.

**Intended use:** Casual or serious chess.

**Pros:** Easier to use than **CH - P1, P1A** with move counter set for 01.

**Cons:** None.

V **FIDE MODE II, IIA**

(FD - 2) (FD - 2A)

**Description:** These are the same as **CH - P2, P2A** above but with the move counter for the second and third time-controls set for 01. These modes are compatible with the **FIDE tournament** mode. Note: the clock will not display move numbers if the number of moves in the second or third time-control of **CH - P2, P2A** is 01 since, unless your time runs out, you make the time-control with every move.

**Intended use:** Casual or serious chess.

**Pros:** Easier to use than **CH - P2, P2A** with move counters set for 01.

**Cons:** None.

## V *COUNT DOWN I* (DN - 1)

**Description:** The second time-control starts when the main time runs out. Special symbols in front of the time show when the second, third, and fourth time-controls have started.

Use this mode for standard timing such as forty-five moves in two hours with twenty-five moves per hour thereafter. Set the main time for 2:00:00 and the second time-control for 1:00:00.

Use this mode also for the "sudden-death overtime" timing method. (A typical example is forty moves in two hours and one hour for the rest of the game. Set the primary time for 2:00:00 and the secondary time for 1:00:00.)

**Intended use:** Tournament chess

**Pros:** The time remaining in a time-control is displayed more clearly and accurately than in mechanical clocks

**Cons:** None.

## V *COUNT DOWN II* (DN - 2)

**Description:** This method is like **DN - 1** above except that there are four time-controls. The fourth time-control repeats

**Intended use:** Serious chess

**Pros:** You can set progressively faster time-controls. For example you could require 40 moves in 1 1/2 hours, then 20 in 30 minutes, then 20 in 15, then 20 in 10 to end of game.

**Cons:** None.

## V *COUNT UP I* (UP - 1)

**Description:** The clock counts up. You can use this mode for standard timing such as forty-five moves in two hours with twenty-five per hour thereafter. A player must make forty-five moves before his clock shows 2:00:00 and another twenty-five before it shows 3:00:00. You could also set the clock for starting times such as 4:00:00 or 4:30:00, to agree with the standard starting time of mechanical clocks. The clock can be set to beep on the hour - a useful feature if the time-controls end on the hour, which is usually the case when mechanical clocks are used.

**Intended use:** Tournament chess.

**Pros:** Simulates mechanical clocks.

**Cons:** None.

V *COUNT UP II*

(UP - 2)

**Description:** This is the same as **UP - 1** above except there is a five second delay before the main time starts to count up. The display shows alternating dashes during the delay time. The clock can be set to beep on the hour - a useful feature if the time-controls end on the hour, which is usually the case when mechanical clocks are used.

**Intended use:** Tournament chess with a time delay.

**Pros:** Simulates mechanical clocks with the addition of a time delay.

**Cons:** None.

V *ADAGIO MODE I*

(AD - 1)

**Description:** After each move you make your time is adjusted up to either the time you had at the beginning of the move, or to your current time plus the delay time (15 seconds, for example), whichever is smaller. This is the adagio method of incorporating a time delay, and it seems to be the simplest and clearest way to add a time delay at each move. Of course, when your main time runs out you lose on time. This mode can be used to play slow games of chess, go, or shogi. (Shogi players please take special note of Notes **2** and **3** below.)

**Notes:**

- 1) When the clock is first started the delay time is automatically added to the initial main time, so that your delay time will start to count before your main time.
- 2) The clock will beep at **30**, **20**, and **10** seconds before the end if the "beep-at-time-control" option is selected.
- 3) Just like go modes **GO - J1,2**, you can set up to **nine byo-yomi beeps** during the last **ten** seconds.

**Intended use:** Serious go, chess, and shogi.

**Pros:** An elegant timing method.

**Cons:** None.

V *ADAGIO MODE II*

(AD - 2)

**Description:** This is similar to **AD - 1** above except the mode has two time-controls and you cannot set any beeps before the end of a time-control as in notes 2 and 3 above.

**Intended use:** Sudden death timing such as forty-five moves in one hour and the rest of the game in thirty minutes with a ten second delay at each move.

**Pros:** Each time-control can have different time delays (including zero).

**Cons:** None.

V *ADAGIO MODE III*

(AD - 3)

**Description:** This is similar to **AD - 2** above except the mode has three time-controls.

**Intended use:** Serious go, chess, and shogi. Also sudden death chess timing with three time-controls.

**Pros:** Each time-control can have different time delays (including zero).

**Cons:** None.

V *ADAGIO MODE IV*

(AD - 4)

**Description:** This is similar to **AD - 2** above except the mode has four time-controls.

**Intended use:** Serious go, chess, and shogi. Also sudden death chess timing with three time-controls.

**Pros:** Each time-control can have different time delays (including zero).

**Cons:** None.

V *SUDDEN DEATH MODE I*

(SD - 1)

**Description:** The clock stops when the main time runs out. Use this mode for timing such as "game in sixty" or "game in two and a half". Set the clock for 1:00:00 or 2:30:00.

**Intended use:** Sudden death chess timing.

**Pros:** The time remaining is displayed more clearly and accurately than in mechanical clocks.

**Cons:** Mode has no provision for a time delay.

V *SUDDEN DEATH MODE II*

(SD - 2)

**Description:** In this mode, a player must make a certain number of moves, say forty, in the first time-control and the rest in the second. To claim a win on time during the first time-control a player must have an accurate record of the game. A player always loses on time if his second time-control time runs out.

**Intended use:** Sudden death chess with two time-controls.

**Pros:** The time remaining in a time-control is displayed more clearly and accurately than in mechanical clocks.

**Cons:** Mode has no provision for a time delay.

V *SUDDEN DEATH MODE III*

(SD - 3)

**Description:** This is similar to **SD - 2** above but with three time-controls. Each player must keep an accurate record of the game to claim a win on time during the first two time-controls.

**Intended use:** Sudden death chess with three time-controls.

**Pros:** The time remaining in a time-control is displayed more clearly and accurately than in mechanical clocks.

**Cons:** Mode has no provision for a time delay.

V *SUDDEN DEATH MODE IV*

(SD - 4)

**Description:** This is similar to **SD - 2** above but with four time-controls. Each player must keep an accurate record of the game to claim a win on time during the first three time-controls.

**Intended use:** Sudden death chess with four time-controls.

**Pros:** The time remaining in a time-control is displayed more clearly and accurately than in mechanical clocks.

**Cons:** Mode has no provision for a time delay.

V *ANDANTE MODE I*

(AN - 1)

**Description:** There is a delay at each move before the main time starts to run. A player loses no main time if he moves in less than the delay time. The delay time remaining is always displayed.

**Intended use:** Serious chess, go, or shogi, especially sudden-death chess with one time-control and a time delay of ten seconds or more.

**Pros:** The delay time is always displayed. The maximum main time is 9:59:59 and the maximum delay time is 99 seconds.

**Cons:** None

V *ANDANTE MODE IA*

(AN - 1A)

**Description:** This is like **AN - 1** above except the maximum main time is 9:59.

**Intended use:** Blitz chess, go, or shogi.

**Pros:** The delay time remaining is always displayed. The maximum delay time is 99 seconds.

**Cons:** None

V *ANDANTE MODE II* (AN - 2)

**Description:** There is a delay at each move before the main time starts to run. A player loses no main time if he moves in less than the delay time. The delay time remaining is always displayed.

**Intended use:** Serious chess, go, or shogi, especially sudden-death chess with two time-controls and a time delay of 10 seconds or more.

**Pros:** The delay time is always displayed. The delay time may be from 0 to 99 seconds and may be different in each time-control. The maximum main time is 9:59:59.

**Cons:** None

V *ANDANTE MODE III* (AN - 3)

**Description:** There is a delay at each move before the main time starts to run. A player loses no main time if he moves in less than the delay time. The delay time remaining is always displayed.

**Intended use:** Serious chess, go, or shogi, especially sudden-death chess with three time-controls and a time delay of 10 seconds or more.

**Pros:** The delay time is always displayed. The delay time may be from 0 to 99 seconds and may be different in each time-control. The maximum main time is 9:59:59.

**Cons:** None

V *SUDDEN DEATH AND DELAY I* (DL - SD1)

**Description:** There is a delay at each move before the clock starts to count down. The colons flash during the delay time. The clock stops when the main time comes to 0:00:00.

**Intended use:** Sudden death chess with a time delay.

**Pros:** Mode has a time delay.

**Cons:** None.

V *SUDDEN DEATH AND DELAY II* (DL - SD2)

**Description:** There is a delay at each move before the clock starts to count down. The colons flash during the delay time. The clock stops when the second time-control time comes to 0:00:00. An upper dash before the time means you are in the second time-control.

**Intended use:** Sudden death chess with two time-controls.

**Pros:** The time delays can be set for different values, including zero, in each time-control.

**Cons:** None.

V **SUDDEN DEATH AND DELAY III** (DL - SD3)

**Description:** This is like **DL - SD2** above except there are three time-controls. An upper dash before the time means you are in the second time control and a lower dash that you are in the third timecontrol.

**Intended use:** Sudden death chess with three time-controls.

**Pros:** The time delays can be set for different values, including zero, in each time-control.

**Cons:** None.

V **SUDDEN DEATH AND DELAY IV** (DL - SD4)

**Description:** This is like **DL - SD3** above except there are four time-controls. Special symbols before the time show which time-control you are in.

**First TC: No dash**

**Second TC: Upper dash**

**Third TC: Lower dash**

**Fourth TC: Double dash**

**Intended use:** Sudden death chess with four time- controls.

**Pros:** The time delays can be set for different values, including zero, in each time-control.

**Cons:** None.

V **COUNT DOWN AND DELAY I** (DL - DN1)

**Description:** This is like **DL - SD2** above except that the second time-control repeats indefinitely. The colons flash during the time delay. This mode is also like **DN - 1** above but with an added time delay at each move. The time delays may be different in the first two time controls.

**Intended use:** Serious chess or shogi with a time delay.

**Pros:** There are an unlimited number of time-controls.

**Cons:** None.

V **COUNT DOWN AND DELAY II** (DL - DN2)

**Description:** This is like **DL - SD4** above except that the fourth time-control repeats indefinitely. The colons flash during the time delay. This mode is also like **DN - 2** above but with an added time delay at each move. The time delays may be different in the first four time controls.

**Intended use:** Serious chess or shogi with a time delay.

**Pros:** There are an unlimited number of time-controls. The first four time-controls may have different settings and different delays.

**Cons:** None.

V **TWO TIME-CONTROLS WITH DELAY AND MOVE COUNTER** (DL - C1)

**Description:** This mode has two time-controls with the number of moves shown during the first time-control. There is an optional time delay at each move. A example setting is 40 moves in two hours with a time delay of 3 seconds followed by one hour with a time delay of 5 seconds. After 40 moves one hour is added to your time. Of course you lose on time if your clock ever runs down to zero.

**Intended use:** Sudden-death chess with two time-controls and a time delay.

**Pros:** The move number is displayed In the first time-control. There is an optional time delay.

**Cons:** Since there are only six display digits, it is not possible to show seconds in the first time-control until the time goes below ten minutes. Also, in most chess tournaments claiming a win on time requires an accurate scoresheet regardless of the number of moves the clock shows, so seeing the number of moves made may not be helpful.

V **THREE TIME-CONTROLS WITH DELAY AND MOVE COUNTER** (DL - C2)

**Description:** This is like **DL - C1** above except that there are three time controls. The number of moves is displayed during the first two time-controls.

**Intended use:** Sudden-death chess with three time-controls and a time delay.

**Pros:** The move number is displayed In the first two time controls. There is an optional time delay.

**Cons:** Same as **DL - C1** above

V **TWO TIME-CONTROLS WITH DELAY AND MOVE COUNTER (A OPTION)** (DL - C1A)

**Description:** This mode is like **DL - C1** above except that the clock changes the display in the first time-control right after the time delay and shows the time in hours minutes and seconds. That is, the move number is not shown on the active side after the delay time. Of course, you can still see the move number on the opponent's clock.

**Intended use:** Sudden-death chess with two time-controls and a time delay.

**Pros:** The time is displayed in hours minutes and seconds after the time delay in the first time-control.

**Cons:** In most chess tournaments claiming a win on time requires an accurate scoresheet showing all the moves made regardless of the number of moves the clock shows, so seeing the number of moves made may not be helpful.

V ***TWO TIME-CONTROLS WITH DELAY AND MOVE COUNTER (B OPTION)*** (DL - C1B)

**Description:** This is like **DL - C1** above except that the move number is always displayed, even in the second time-control. This can be used in a tournament that has a rule such as “a game is automatically a draw after 150 moves”.

**Intended use:** Sudden-death chess with two time-controls and a rule such as “a game is automatically a draw after 150 moves”.

**Pros:** The move number is displayed at all times and there is an optional time delay.

**Cons:** The seconds are not shown until the time goes below ten minutes.

V ***THREE TIME-CONTROLS WITH DELAY AND MOVE COUNTER (A OPTION)*** (DL - C2A)

**Description:** This mode is like **DL - C1A** above except that it has three time-controls.

**Intended use:** Sudden-death chess with three time-controls and a time delay.

**Pros:** The time is displayed in hours minutes and seconds after the time delay in the first two time-controls.

**Cons:** In most chess tournaments claiming a win on time requires an accurate scoresheet regardless of the number of moves the clock shows, so seeing the number of moves made may not be helpful.

V ***THREE TIME-CONTROLS WITH DELAY AND MOVE COUNTER (B OPTION)*** (DL - C2B)

**Description:** This is like **DL - C1B** above except that there are three time controls. The number of moves is displayed at all times.

**Intended use:** Sudden-death chess with three time-controls and a rule such as “a game is automatically a draw after 150 moves”.

**Pros:** The move number is displayed at all times and there is an optional time delay.

**Cons:** The seconds are not shown until the time goes below ten minutes.

V **SHOGI MODE I** (SHO - 1)

**Description:** Your time is adjusted up to the nearest minute after each move.

**Notes:**

1. The clock will beep at 30, 20, and 10 seconds before the end of the last minute if the “beep-at-time-control” feature is on.
2. As in go modes **GO - J1** and **GO - J2**, you can set up to nine byo-yomi beeps during the last ten seconds.

**Intended use:** Serious shogi.

**Pros:** Byo-yomi beeps at the end of the last minute.

**Cons:** None.

V **SHOGI MODE II** (SHO - 2)

**Description:** This is just like **GO - J2** mode above except there is no main time. The display flashes “forfeit” if you run out of time.

**Intended use:** Casual or serious shogi.

**Pros:** Byo-yomi beeps and time-control beeps.

**Cons:** None.

V **SHOGI MODE III** (SHO - 3)

**Description:** This is similar to **SHO - 2** above except that the range of parameters is different and the number of byo-yomi periods remaining is always displayed. If the “beep-at-time-control” option is on the clock will issue a warning beep at the start of each of the last three byoyomi periods. Byo-yomi beeps can be set for the last byo-yomi period.

**Intended use:** Casual or serious shogi.

**Pros:** Byo-yomi beeps.

**Cons:** None.

V *SHOGI MODE IV*

(SHO - 4)

**Description:** This is like **CH - P1** except that the move counters count down. This mode could be used for go with a setting such as 00-1:00:00, 50 - 0:30:00, 25 - 0:15:00. That is, 100 moves must be made in an hour, then 30 minutes are added for the next 50, then 15 minutes are added for the next 25 etc. You could also set the second and third time-control move counters for 01 and have a mode just like **FD - 2** except that the move counter counts down.

**Intended use:** Serious chess, go, or shogi,

**Pros:** Number of moves left in the time-control is always displayed (unless the move counter is set for 01).

**Cons:** Seconds are not visible until the time goes under ten minutes, or the move counter is set for 01. (Note: Since the move counter does not change if it is set for 01, it is not displayed.)

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## Shuffle Chess Position Generator

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The clock includes a random position generator for shuffle chess.

### NUMBER OF DIFFERENT POSITIONS:

There are  $(8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2) / (2 \times 2 \times 2) = 5040$  different starting positions if the first row of pieces are randomly placed. This includes leftright reflections and positions with bishops on squares of the same color. There are  $(8 \times 4 \times 6 \times 5 \times 4 \times 3 \times 2) / (2 \times 2 \times 2) = 2880$  positions with the bishops on different colors. In either case exactly  $1/3$  of the positions (i.e.  $5040/3 = 1680$  or  $2880/3 = 960$ ) have the king placed between the rooks (a requirement in some versions of shuffle chess).

### RESTRICTED SHUFFLE:

If the shuffle is restricted to the left and right sides of the standard starting position (that is, the four pieces on the left must remain there and the same for the four on the right), then the number of total number of positions is  $(4 \times 3 \times 2 \times 4 \times 3 \times 2) = 576$  and the number of positions with bishops on different colors is  $(4 \times 3 \times 2 \times 2 \times 3 \times 2) = 288$ .

The purpose of the restricted shuffle is to reach positions in which the left and right sides always have one rook, knight, and bishop.

### HOW THE CLOCK DOES IT:

The clock has seven independent counters that cycle through all possible positions in less than  $1/100$  of a second. When you are in the shuffle chess mode and you press the red switch the timers are read and a position is generated. Since it is impossible to predict where the timers will be when you press the switch, the position is truly random.

### HOW TO GENERATE RANDOM POSITIONS WITH THE KING BETWEEN THE ROOKS:

Use the **SHCH - 1** or **SHCH - 2** shuffle chess modes to generate a random position or a random position with the bishops on different colors. If the king is between the rooks, you are done. If not, simply exchange the king with the nearest rook. All positions you get with this procedure are equally likely.

### WHY PLAY SHUFFLE CHESS?

Changing the starting position makes all opening books and computer opening databases obsolete. It tends to level the playing field whether you are playing a strong human or a computer. It seems humans can connect opening systems with middlegame plans in a way that computers are not yet powerful enough to do.

It should be noted that very small changes in the starting position can have the desired effect. For example, reversing the positions of the black king and queen would alter all opening theory. (And only two pieces are changed.) Or starting the game with pawns on QR3. (Again, only two pieces, or more precisely, pawns, are changed.) Or reversing the position of the bishops and knights. (This changes 8 pieces but keeps symmetry.) Perhaps just reversing white's QR and QN (but not black's) would alter opening theory and also reduce the advantage of the first move. In any event it would be impossible to rely on databases or memorized variations in these games. People and computers would be forced to play the openings more by general principles and less by memory.

**HOW TO GENERATE A RANDOM POSITION:**

Turn the clock on with both play switches pressed, then long press the red switch. You will see **Pitch, Sr - Nr** on the display. Long press the red switch again. You will see **SHCH - 1**, **SHCH - 2** on the displays. Press the left side (SHCH - 1) to generate all positions including positions with bishops on the same color, or the right side (SHCH - 2) to generate all positions with bishops on different colors. The initial display will show the pieces in the standard starting position. Short press the red switch to generate a random position. Long press the red switch to restrict the shuffle to the left and right sides separately. Short or long press the red switch repeatedly for more positions. Press either play switch to exit the mode.

You can use the randomly generated position for both sides, or, as in standard chess, do a left-right reflection for the black side.

**THE PROBABILITY OF ROOKS, KNIGHTS, OR BISHOPS ON CONSECUTIVE SQUARES:**

The probability of two rooks on consecutive squares when the pieces are completely shuffled (**SHCH - 1**), or shuffled with bishops on different colors (**SHCH - 2**), is exactly  $1/4$ . The same is true for the knights. The same is true for the bishops if **SHCH - 1** is used, but if the pieces are shuffled with **SHCH - 2** that is, with bishops on different colors, the probability of consecutive bishops goes up to  $7/16$ . These probabilities explain why consecutive rooks, and/or knights, and/or bishops occur so frequently in the randomly generated positions.

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## How to Change Batteries

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Replace the batteries when the lights are dim or the displays malfunction. You need a Phillips and a slotted screwdriver to change the batteries. Turn the clock off, place it on a table, and remove the four screws holding the top on using the Phillips screwdriver. Carefully remove the top piece. Remove shipping tape on the batteries, if present. With the slotted screwdriver carefully remove the batteries from the battery holder. Replace the batteries with three longlife alkaline AA batteries. As is marked on the battery holder, be sure to place the flat or negative side of the batteries towards the springs. Replace the top and replace the screws holding the top on.

The batteries will last approximately 900 continuous hours if the “playerto-move” lights are turned off. Turning the lights on increases the power consumption. If the lights are always on, the batteries will last approximately 600 hours. When the clock is off it is actually in a low power mode and not really off. Therefore, even if the clock is not used, the batteries will run down after a year and a half and should be replaced.

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## Care of the Clock

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The clock should be kept away from high temperatures since this will cause the displays to blacken. Do not leave the clock in direct sunlight for a long period of time. (Don't leave the clock in the back seat of a car on a hot day.) If the displays do become black from accidental exposure to heat or sunlight, place the clock in a cooler area and the displays will return to normal after ten or fifteen minutes. Unless the heat was very intense, the displays will not be damaged.

Avoid cold temperatures also, since this causes condensation inside the case. If condensation does occur, allow the clock to warm up and dry out before turning it on.

Use only a clean damp cloth to clean the clock. Do not use any solvents on the clock or the displays.

## **Limited Warranty**

DCI will repair or replace, without charge, any part of your clock which has a defect in material or workmanship during the first year after the date of purchase.

This warranty does not apply to conditions resulting from consumer damage, such as: misuse, abuse, accident, alteration, disassembly, or reverse installation of the batteries.

Without limiting the foregoing, damage from battery leakage, damage from dropping the clock, or damage to the LCD displays are presumed to have resulted from abuse or misuse.

No responsibility is assumed for any direct, incidental, or consequential damages resulting from the use, or inability to use, this product.

The consumer must keep a copy of his receipt, or of his canceled check, verifying the purchase date to validate this warranty.

For service under this warranty send to

DCI  
P.O. Box 390741  
Mountain View, CA  
94039

# Introduction to the Chronos Game Clock

- Q. Why should I bother reading this introductory document?
- A. Reference manuals have to be **complete**, but that often makes them hard to read. This document is intended to get you started, but it **isnot** complete. For a full explanation about anything discussed here, see the *User's Guide* - it is complete.
- Q. Why should anything as simple as a clock be so complicated? Why should it need a large manual?
- A. The clock has a lot of features, and that means complexity. It's unavoidable, but manageable. The alternative is to remove some features, but then some users would probably request them, and we would be back to where we started. Many features of the clock were in fact originally suggested by users.
- Q. OK so, how do I turn the clock on - I don't see any on/off switch?
- A. Press the center red button to turn the clock on (try it).
- Q. The clock is on. How do I turn it off?
- A. Press and hold the center red button, then press either black play switch 5 times (try it). This always works.
- Q. Is there another way to turn the clock off?
- A. No.
- Q. Is there more than one way to turn the clock on?
- A. Yes, four ways. Each way selects a different group of modes:
- Turn on with neither play switch pressed:  
This selects user modes 1 to 4.
  - Turn on with left play switch pressed:  
This selects user modes 5 to 8.
  - Turn on with right play switch pressed:  
This selects user modes 9 to 12.
  - Turn on with both play switches pressed:  
This selects all modes.
- Q. What are the "user modes" and why should I care about them?
- A. You can set up any of the 70+ modes, according to your preferences, save the settings, and retrieve them quickly. Because these settings are chosen by you, the user, they are called *user modes*. The user modes remain saved even if you turn the clock off. **You can quickly start any user mode with at most one or two button presses after you turn the clock on.** You may have up to 12 user modes - more than enough for most people.
- Q. Can I set up several user modes with one basic mode but with different times? That is, can I have user mode 1 be five-minute with a 5:00, 5:00 time setting, user mode 2 be five-minute with a 6:00, 4:00 time setting etc.?
- A. Yes.
- Q. Is there a mode compatible with the Internet Chess Server mode?

- A. Yes. Mode CH - P4. (Note: this mode is also the initial setting for User Mode 3, so you can try it out right away.)
- Q. What does CH - P4 mean?
- A. CH - P4 is the mode abbreviation for the mode in question.
- Q. What is a mode abbreviation?
- A. A short sequence of letters and numbers used to identify a mode. Except for the first 4 user modes, each mode is selected by its mode abbreviation.
- Q. Why are mode abbreviations used?
- A. The clock has 70+ modes - too many to remember by number. Short abbreviations makes remembering easier.
- Q. Are there really 70+ *different* modes?
- A. No. There are a smaller number of basic modes with variations on these consisting mostly of different numbers of time-controls or display formats.

**NOTE FOR THE FOLLOWING:** There are two ways to press the center red switch, long and short. **Long press** means to press the red switch for more than one second before releasing it (you will hear a double beep when you have pressed it long enough). **Short press** means to press and release the switch within one second (if you hear a double beep, you have pressed it too long).

- Q. How do I select a mode and get its starting time on the display?
- A. For user modes 1 to 4: Just turn the clock on selecting user modes 1 to 4, and then short press the red switch until the starting time for the mode you want appears on the display. **You are now ready to play.** It is difficult to remember more than a few modes by their starting times, so the other modes are selected using their *mode abbreviations*. When you turn the clock on in one of the other three ways you will see two mode abbreviations on the display (CH- F1, CH - F2 for example). Whenever mode abbreviations are on the display you have the following choices:
- 1) Press either the left or right play switch to bring up the starting time for the mode on that side of the display. **You are now ready to play.**
  - 2) Short press the red switch to move to the next pair of mode abbreviations.
  - 3) Long press the red switch to move to the previous pair (in case you went too far).

**For example:** Turn the clock on with both play switches pressed. You will see CH - F1, CH - F2 on the display, mode abbreviations for two five-minute chess modes. Short press the red switch repeatedly to cycle through all mode abbreviations (takes about 35+ presses - try it.) Long press the red switch to back up. (Try it.) Press a black play switch to bring up the starting time for a mode. (Try it.)

- Q. I've got the starting time for a mode on the display. How do I start the clock?
- A. Once the starting time is on the display, just press either black play switch.
- Q. The game is over, how do I stop the clock?
- A. Just press the red switch to immediately stop the clock.
- Q. I've stopped the clock. How do I reset the clock?

- A. By short pressing the red switch after you have stopped the clock. Some modes will reset on one press, others require four presses (to avoid accidentally resetting the clock).
- Q. I've reset the clock. What happens if I keep short pressing the red switch?
- A. After three presses, you will go back to displaying mode abbreviations.
- Q. How do I set up one of the 12 user modes?
- A. Briefly, once the starting time for the mode is on the display, long press the red switch to enter set mode. Digits will start to flash and you can change them with the left or right play switches. Short press the red switch to change to the next digit. After you have gone through all the digits, you will cycle through a set of options available for that mode. Press either the left or right switch to select, or deselect, an option. The last option you will come to will say **COPY TO 0** with the 0 flashing. Change the 0 to a number from 1 to 12. Long press the red switch and you are done. There are step-by-step examples in the *User's Guide*, and in the *tutorial*.
- Q. Some common questions about the modes: Are there any sudden-death modes? Are there any time-delay modes? Are there any sudden-death modes with time-delay? Can you have a time-delay in one time-control, but not in the next? Does the clock have modes compatible with the two FIDE modes, rapids and tournament? Are there modes with a move counter?
- A. Yes to all the above questions. The delay modes are called *andante*, *adagio*, or *delay*. See the *User's Guide* for details. Also look at the section **Starting times: All modes - all time-controls** in the *User's Guide*. It gives a bird's eye view of all the modes. From it you can probably guess which of the modes has a move counter, time-delay, how many time-controls, etc.
- Q. What are the CH - BY1, 2, 3, 4 chess byo-yomi modes all about?
- A. These modes are ideal for chess, whether blitz, sudden death, or serious tournament play. They incorporate a sort of "sudden death overtime" at the end of each time control that works as follows: when your time has run out (or almost run out) you are given a fixed time, say 10 seconds (the "byoyomi" time), for each remaining move of the game, or time control. If you exceed the extra time, of course, you lose on time, but in general the extra time is enough to let you assess the position and physically make your move without overstepping. Blitz players might use a byo-yomi time of 4 or 6 seconds, while serious tournament players might use 15 or 20 seconds. CH- BY1 is the initial setting for user mode 4. Try it out!
- Q. Could you explain what this term, "byo-yomi", means?
- A. Literally, "counting seconds". A referee counts the seconds at the end of a go game. If a move is made before he gets to zero, the player's "seconds counting" (i.e. "byo-yomi") time is reset (to 30 seconds, or 1 minute, for example). The player gets his "byo-yomi" time back.
- Q. What is the most popular go mode?
- A. For amateurs, Canadian byo-yomi, and for professionals, Japanese byo-yomi. There are four Canadian byo-yomi modes, and two Japanese byo-yomi modes.
- Q. What other go byo-yomi timing methods are available?

- A. ING byo-yomi, progressive byo-yomi, and andante byo-yomi.  
Note: The term byo-yomi in these modes has the meaning “type of second time control”, rather than “seconds counting”.  
Note: Andante byo-yomi is an ideal timing method for serious go. See the discussion in the *User’s Guide* for an explanation.
- Q. Can I make the clock beep during byo-yomi?  
A. Yes. There are several options. See the *User’s Guide*.
- Q. Can I make the clock beep at the end of a game or time control?  
A. These options are available for most modes, but may not be legal in some tournaments.
- Q. Can I change the volume of the beeper?  
A. Yes. Actually, you can change the pitch of the beeper, and that results in changing the volume also.
- Q. Is there any other feature of the clock I might find interesting?  
A. The clock includes a shuffle-chess position generator. See the *User’s Guide* for details.
- Q. Any other suggestions?  
A. Work through the tutorial and/or the examples in the User’s Guide. Also, look at the section **Starting Times: All modes - all time-controls**. It gives a bird’s eye view of the modes, and will help you locate the ones you may want to use.

# Chronos Game Clock Tutorial

Estimated time to complete tutorial: 20- 30 minutes.

What you will learn:

- how to turn the clock on and off,
- how to start, stop, and reset the clock,
- how to set up a user mode.

What you will not learn: detailed features of the 70+ modes. Look in the User's Guide *Discussion of the Modes* for that information.

⇒ **Statements in bold like this are *action items* for you to do.**

**Statements in bold and underlined like this describe your progress.**

*How do I turn the clock on?* The clock is turned on by pressing the center red switch. One of four different groups of modes is selected according to the following table.

Turn on with neither play switch pressed:

This selects user modes 1 to 4.

Turn on with left play switch pressed:

This selects user modes 5 to 8.

Turn on with right play switch pressed:

This selects user modes 9 to 12.

Turn on with both play switches pressed:

This selects all modes.

*How do I turn the clock off?* Press and hold the red switch while pressing either play switch five times.

⇒ **Press the red switch with neither play switch pressed. 5:00 appears on the displays, the starting time for user mode 1. Now press and hold the red switch while pressing either play switch five times to turn the clock off.**

**You now know how to turn the clock on and off.**

NOTE FOR THE FOLLOWING: There are two ways to press the center red switch, long and short. **Long press** means to press the red switch for more than one second before releasing it (you will hear a double beep when you have pressed it long enough). **Short press** means to press and release the switch within one second (if you hear a double beep, you have pressed it too long).

Short press the red switch to cycle through the starting times for user modes 1 to 4.

⇒ **Turn the clock on with neither play switch pressed. 5:00 appears on the display. Short press the red switch repeatedly to cycle through the starting times for user modes 1 to 4. Do this a few times and turn the clock off.**

**You now know how to get the starting times for user modes 1 to 4 on the display.**

*How do I start the clock?* When the starting time for a mode is on the display you are ready to play. Just press either play switch to start.

How do I stop the clock? Pressing the red switch immediately stops the clock.

How do I reset the clock? Short press the red switch. Some modes reset on one press, others require five presses (to avoid accidentally resetting the clock).

⇒ Turn the clock on with neither play switch pressed. 5:00 appears on the displays. Press either play switch to start the clock. Press the other play switch to start the other side. Press the red switch to stop the clock. Short press the red switch to reset the clock. Turn the clock off.

**You now know how to start, stop, and reset the clock when you have the starting time for a mode on the display.**

I now know how to get the starting times for user modes 1 to 4 on the display. How do I bring up the starting times for the other modes?

User modes 1 to 4 are selected and remembered by their starting times, but it is difficult to do this with all 70+ modes, so a system of *mode abbreviations* - a short sequence of letters and numbers - is used to remember and select the other modes. Mode abbreviations are shown in pairs, one on each display. Whenever mode abbreviations are on the displays you have the following choices:

- 1) Press either the left or right play switch to bring up the starting time for the mode on that side of the display. ***You are now ready to play.***
- 2) Short press the red switch to move to the next pair of mode abbreviations.
- 3) Long press the red switch to move to the previous pair (in case you went too far).

⇒ Turn the clock on with the left play switch pressed. You will see GO- J1, GO - C1 on the display. These are the mode abbreviations for user modes 5 and 6. Short press the red switch. AD- 1, GO - A1 appears on the display. These are the mode abbreviations for user modes 7 and 8. Press the left play switch. 2:00:00 appears, the starting time for user mode 7. Short press the red switch until the mode abbreviations reappear. Turn the clock off.

**You now know how to get the starting times for user modes 5 to 8 on the display.**

User modes 9 to 12 are accessed in the same way except you turn the clock on with the right play switch pressed.

**You now know how to access any user mode.**

The user modes can be quickly accessed with just one or two button presses after you turn the clock on. The pre-programmed factory selections for the user modes are suggestions only, and *it is assumed you will set up these modes (as described below) according to your preferences.*

How do I change the starting time for a mode? In this case an illustration is the best explanation. ⇒ Turn the clock on with neither play switch pressed. 5:00 appears on the display. Long press the red switch. The 5s will start to blink. Press the play switches until one side says 4, and the other side says 6. Short press the red switch to move to the digit. The 0s will blink. Press the play switches until the digits become 3s. Now short press the red switch two more times. The displays will show 1- BEEP, 1 - LED with the 1s blinking. Press the left and right play switches to deselect these

options. (BEEP is the beep-on-move option and LED is the light-shows-player-on-move option.) Short press the red switch. 0- BEEP AT END appears. This is the beep-at-end option. Change the 0 to 1 to select this option. Short press the red switch. 0- HALT AT END appears. This option stops *both clocks* if one side oversteps (so it is not possible for both sides to overstep). Leave the option unselected. Short press the red switch. COPY TO 1 appears. The "1" means user mode 1. You can change this to any number from 0 to 12. If 0 is selected, the changes are not saved. Change the number to 0 by repeatedly pressing the right play switch. Long press the red switch. The new starting times will appear on the display. Press either play switch. The LEDs will not light up and no beep will sound since these options were deselected. Beeps will sound if one side oversteps since the beep-at-end option was selected.

**If you have the starting time for any mode on the display, you now know how to change the times and options of that mode and save them as any user mode.** To summarize: Once the starting time of a mode is on the display, long press the red switch to start the "set clock function". Digits will start to flash and you can change them with the left or right play switches. Short press the red switch to change to the next digit. After you have gone through all the digits, you will cycle through a set of options available for that mode. Press either the left or right switch to select, or deselect, an option. The last option you will come to will say **COPY TO 0** with the 0 (or a number from 1 to 12) blinking. Change the 0 to a number from 1 to 12 to select the user mode for the new settings. Long press the red switch to stop the "set clock function" and you are done. The next time you turn the clock on and select the new user mode, your saved mode and settings will appear, replacing the previous settings for that user mode.

*I've read the Discussion of the Modes section in the User's Guide and I want to set up user mode 2 with the CH- A1 mode, which has one time control and a time delay feature. I want a starting time of 60:00 and a 3 second time delay. The beep-on-move feature should be off, but the LEDs and the beep-at-end feature should be on. How do I do this?*

⇒ Turn the clock on with both play switches pressed. This will access all 70+ modes of the clock. CH- F1, CH - F2 appears on the display first. Short press the red switch twice and you will see CH- A1, CH - A2 on the displays. Press the left play switch to get the starting times for the mode CH - A1 on the display. The displays will show 5- 90:00. Long press the red switch to start the "set clock function". Change the 5s to 3s and the 9s to 6s. Continue to short press the red switch to cycle through the options for this mode and change them so the beep-on-move feature is off, the LEDs are on, and the beep-at-end feature is on. The last option will say COPY to 0. Change the 0 to 2. If you now long press the red switch, the new mode and starting times with the options you've selected will be saved as user mode 2. If you don't want to save these settings, don't change the 0 to 2, and turn the clock off.

In general, do the following to set up a user mode with one of the 70+ available modes: Turn the clock on with both play switches pressed. Short press the

red switch until the mode abbreviation for the mode you want is on the display. If you accidentally go past the mode you want to select, you can long press the red switch to back up. When the mode abbreviation for the mode you want is on the display, press the appropriate play switch to get the starting times for that mode on the clock. You can now set new times and options for that mode as described above. Select a user mode from 1 to 12, for the last step, long press the red switch, and you are done.

There are additional step-by-step examples in the *User's Guide*.

**You now know how to select and set up any of the 70+ modes of the clock as any user mode with your choice of starting times and options.**

**You now know how to set up and operate the clock.**

Now read the section *Discussion of the Modes* in the *User's Guide* for information on the modes available, set up the user modes according to your preferences, and ***you are ready to play.***

## Additions to the *User's Guide*

Six progressive modes have been added: **PR - C1, PR - C2, PR - C1A, PR - C1B, PR - C2A, PR - C2B.**

**Intended use:** Sudden-death chess with progressive timing and 2 or 3 time-controls.

### **Description:**

These are progressive modes similar to **CH - P6** and **CH - P7**, but with the addition of move counters.

**PR - C1** has two time-controls. The move number is omitted in the second time control since you must play **all** of the rest of your moves before your time runs out. **PR - C1A** is similar, **except** for this feature: the display of a **running** clock will **always** show the time in **hours, minutes, and seconds** (instead of showing only hours and minutes when the time is greater than ten minutes). To make room for the full time, the move number is not shown on the running clock, although the move number on the opponent's clock, of course, is still shown. **PR - C1B** shows the move counter at all times, that is, in both time-controls. This could be used in tournaments with a rule such as "all games over 150 moves are a draw".

The **PR - C2, PR - C2A, and PR - C2B** modes are similar to the above but with three time-controls.

**Pros:** The move number is displayed.

**Cons:** In most chess tournaments claiming a win on time requires an accurate scoresheet regardless of the number of moves the clock shows, so seeing the number of moves made may not be useful.

## NEW FEATURE

### Save time-per-move option

This option saves the time spent on each move of a game to the nearest tenth of a second. Do you sometimes move too slowly in a game? This option gives you a profile of how you spent your time in a game so you can learn to avoid time trouble.

Selecting any user mode 9- 12 automatically turns on this option.

Two triangles (which disappear when the clock starts) appear at the left of the displays when the clock is in the reset position and the option is selected. Then the time for each move of a game will be saved until the clock is turned off or reset. The clock will keep the moves of one game only; if you begin a second game with this option, the first game's movetimes are lost. Resetting the clock automatically turns the option off to make it less likely that you will accidentally overwrite the saved times.

To see the saved move-times, turn the clock off, then turn it on with the following procedure:

- 1) Press down on the red switch
- 2) simultaneously press, then release, the two black play switches
- 3) release the red switch

(The easiest way to do this is to place the index finger of your right hand over the red switch and the ring finger over the right play switch. Place your left index finger over the left play switch. Now press the red switch, press and release the play switches, then release the red switch.)

The first display will say TOTAL , xxx, where xxx is the total number of movetimes saved. For example, a 20 move chess game would have 40 movetimes saved. Now press either black play switch repeatedly to see the time for each move. The movetime is on the right and the move number on the left .

Chess and go players number the moves of a game differently. Chess players number each side separately, so each side has moves numbered 1, 2, 3, etc. If this style is selected the display shows the move number preceded with an upper circle (for the first player), or a lower circle (for the second player). For example, the display might show:  $\overset{\circ}{0}$  1 (or  $\underset{\circ}{0}$  1), 1:03\_7. This means the first player (or second player) used 1:03\_7 for his first move.

Go players number both sides together, so the first player's move numbers are all odd (1, 3, 5,...) and the second player's even (2, 4, 6,...).

Long press the red switch to alternate between chess and go style move numbering.

The maximum time-per-move saved is 99:59\_9 and includes all time spent on the move, including any delay time. The time is, of course, rounded off, so a time of 1:03\_7 means between 1:03\_7 and 1:03\_8 were used for the move.

This option is easy to use, just copy the modes you use in tournaments to user modes 9 to 12; when you start one of them the option is automatically selected and you are ready to play.

(Note: Although you would normally use modes 9- 12 for this option, it can also be turned on from the reset position of any mode with the following procedure: Press the red switch, then simultaneously press and release the two black play switches, then release the red switch.)

## Additions to the *User's Guide*

Two ten-second modes have been added: **CH-TN1**, **CH-TN2**.

**Intended use:** Blitz chess.

**Description:**

You must move before ten seconds (or other preset time) has run out. In **CH-TN1**, you must press your clock before your time is out or the clock will beep and stop. In **CH-TN2** you should move before your time is out, but you do not need to press your clock because your opponent's clock will automatically reset and start when your time has run out to zero. By "gentlemen's agreement", a player loses if he doesn't *start* his move at the point when his time runs out and the clock beeps.

The clock can be set to make a warning beep at each second, starting at any preset time and continuing until the time goes to zero. The initial setting for this feature is 0:02 (i.e. warning beeps start at two seconds before the end).

The initial times may be set with different values as a way of giving odds.

**Pros:** A "fun" way to play fast chess (or go or shogi).

**Cons:** The optional warning beeps at each move may be too noisy for some quiet chess clubs.

The `beep_at_end` feature now has three options. **X** has the following meanings when you are in set mode and **X - BEEP AT END** is on the display.

- X = 0:** There is no beep when the clock runs out.
- X = 1:** There are beeps for a short time when the clock runs out.
- X = 2:** There are beeps for a long time when the clock runs out. This makes it hard to overlook the fact that somebody's clock has run down to zero.

A "visual beep" option for the LEDs is now available which keeps the battery power consumption down to essentially the same as LEDs always off. The option is most useful for blitz chess. **X** has the following meanings when you are in set mode and **X - SHORT LED** is on the display.

- X = 0:** The option is off.
- X = 1:** The option is on. The LED will go on for 1/4 second when a player presses the clock, making a kind of "visual beep".