

Operation Guide 4335 4348

CASIO®

Getting Acquainted

Congratulations upon your selection of this CASIO watch. To get the most out of your purchase, be sure to read this manual carefully.

Warning!

- The measurement functions built into this watch are not intended for use in taking measurements that require professional or industrial precision. Values produced by this watch should be considered as reasonably accurate representations only.
- The longitude, lunital interval, Moon phase indicator and tide graph data that appear on the display of this watch are not intended for navigation purposes. Always use proper instruments and resources to obtain data for navigation purposes.
- This watch is not an instrument for calculating low tide and high tide times. The tide graph of this watch is intended to provide a reasonable approximation of tidal movements only.
- CASIO COMPUTER CO., LTD. assumes no responsibility for any loss, or any claims by third parties that may arise through the use of this watch.

About This Manual



Module 4335

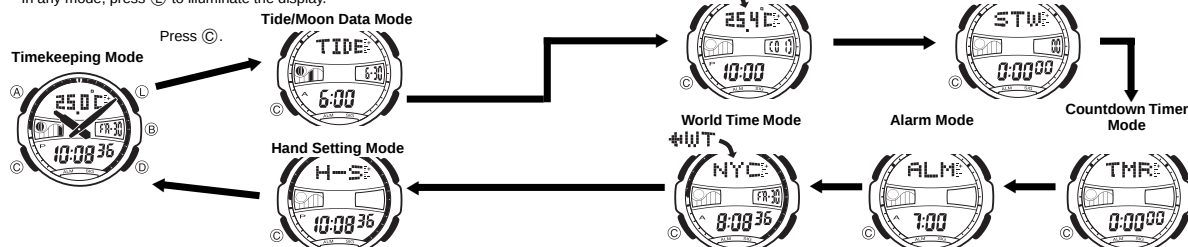


Module 4348

- Depending on the model of your watch, display text appears either as dark figures on a light background (Module 4335), or light figures on a dark background (Module 4348). All sample displays in this manual are shown using dark figures on a light background.
- Button operations are indicated using the letters shown in the illustration.
- For the sake of simplicity, the sample displays in this manual do not show the analog hands of the watch.
- Each section of this manual provides you with the information you need to perform operations in each mode. Further details and technical information can be found in the "Reference" section.

General Guide

- Press (C) to change from mode to mode.
- In any mode, press (L) to illuminate the display.

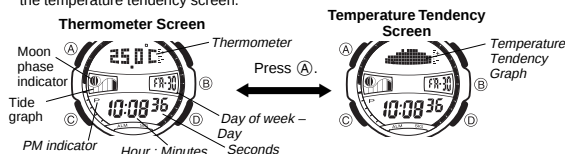


Timekeeping

Use the Timekeeping Mode to set and view the current time and date.

This watch features separate digital and analog timekeeping. The procedures for setting the digital time and analog time are different.

- In the Timekeeping Mode, press (A) to toggle between the thermometer screen and the temperature tendency screen.



- The tide graph shows tidal movements for the current date in accordance with the current time as kept in the Timekeeping Mode.
- The Moon phase indicator shows the current Moon phase in accordance with the current date as kept in the Timekeeping Mode.
- See "Thermometer" for details about the thermometer screen and temperature tendency graph.

Important!

- Be sure to configure the current time and date, and your Home Site data (data for the site where you use the watch) correctly before using the functions of this watch. See "Home Site Data" for more information.

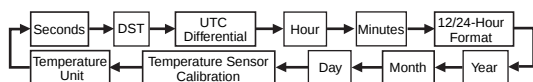
Setting the Digital Time and Date

This watch is preset with UTC differential values that represent each time zone around the globe. Before setting the digital time, be sure to first set the UTC differential for your Home Site, which is the location where you normally will be using the watch.

- Note that World Time mode times are all displayed based on the time and date settings you configure in the Timekeeping Mode.

To set the digital time and date

- In the Timekeeping Mode, hold down (A) until the seconds start to flash, which indicates the setting screen.
 - Be sure to configure the correct UTC differential for your Home Site before configuring any other Timekeeping Mode settings.
 - See the "UTC Differential/City Code List" for information about the UTC differential settings that are supported.
- Press (C) to move the flashing in the sequence shown below to select other settings.



- When the setting you want to change is flashing, use (D) and (B) to change it as described below.

Screen:	To do this:	Do this:
36	Reset the seconds to 00	Press (D).
07	Toggle between Daylight Saving Time (07) and Standard Time (0F)	Press (D).
+ 90	Specify the UTC differential	Use (D) (+) and (B) (-).
10:08	Change the hour or minutes	Use (D) (+) and (B) (-).
12H	Toggle between 12-hour (12H) and 24-hour (24H) timekeeping	Press (D).
6:30	Change the year	Use (D) (+) and (B) (-).
2006	Change the month or day	

- The UTC differential setting range is -12.0 to +14.0, in 0.5-hour units.
- For information about settings other than time and date, see the following.
Temperature Sensor Calibration: "Thermometer"
Temperature Unit: "Thermometer"

- Press (A) twice to exit the setting screen.
- The 12-hour/24-hour timekeeping format you select in the Timekeeping Mode is applied in all modes.
- The day of the week is displayed automatically in accordance with the date (year, month, and day) settings.
- When DST is turned on, the UTC differential setting range is -11.0 to +15.0, in 0.5-hour units.
- Any time the seconds setting is changed, the analog hands are adjusted accordingly.
- See "Daylight Saving Time (DST) Setting" below for details about the DST setting.

Daylight Saving Time (DST) Setting

Daylight Saving Time (summer time) advances the time setting by one hour from Standard Time. Remember that not all countries or even local areas use Daylight Saving Time.

To toggle the Timekeeping Mode digital time between DST and Standard Time

- In the Timekeeping Mode, hold down (A) until the seconds start to flash, which indicates the setting screen.
- Press (C) once and the DST setting screen appears.
- Press (D) to toggle between Daylight Saving Time (07 displayed) and Standard Time (0F displayed).
- Press (A) twice to exit the setting screen.
- The DST indicator appears on the Timekeeping, Tide/Moon Data, Alarm, and Hand Setting Mode screens to indicate that Daylight Saving Time is turned on. In the case of the Tide/Moon Data Mode, the DST indicator appears on the Tide Data screen only.

Home Site Data

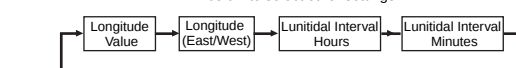
Moon phase, tide graph data, and Tide/Moon Data Mode data will not be displayed properly unless Home Site data (UTC differential, longitude and lunital interval) is configured correctly.

- The UTC differential indicates the time differential with Greenwich, England.
- The letters UTC is the abbreviation for Coordinated Universal Time, which is the world-wide scientific standard of timekeeping. It is based upon carefully maintained atomic (cesium) clocks that keep time accurately to within microseconds. Leap seconds are added or subtracted as necessary to keep UTC in sync with the Earth's rotation.

- The lunital interval is the time elapsing between the Moon's transit over a meridian and the next high tide at that meridian. See "Lunital Interval" for more information.
- This watch displays lunital intervals in terms of hours and minutes.
- The "Site/Lunital Interval Data List" provides UTC differential and longitude information around the world.
- The following is the initial factory default Home Site data (Tokyo, Japan) when you first purchase the watch and whenever you have the batteries replaced. Change these settings to match the area where you normally use the watch.
UTC differential (+9.0); Longitude (East 140 degrees); Lunital interval (5 hours, 20 minutes)

To configure Home Site data

1. In the Timekeeping Mode, hold down (A) until the seconds start to flash, which indicates the setting screen.
2. Press (C) once to display the UTC differential setting screen, and confirm that the setting is correct.
 - If the UTC differential setting is not correct, use (D) (+) and (B) (-) to change it.
3. Press (A) to display the longitude value setting screen.
4. Press (C) to move the flashing in the sequence shown below to select other settings.



5. While the setting you want to change is flashing, use (D) and (B) to change it as described below.

Setting	Screen	Button Operations
Longitude Value	LON	Use (D) (+) and (B) (-) to change the setting. • You can specify a value from 0° to 180°, in 1-degree units.
Longitude (East/West)	140°	Use (D) to switch between east longitude (E) and west longitude (W).
Lunital Interval Hours, Minutes	INT 5:20	Use (D) (+) and (B) (-) to change the setting.

6. Press (A) to exit the setting screen.

Setting the Analog Time

Perform the procedure below when the time indicated by the analog hands does not match the time of the digital display.

To adjust the analog time

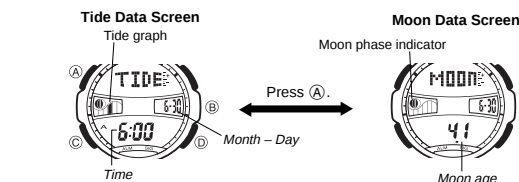
1. In the Timekeeping Mode, press (C) seven times to enter the Hand Setting Mode.
 2. Hold down (A) until the current digital time starts to flash, which indicates the setting screen.
 3. Use (D) to adjust the analog setting.
 - Press (D) once to advance the hands 20 seconds.
 - Hold down (D) to advance the hands at high speed.
- To lock high speed hands movement, hold down (D) to start it and then press (B) to lock. The hands will continue to advance for one 12-hour cycle or until you press any button to stop it.
It will also stop automatically after the time advances 12 hours or if an alarm (daily alarm, Hourly Time Signal, or countdown beeper) starts to sound.
4. Press (A) to exit the setting screen.
 - The minute hand will be adjusted slightly to match the seconds when you exit the setting screen.
 - To return to the Timekeeping Mode, press (C).

Tide/Moon Data

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- Tide/Moon data lets you view the Moon age and the Moon phase for a particular date, and tidal movements for a particular date and time for your Home Site.
- When you enter the Tide/Moon Data Mode, the data for 6:00 a.m. on the current date appears first.
 - If you suspect that the Tide/Moon data is not correct for some reason, check the Timekeeping Mode data (current time, date, and Home Site settings), and make changes as required.
 - See "Moon Phase Indicator" for information about the Moon phase indicator and "Tide Graph" for information about the tide graph.
 - All of the operations in this section are performed in the Tide/Moon Data Mode, which you enter by pressing (C).

Tide/Moon Data Screens

In the Tide/Moon Data Mode, press (A) to toggle between the Tide Data screen and the Moon Data screen.



- When you enter the Tide/Moon Data Mode, the data that appears first is the Moon data (Moon age and Moon phase indicator) for the current date as kept by the Timekeeping Mode.

To view the Moon data for a particular date

1. In the Tide/Moon Data Mode, press (A) to display the Moon Data screen.
2. Use (D) (+) and (B) (-) to display the date whose Moon Data you want to view.
 - You can select any date from 2000 to 2099.
 - You can also specify a date for tide data or Moon data. For details, see "To specify a date".

To view tide data for a particular time

1. In the Tide/Moon Data Mode, press (A) to display the Tide Data screen.
 - The initial screen shows the tide graph for 6:00 AM.
2. Use (D) (+) and (B) (-) to display the time whose Tide Data you want to view.

To specify a date

1. In the Tide/Moon Data Mode, hold down (A) until the year setting starts to flash, which indicates the setting screen.
2. Press (C) to move the flashing in the sequence shown below to select the other settings.

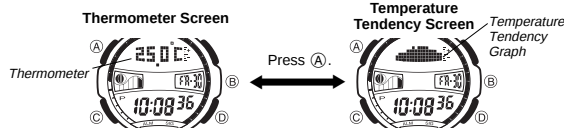


3. While a setting is flashing, use (D) (+) or (B) (-) to change it.
 - You can specify a date in the range of January 1, 2000 to December 31, 2099.
4. Press (A) to exit the setting screen.
5. Use (A) to display either the Tide Data screen or the Moon Data screen.

Thermometer

This watch uses a temperature sensor to measure temperature. A reading is taken during each even-numbered minute, and the result of the last reading is displayed on the thermometer screen.

The watch also takes separate readings and stores them in memory for display in the temperature tendency graph, which can be viewed in the Timekeeping Mode. Measured temperature values are stored in memory for later recall when you need them.



- You can select either Celsius (°C) or Fahrenheit (°F) units for the thermometer screen. See "To specify the temperature display unit" for more information.
- The thermometer screen displays temperature values in 0.1°C units (or 0.2°F units).
- The display range of the thermometer screen is -10.0°C to 60.0°C (or 14.0°F to 140.0°F).
- You can calibrate the temperature sensor if you feel that the displayed temperature values are not correct. See "Temperature Sensor Calibration" for more information.

Important!

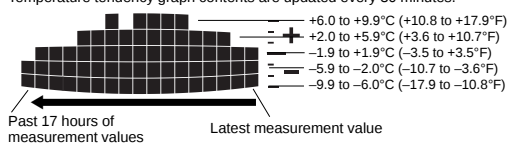
Temperature measurements are affected by your body temperature (while you are wearing the watch), direct sunlight, and moisture. To achieve a more accurate temperature measurement, remove the watch from your wrist, place it in a well ventilated location out of direct sunlight, and wipe all moisture from the case. It takes approximately 20 to 30 minutes for the case of the watch to reach the actual surrounding temperature.

Temperature Tendency Graph

The watch also takes temperature readings at the top and the bottom of each hour and stores the results in memory for display on the temperature tendency graph. Depending on the current Timekeeping Mode time, the temperature tendency graph shows either the top of the hour measurements or the bottom of the hour measurements for the past 17 hours.

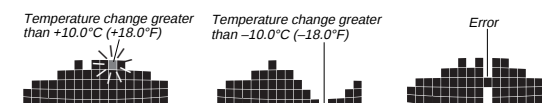
From the top of each hour to the 29th minute, past top of the hour readings are shown in the graph. From the bottom of each hour to the 59th minute, past bottom of the hour readings are shown in the graph.

Temperature tendency graph contents are updated every 30 minutes.



The horizontal axis of the graph represents time. The rightmost column is the newest temperature value in memory, while the leftmost column is the temperature value stored approximately 17 hours ago (1 dot = 1 hour). The vertical axis of the graph represents the relative change from one hour to the next.

- When the relative change from one hour to the next exceeds +10.0°C (+18.0°F), the dot at the highest point for the applicable hour flashes.
- When the relative change from one hour to the next exceeds -10.0°C (-18.0°F), there is no dot in the applicable hour's column.
- If a measurement error occurs for some reason, only a single the dot in the center column will be displayed.



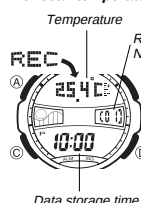
Recalling Temperature Data

The measurements the watch takes at the top and the bottom of each hour are stored in memory automatically. Memory can hold up to 50 measurement records. You can use the Temperature Data Recall Mode to recall memory data when you need it.

- Temperature data records are assigned numbers automatically starting from 01.
- When there are already 50 records in memory, storage of a new temperature reading causes the oldest record (record number 50) to be deleted automatically to make room for the new data. The new data is assigned record number 1, and all of the numbers of all the other records (01 to 49) are incremented by 1 (becoming 02 through 50).

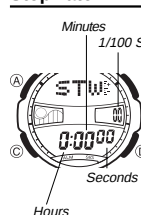
To recall temperature records

1. In the Timekeeping Mode, press **(C)** twice to enter the Temperature Data Recall Mode.
 - This displays the newest record currently in memory.
2. Use **(D)** (+) and **(B)** (-) to scroll through the records.
 - Pressing **(B)** while the oldest record is displayed will scroll to the newest record.
 - If a temperature measurement operation is performed while a record is displayed, the displayed record's number will be incremented by 1.
 - If an error occurs during temperature measurement, "E" will be shown for the temperature value in the corresponding record.



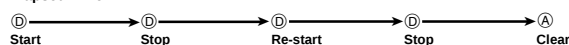
Stopwatch

- The stopwatch lets you measure elapsed time, split times, and two finishes.
- The display range of the stopwatch is 99 hours, 59 minutes, 59.99 seconds.
 - The stopwatch continues to run, restarting from zero after it reaches its limit, until you stop it.
 - All of the operations in this section are performed in the Stopwatch Mode, which you enter by pressing **(C)**.



To measure times with the stopwatch

Elapsed Time



Split Time



Two Finishes



Countdown Timer

- You can set the countdown timer within a range of one minute to 100 hours. An alarm sounds when the countdown reaches zero.
- You can also select auto-repeat, which automatically restarts the countdown from the original value you set whenever zero is reached.
 - All of the operations in this section are performed in the Countdown Timer Mode, which you enter by pressing **(C)**.



To use the countdown timer

- Press **(D)** while in the Countdown Timer Mode to start the countdown timer.
- When the end of the countdown is reached and auto-repeat is turned off, the alarm sounds for 10 seconds or until you stop it by pressing any button. The countdown time is automatically reset to its starting value after the alarm stops.
 - When auto-repeat is turned on, the countdown will restart automatically without pausing when it reaches zero. The alarm sounds to signal when the countdown reaches zero.
 - The countdown timer measurement operation continues even if you exit the Countdown Timer Mode.
 - To stop a countdown operation completely, first pause it (by pressing **(D)**), and then press **(A)**. This returns the countdown time to its starting value.

To configure countdown start time and auto-repeat settings

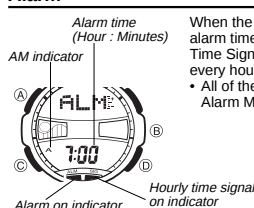
1. While the countdown start time is on the display in the Countdown Timer Mode, hold down **(A)** until the hour setting of the countdown start time starts to flash, which indicates the setting screen.
 - If the countdown start time is not displayed, use the procedure under "To use the countdown timer" to display it.
2. Press **(C)** to move the flashing in the sequence shown below, and select the setting you want to change.

Auto-repeat on indicator



3. Perform the following operations, depending on which setting is currently selected on the display.
 - While the start time setting is flashing, use **(D)** (+) and **(B)** (-) to change it.
 - Set **0:00** to specify 100 hours.
 - While the auto-repeat on/off setting (**ON** or **OFF**) is flashing on the display, press **(D)** to toggle auto-repeat on (**ON**) and off (**OFF**).
4. Press **(A)** to exit the setting screen.
 - The auto-repeat on indicator (**ALM**) is displayed on the Countdown Timer Mode screen while this function is turned on.
 - Frequent use of auto-repeat and the alarm can run down battery power.

Alarm



To set the alarm time



1. In the Alarm Mode, hold down **(A)** until the hour setting of the alarm time starts to flash, which indicates the setting screen.
 - This operation turns on the alarm automatically.
2. Press **(C)** to move the flashing between the hour and minute settings.
3. While a setting is flashing, use **(D)** (+) and **(B)** (-) to change it.

Alarm Operation

The alarm sounds at the preset time for 10 seconds, regardless of the mode the watch is in.

- To stop the alarm tone after it starts to sound, press any button.

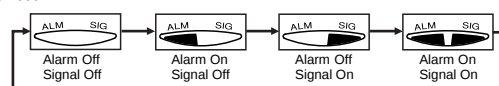
To test the alarm

In the Alarm Mode, hold down **(D)** to sound the alarm.

To turn the Daily alarm and the Hourly Time Signal on and off

In the Alarm Mode, press **(D)** to cycle through the settings shown below.

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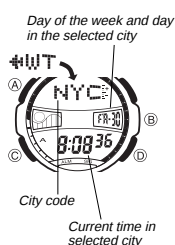


- The alarm on indicator and the Hourly Time Signal on indicator are shown on the display in all modes while these functions are turned on.

World Time

The World Time Mode digitally displays the current time in 50 cities (30 time zones) around the world.

- The times kept in the World Time Mode are synchronized with the time being kept in the Timekeeping Mode. If you feel that there is an error in any World Time Mode time, check the UTC differential of your Home Site Data (Home City) and the current setting of the Timekeeping Mode time.
- Select a city code in the World Time Mode to display the current time in any particular time zone around the globe. See the "UTC Differential/City Code List" for information about the UTC differential settings that are supported.
- All of the operations in this section are performed in the World Time Mode, which you enter by pressing **(C)**.



To view the time in another city

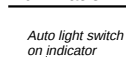
While in the World Time Mode, press **(D)** to scroll eastward through the city codes (time zones) or **(B)** to scroll westward.

To toggle a city code time between Standard Time and Daylight Saving Time

1. In the World Time Mode, use **(D)** and **(B)** to display the city code (time zone) whose Standard Time/Daylight Saving Time setting you want to change.
 2. Hold down **(A)** to toggle between Daylight Saving Time (DST indicator displayed) and Standard Time (DST indicator not displayed).
- The DST indicator is shown on the World Time screen while Daylight Saving Time is turned on.
 - Note that changing the Daylight Saving Time for any city code causes the setting to be applied to all city codes.



Illumination



This watch has an EL (electro-luminescent) panel that causes the entire display to glow for easy reading in the dark. The watch's auto light switch turns on illumination automatically when you angle the watch towards your face.

- The auto light switch must be turned on (indicated by the auto light switch on indicator) for it to operate.
- See "Illumination Precautions" for other important information about using illumination.

To turn on illumination manually

- In any mode, press **(L)** to illuminate the display for about 1.5 seconds.
- The above operation turns on illumination regardless of the current auto light switch setting.

About the Auto Light Switch

Turning on the auto light switch causes illumination to turn on, whenever you position your wrist as described below in any mode, except for the Hand Setting Mode setting screen.

Moving the watch to a position that is parallel to the ground and then tilting it towards you more than 40 degrees causes illumination to turn on.

- Wear the watch on the outside of your wrist.



Warning!

- Always make sure you are in a safe place whenever you are reading the display of the watch using the auto light switch. Be especially careful when running or engaged in any other activity that can result in accident or injury. Also take care that sudden illumination by the auto light switch does not startle or distract others around you.
- When you are wearing the watch, make sure that its auto light switch is turned off before riding on a bicycle or operating a motorcycle or any other motor vehicle. Sudden and unintended operation of the auto light switch can create a distraction, which can result in a traffic accident and serious personal injury.

To turn the auto light switch on and off

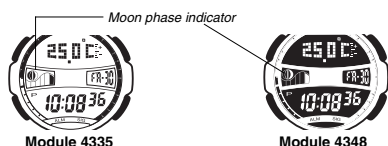
- In the Timekeeping Mode, hold down **(D)** for about three seconds to toggle the auto light switch on (☀️ displayed) and off (☀️ not displayed).
- The auto light switch on indicator (☀️) is on the display in all modes while the auto light switch is turned on.
 - In order to protect against running down the battery, the auto light switch will turn off automatically approximately six hours after you turn it on. Repeat the above procedure to turn the auto light switch back on if you want.

Reference

This section contains more detailed and technical information about watch operation. It also contains important precautions and notes about the various features and functions of this watch.

Moon Phase Indicator

The Moon phase indicator of this watch indicates the current phase of the Moon as shown below.



		Moon phase indicator									
Moon Phase Indicator	Module 4335										
	Module 4348										
		(part you cannot see)									
		Moon phase (part you can see)									
		Moon Age									
		0.0 - 1.8 27.7 - 29.5	1.9 - 5.5	5.2 - 9.2	9.3 - 12.9	13.0 - 16.6	16.7 - 20.2	20.3 - 23.9	24.0 - 27.6		
		Moon Phase									
		New Moon		First Quarter (Waxing)		Full Moon		Last Quarter (Waning)			

- The Moon phase indicator shows the Moon as viewed at noon from a position in the Northern Hemisphere looking south. Note that at times the image shown by the Moon phase indicator may differ from that of the actual Moon in your area.
- The left-right orientation of the Moon phase is reversed when viewing from the Southern Hemisphere or from a point near the equator.

Moon Phases and Moon Age

The Moon goes through a regular 29.53-day cycle. During each cycle, the Moon appears to wax and wane as the relative positioning of the Earth, Moon, and Sun changes. The greater the angular distance between the Moon and the Sun, the more we see illuminated.

* The angle to the Moon in relation to the direction at which the Sun is visible from the Earth.

This watch performs a rough calculation of the current Moon age starting from day 0 of the moon age cycle. Since this watch performs calculations using integer values only (no fractions), the margin for error of the displayed Moon age is ± 1 day.

Tide Graph

The wave on the watch's tide graph indicates the current tide.



Tidal Movements

Tides are the periodic rise and fall of the water of oceans, seas, bays, and other bodies of water caused mainly by the gravitational interactions between the Earth, Moon and Sun. Tides rise and fall about every six hours. The tide graph of this watch indicates tidal movement based on the Moon's transit over a meridian and the lunital interval. The lunital interval differs according to your current location, so you must specify a lunital interval in order to obtain the correct tide graph readings.

The tide graph displayed by this watch is based on the current Moon age. Remember that the margin for error of the Moon age displayed by this watch is ± 1 day. The greater the error in a particular Moon age, the greater the error in the resulting tide graph.

Lunital Interval

Theoretically, high tide is at the Moon's transit over the meridian and low tide is about six hours later. Actual high tide occurs somewhat later, due to factors such as viscosity, friction, and underwater topography. Both the time differential between the Moon's transit over the meridian until high tide and the time differential between the Moon's transit over the meridian until low tide are known as the "lunital interval." When setting the lunital interval for this watch, use the time differential between the Moon's transit over the meridian until high tide.

Thermometer

Temperature Sensor Calibration

The temperature sensor built into the watch is calibrated at the factory and normally requires no further adjustment. If you notice serious errors in the temperature readings produced by the watch, you can calibrate the sensor to correct the errors.

Important!

Incorrectly calibrating the temperature sensor can result in incorrect readings. Carefully read the following before doing anything.

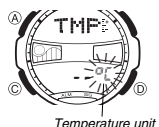
- Compare the readings produced by the watch with those of another reliable and accurate thermometer.
- If adjustment is required, remove the watch from your wrist and wait for 20 or 30 minutes to give the temperature of the watch time to stabilize.

To calibrate the temperature sensor



- In the Timekeeping Mode, hold down **(A)** until the seconds start to flash, which indicates the setting screen.
 - Press **(C)** nine times to display the temperature sensor calibration screen.
 - Use **(D)** (+) and **(B)** (-) to change the calibration value.
 - You can change the value in 0.1°C (0.2°F) steps, in a range of $\pm 10^\circ\text{C}$ ($\pm 18^\circ\text{F}$). The calibration value shows "--" when the setting is outside the allowable range.
 - To return the calibration value to its default (no calibration, indicated by "- -"), press **(D)** and **(B)** at the same time.
 - Temperature sensor calibration will not be possible if the current reading is outside the allowable display range ($-10.0^\circ\text{C}/14.0^\circ\text{F}$ to $60.0^\circ\text{C}/140.0^\circ\text{F}$) and the calibration value shows "- -".
 - Setting a sensor calibration value does not affect temperature values that are already stored in memory.
4. After configuring the setting you want, press **(A)** twice to exit the setting screen.

To specify the temperature display unit



- In the Timekeeping Mode, hold down **(A)** until the seconds start to flash, which indicates the setting screen.
 - Press **(C)** 10 times to display the temperature unit setting screen.
 - Use **(D)** to switch between Celsius (°C) and Fahrenheit (°F).
 - The initial factory default and the initial default after battery replacement is Celsius (°C).
4. After configuring the setting you want, press **(A)** twice to exit the setting screen.
- The temperature display unit setting you select is also applied to temperature values that are already stored in memory.

Auto Return Feature

- If you leave a screen with flashing digits on the display without performing any operation for two or three minutes, the watch saves any settings you have made up to that point and exits the setting screen automatically.
- The watch will change to the Timekeeping Mode automatically if you do not perform any operation in the Tide/Moon Data Mode, Temperature Data Recall Mode, Alarm Mode, or Hand Setting Mode for two or three minutes.

Button Operation Tone

- In any mode (except when a setting screen is on the display), hold down **(C)** for about three seconds to toggle the button operation tone on and off. The button operation tone off indicator (X) is displayed while the tone is turned off.
- Even if the button operation tone is turned off, the daily alarm and countdown timer alarm continue to sound when required.

Data and Setting Scrolling

The **(B)** and **(D)** buttons are used in various modes and setting screens to scroll through data on the display. In most cases, holding down these buttons during a scroll operation scrolls through the data at high speed.

Timekeeping

- Resetting the seconds to **00** while the current count is in the range of 30 to 59 causes the minutes to be increased by 1. In the range of 00 to 29, the seconds are reset to **00** without changing the minutes.
- With the 12-hour format, the **P** (PM) indicator appears for times in the range of noon to 11:59 p.m. and the **A** (AM) indicator appears for times in the range of midnight to 11:59 a.m.
- With the 24-hour format, times are displayed in the range of 0:00 to 23:59, without any indicator.
- The year can be set in the range of 2000 to 2099.
- The watch's built-in full automatic calendar makes allowances for different month lengths and leap years. Once you set the date, there should be no reason to change it except after you have the watch's batteries replaced.

World Time

- The seconds count of the World Time is synchronized with the seconds count of the Timekeeping Mode.
- All World Time Mode times are calculated from the current time in the Timekeeping Mode using UTC time differential values.
- The UTC differential is a value that indicates the time difference between a reference point in Greenwich, England and the time zone where a city is located.
- The letters UTC is the abbreviation for Coordinated Universal Time, which is the world-wide scientific standard of timekeeping. It is based upon carefully maintained atomic (cesium) clocks that keep time accurately to within microseconds. Leap seconds are added or subtracted as necessary to keep UTC in sync with the Earth's rotation.

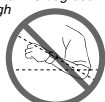
Illumination Precautions

- The electro-luminescent panel that provides illumination loses power after very long use.
- Illumination may be hard to see when viewed under direct sunlight.
- The watch may emit an audible sound whenever the display is illuminated. This is due to vibration of the EL panel used for illumination, and does not indicate malfunction.
- Illumination turns off automatically whenever an alarm sounds.
- Frequent use of illumination runs down the batteries.

Auto light switch precautions

- Avoid wearing the watch on the inside of your wrist. Doing so causes the auto light switch to operate when it is not needed, which shortens battery life. If you want to wear the watch on the inside of your wrist, turn off the auto light switch feature.

More than 15 degrees
too high



- Illumination may not turn on if the face of the watch is more than 15 degrees above or below parallel. Make sure that the back of your hand is parallel to the ground.
- Illumination turns off in about one second, even if you keep the watch pointed towards your face.

- Static electricity or magnetic force can interfere with proper operation of the auto light switch. If illumination does not turn on, try moving the watch back to the starting position (parallel with the ground) and then tilt it back toward you again. If this does not work, drop your arm all the way down so it hangs at your side, and then bring it back up again.
- Under certain conditions, illumination may not turn on until about one second after you turn the face of the watch towards you. This does not necessarily indicate malfunction of the auto light switch.
- You may notice a very faint clicking sound coming from the watch when it is shaken back and forth. This sound is caused by mechanical operation of the auto light switch, and does not indicate a problem with the watch.

UTC Differential/City Code List

City Code	City	UTC Differential	Other major cities in same time zone
PPG	Pago Pago	-11.0	
HNL	Honolulu	-10.0	Papeete
ANC	Anchorage	-09.0	Nome
YVR	Vancouver		
SFO	San Francisco	-08.0	Las Vegas, Seattle/Tacoma, Dawson City
LAX	Los Angeles		
DEN	Denver	-07.0	Edmonton, El Paso
MEX	Mexico City	-06.0	Houston, Dallas/Fort Worth, New Orleans, Winnipeg
CHI	Chicago		
MIA	Miami	-05.0	Montreal, Detroit, Boston, Panama City, Havana, Lima, Bogota
NYC	New York		
CCS	Caracas	-04.0	La Paz, Santiago, Port Of Spain
YYT	St. Johns	-03.5	
RIO	Rio De Janeiro	-03.0	Sao Paulo, Buenos Aires, Brasilia, Montevideo
RAI	Praia	-01.0	
LIS	Lisbon	+00.0	Dublin, Casablanca, Dakar, Abidjan
LON	London		
BCN	Barcelona		
PAR	Paris	+01.0	Amsterdam, Algiers, Hamburg, Frankfurt, Vienna, Madrid, Stockholm
MIL	Milan		
ROM	Rome		
BER	Berlin		
ATH	Athens		
JNB	Johannesburg	+02.0	Helsinki, Beirut, Damascus, Cape Town
IST	Istanbul		
CAI	Cairo		
JRS	Jerusalem		
MOW	Moscow	+03.0	Kuwait, Riyadh, Aden, Addis Ababa, Nairobi
JED	Jeddah	+03.5	Shiraz
THR	Tehran	+04.0	Abu Dhabi, Muscat
DXB	Dubai	+04.5	
KBL	Kabul	+05.0	
KHI	Karachi		
MLE	Male	+05.5	Mumbai, Kolkata
DEL	Delhi	+06.0	Colombo
DAC	Dhaka	+06.5	
RGN	Yangon	+07.0	Phnom Penh, Hanoi, Vientiane
BKK	Bangkok		
JKT*	Jakarta		
SIN*	Singapore		
HKG	Hong Kong	+08.0	Kuala Lumpur, Taipei, Manila, Perth, Ulaanbaatar
BJS	Beijing		
SEL	Seoul	+09.0	Pyongyang
TYO	Tokyo	+09.5	Darwin
ADL	Adelaide	+10.0	Melbourne, Rabaul
GUM	Guam	+11.0	Port Vila
SYD	Sydney	+12.0	Christchurch, Nadi, Nauru Island
NOU	Noumea	+13.0	
WLG	Wellington		
TBU	Nuku'Alofa		

* Based on data as of June 2005.

* The sequence of these city codes is SIN → JKT.

Site/Lunital Interval Data List

Site	UTC Differential		Longitude	Lunital Interval
	Standard Time	DST/Summer Time		
Anchorage	-9.0	-8.0	149°W	5:40
Bahamas	-5.0	-4.0	77°W	7:30
Baja, California	-7.0	-6.0	110°W	8:40
Bangkok	+7.0	+8.0	101°E	4:40
Boston	-5.0	-4.0	71°W	11:20
Buenos Aires	-3.0	-2.0	58°W	6:00
Casablanca	+0.0	+1.0	8°W	1:30
Christmas Island	+14.0	+15.0	158°W	4:00
Dakar	+0.0	+1.0	17°W	7:40
Gold Coast	+10.0	+11.0	154°E	8:30
Great Barrier Reef, Cairns	+10.0	+11.0	146°E	9:40
Guam	+10.0	+11.0	145°E	7:40
Hamburg	+1.0	+2.0	10°E	4:50
Hong Kong	+8.0	+9.0	114°E	9:10
Honolulu	-10.0	-9.0	158°W	3:40
Jakarta	+7.0	+8.0	107°E	0:00
Jeddah	+3.0	+4.0	39°E	6:30
Karachi	+5.0	+6.0	67°E	10:10
Kona, Hawaii	-10.0	-9.0	156°W	4:00
Lima	-5.0	-4.0	77°W	5:20
Lisbon	+0.0	+1.0	9°W	2:00
London	+0.0	+1.0	0°E	1:10
Los Angeles	-8.0	-7.0	118°W	9:20
Maldives	+5.0	+6.0	74°E	0:10
Manila	+8.0	+9.0	121°E	10:30
Mauritius	+4.0	+5.0	57°E	0:50
Melbourne	+10.0	+11.0	145°E	2:10
Miami	-5.0	-4.0	80°W	7:30
Noumea	+11.0	+12.0	166°E	8:30
Pago Pago	-11.0	-10.0	171°W	6:40
Palau	+9.0	+10.0	135°E	7:30
Panama City	-5.0	-4.0	80°W	3:00
Papeete	-10.0	-9.0	150°W	0:10
Rio De Janeiro	-3.0	-2.0	43°W	3:10
Seattle	-8.0	-7.0	122°W	4:20
Shanghai	+8.0	+9.0	121°E	1:20
Singapore	+8.0	+9.0	104°E	10:20
Sydney	+10.0	+11.0	151°E	8:40
Tokyo	+9.0	+10.0	140°E	5:20
Vancouver	-8.0	-7.0	123°W	5:10
Wellington	+12.0	+13.0	175°E	4:50

* Based on data as of 2003.