

Operation Guide 5371

CASIO®

ENGLISH

Congratulations upon your selection of this CASIO watch.

Applications

The built-in sensors of this watch measure direction, barometric pressure, temperature and altitude. Measured values are then shown on the display. Such features make this watch useful when hiking, mountain climbing, or when engaging in other such outdoor activities.

Warning !

- The measurement functions built into this watch are not intended for taking measurements that require professional or industrial precision. Values produced by this watch should be considered as reasonable representations only.
- When engaging in mountain climbing or other activities in which losing your way can create a dangerous or life-threatening situation, always use a second compass to confirm direction readings.
- Note that CASIO COMPUTER CO., LTD. assumes no responsibility for any damage or loss suffered by you or any third party arising through the use of this product or its malfunction.

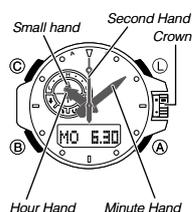
E-1

Important!

- The watch's Altimeter Mode calculates and displays relative altitude based on barometric pressure readings produced by its pressure sensor. This means that readings taken at different times at the same location may produce different altitude values due to changes in barometric pressure. Also note that the value displayed by the watch may be different from the actual elevation and/or sea level elevation indicated for the area where you are located.
- When using the altimeter of this watch for mountain climbing or other activities, it is highly recommended that you check a map, local altitude indications, or some other source for your current correct altitude and regularly calibrate the altimeter with the latest information. For more information, see "To specify a reference altitude value" (page E-66).
- Whenever you use the digital compass of this watch for serious trekking, mountain climbing, or other activities, be sure always to take along another compass to confirm readings. If the readings produced by the digital compass of this watch are different from those of the other compass, perform bidirectional calibration of the digital compass to ensure more accurate readings.
- Direction readings and digital compass calibration will not be possible if the watch is in the vicinity of a permanent magnet (magnetic accessory, etc.), metal objects, high-voltage wires, aerial wires, or electrical household appliances (TV, computer, cellphone, etc.)

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About This Manual



- Depending on the model of your watch, digital display text appears either as dark figures on a light background, or light figures on a dark background. All examples in this manual are shown using dark figures on a light background.
- Button operations are indicated using the letters shown in the illustration.
- Note that the product illustrations in this manual are intended for reference only, and so the actual product may appear somewhat different than depicted by an illustration.

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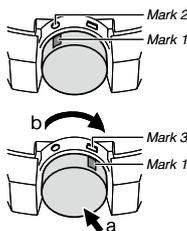
Using the Crown

This watch has a lock-type crown.

Important!

- You should keep the crown locked during normal daily use. Leaving the crown unlocked creates the risk of unintended operations or even damage due to impact.

To lock the crown



1. Push the crown back (see "To pull out, rotate, or push the crown in" below).
 - Note that attempting to lock the crown when it is not pushed in can cause unexpected watch operation.
2. Rotate the crown so Mark 1 is aligned with Mark 2.
3. While pushing in on the crown (a), rotate it to the right (b) until it stops, and align Mark 1 with Mark 3.
4. Gently pull on the crown to make sure it is securely locked and does not come out.

To unlock the crown

Rotate the crown so Mark 1 aligns with Mark 2.

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To pull out, rotate, or push the crown in

Important!

- Before performing any of these operations, first unlock the crown.

The illustrations below show the different crown operations.

Pull out	Rotate	Push in

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High-speed Movement

You can use either of the crown operations described below to move watch hands or indicators at high speed.

HS1: Can be used to move both hands and display indicators.

HS2: Can be used when setting the hour and minute manually to move the hands at high speed.

To start HS1 high-speed movement



While the crown is pulled out, rotate it rapidly three turns away from you (for forward movement) or towards you (for reverse movement). High-speed movement will continue even if you release the crown.

To start HS2 high-speed movement



While HS1 high-speed movement is in progress, again rotate the crown rapidly three turns in the same direction as the current HS1 movement (away from you for forward movement or towards you for reverse movement).

To stop high-speed movement



Rotate the crown in the direction that is opposite that of the current high-speed movement or press any button.

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Note

- If you do not perform any operation for more than two minutes after pulling out the crown, the indicator shown below will appear and crown operations will become disabled. If this happens, push the crown back in and then pull it out again to re-enable crown operations.
- Even if the indicator shown below appears immediately after you pull out the crown, crown operations are disabled. If this happens, push the crown back in and lock it.



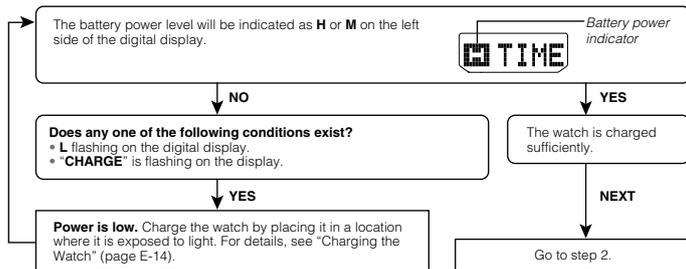
- You can use high-speed movement in the following cases: when changing the time and/or date setting in the Timekeeping Mode, Countdown Timer Mode, or Alarm Mode, or when performing magnetic declination angle calibration, altitude calibration, barometric pressure calibration, or temperature calibration operations.

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Things to check before using the watch

1. Check the battery power level.

In any mode, hold down **(B)** for at least two seconds. The battery power indicator will appear on the digital display, and then the watch will enter the Timekeeping Mode.



- When L is flashing, the second hand will jump at two-second intervals.
- When CHARGE is flashing, all hands will move to and stop at 12 o'clock.

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2. Check the Home City and the daylight saving time (DST) setting.

Use the procedure under "To configure Home City and summer time settings" (page E-34) to configure your Home City and daylight saving time settings.

Important!

- Proper time calibration signal reception, and World Time Mode data depend on correct Home City, time, and date settings in the Timekeeping Mode. Make sure you configure these settings correctly.

3. Set the current time.

- To set the time using a time calibration signal
See "To get ready for a receive operation" (page E-22).
- To set the time manually
See "Configuring Current Time and Date Settings Manually" (page E-36).

The watch is now ready for use.

- For details about the watch's radio controlled timekeeping feature, see "Radio Controlled Atomic Timekeeping" (page E-20).

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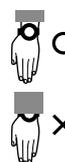
Charging the Watch

The face of the watch is a solar panel that generates power from light. The generated power charges a built-in rechargeable battery, which powers watch operations. The watch charges whenever it is exposed to light.

Charging Guide

Whenever you are not wearing the watch, leave it in a location where it is exposed to light.

- Best charging performance is achieved by exposing the watch to the strongest light available.



When wearing the watch, make sure that its face is not blocked from light by the sleeve of your clothing.

- The watch may enter a sleep state (page E-19) if its face is blocked by your sleeve even only partially.

Warning!

Leaving the watch in bright light for charging can cause it to become quite hot. Take care when handling the watch to avoid burn injury. The watch can become particularly hot when exposed to the following conditions for long periods.

- On the dashboard of a car parked in direct sunlight
- Too close to an incandescent lamp
- Under direct sunlight

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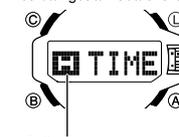
Important!

- Allowing the watch to become very hot can cause its liquid crystal display to go blank (totally black or totally white, depending on the watch model). The appearance of the LCD should become normal again when the watch returns to a lower temperature.
- Turn on the watch's Power Saving function (page E-19) and keep it in an area normally exposed to bright light when storing it for long periods. This helps to ensure that power does not run down.
- Storing the watch for long periods in an area where there is no light or wearing it in such a way that it is blocked from exposure to light can cause power to run down. Expose the watch to bright light whenever possible.

Power Levels

In any mode, hold down **(B)** for at least two seconds. The battery power indicator will appear on the digital display, and then the watch will enter the Timekeeping Mode.

You can get an idea of the watch's power level by observing the battery power indicator on the display.



Level	Battery Power Indicator	Function Status
1 (H)		All functions enabled.
2 (M)		All functions enabled.

Battery power indicator

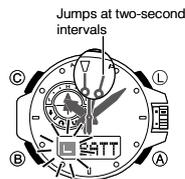
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Level	Battery Power Indicator	Function Status
3 (L)		Functions below are disabled. • Auto and manual receive • Sensor operation • Moon age • Tide Graph, barometric pressure change indicator When the above functions are disabled, the small hand stays at 9 o'clock. • Illumination • Beeper Second hand jumps every two seconds.
4 (CHARGE)		All hands stopped at 12 o'clock. All functions disabled.
5	---	All hands stopped at 12 o'clock. All functions disabled and settings return to their initial factory defaults.

- The flashing **L** indicator at Level 3 (**L**) tells you that battery power is very low, and that exposure to bright light for charging is required as soon as possible.
- Once the battery reaches Level 2 (**M**) after falling to Level 5, reconfigure the current time, date, and other settings.
- Display indicators reappear as soon as the battery is charged from Level 5 to Level 2 (**M**).

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- Leaving the watch exposed to direct sunlight or some other very strong light source can cause the battery power indicator to show a reading temporarily that is higher than the actual battery level. The correct battery level should be indicated after a few minutes.
- The current time and all other settings return to their initial factory defaults whenever battery power drops to Level 5 and when you have the battery replaced.
A dark environment while battery power is at Level 4 will cause the level to drop to Level 5. Expose the watch to bright light whenever possible.



Low battery alert

When battery power reaches Level 3, the second hand of the watch will jump at 2-second intervals in the Timekeeping Mode to let you know that charging is required.

Power Recovery Mode

- Performing multiple sensor, illumination, or beeper operations during a short period may cause the recovery indicator (**RECOVER**) to start flashing on the display. This indicates that the watch is in the power recovery mode. Illumination, alarm, countdown timer alarm, hourly time signal, and sensor operations will be disabled until battery power recovers.
- Battery power will recover in about 15 minutes. At this time, the recovery indicator (**RECOVER**) will stop flashing. This indicates that the functions listed above are enabled again.

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- Frequent flashing of the recovery indicator (**RECOVER**) indicates that battery power is low. Expose the watch to bright light as soon as possible.
- Even if battery power is at Level 1 (**H**) or Level 2 (**M**), the Digital Compass Mode, Barometer Mode, Thermometer Mode or Altimeter Mode sensor may be disabled if there is not enough power available to power it sufficiently. This is indicated when the recovery indicator (**RECOVER**) are flashing.
- Frequent flashing of the recovery indicator (**RECOVER**) probably means that remaining battery power is low. Leave the watch in bright light to allow it to charge.

Charging Times

Exposure Level (Brightness)	Daily Operation ^{*1}	Level Change ^{*2}				
		Level 5	Level 4	Level 3	Level 2	Level 1
Outdoor sunlight (50,000 lux)	8 min.		3 hours	22 hours	6 hours	
Sunlight through a window (10,000 lux)	30 min.		7 hours	82 hours	22 hours	
Daylight through a window on a cloudy day (5,000 lux)	48 min.		10 hours	133 hours	36 hours	
Indoor fluorescent lighting (500 lux)	8 hours		118 hours	---	---	

^{*1} Approximate amount of exposure time required each day to generate enough power for normal daily operation.

^{*2} Approximate amount of exposure time (in hours) required to take power from one level to the next.

- The above exposure times all are for reference only. Actual exposure times depend on lighting conditions.
- For details about the operating time and daily operating conditions, see the "Power Supply" section of the Specifications (page E-111).

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Power Saving

When turned on, Power Saving enters a sleep state automatically whenever the watch is left for a certain period in an area where it is dark. The table below shows how watch functions are affected by Power Saving.

- For information about enabling and disabling power saving, see "To turn Power Saving on or off" (page E-99).
- There actually are two sleep state levels: "display sleep" and "function sleep".

Elapsed Time in Dark	Hands and Display	Operation
60 to 70 minutes (display sleep)	Blank display, second hand stopped.	Except for display and second hand, all functions enabled.
6 or 7 days (function sleep)	Blank display, all hands stopped at 12 o'clock.	Except for timekeeping, all functions disabled.

- The watch will not enter a sleep state between 6:00 a.m. and 9:59 p.m. If the watch is already in a sleep state when 6:00 a.m. arrives, however, it will remain in the sleep state.
- The watch will not enter a sleep state while it is in the Stopwatch Mode or Countdown Timer Mode.
- The watch will not enter a sleep state while barometric pressure change indicator is enabled (page E-50).

To recover from the sleep state

Move the watch to a well-lit area, press any button, or angle the watch towards your face for reading (page E-96).

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Radio Controlled Atomic Timekeeping

This watch receives a time calibration signal and updates its time setting accordingly. However, when using the watch outside of areas covered by time calibration signals, you will have to adjust the settings manually as required. See "Configuring Current Time and Date Settings Manually" (page E-36) for more information.

This section explains how the watch updates its time settings when the city code selected as the Home City is in Japan, North America, Europe, or China, and is one that supports time calibration signal reception.

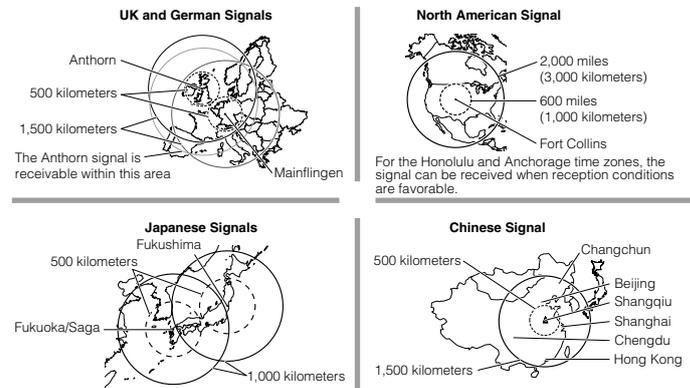
If your Home City Code setting is this:	The watch can receive the signal from the transmitter located here:
LONDON (LON), PARIS (PAR), ATHENS (ATH)	Anthorn (England), Mainflingen (Germany)
HONG KONG (HKG)	Shangqiu City (China)
TOKYO (TYO)	Fukushima, Fukuoka/Saga (Japan)
NEW YORK (NYC), CHICAGO (CHI), DENVER (DEN), LOS ANGELES (LAX), ANCHORAGE (ANC), HONOLULU (HNL)	Fort Collins, Colorado (United States)

Important!

- The areas covered by **ANC** and **HNL** are quite far from the calibration signal transmitters, so certain conditions may cause reception problems.

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Approximate Reception Ranges

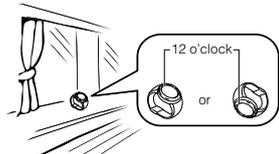


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- Even when the watch is within range of a transmitter, signal reception may be impossible due to the effects of geographic contours, structures, weather, the time of year, the time of day, radio interference, etc. The signal becomes weaker at distances of approximately 500 kilometers, which means that the influence of the conditions listed above becomes even greater.
- Signal reception may not be possible at the distances noted below during certain times of the year or day. Radio interference may also cause problems with reception. Mainflingen (Germany) or Anthorn (England) transmitters: 500 kilometers (310 miles). Fort Collins (United States) transmitter: 600 miles (1,000 kilometers). Fukushima or Fukuoka/Saga (Japan) transmitters: 500 kilometers (310 miles). Shangqiu (China) transmitter: 500 kilometers (310 miles).
- As of December 2013, China does not use Daylight Saving Time (DST). If China does go to the Daylight Saving Time system in the future, some functions of this watch may no longer operate correctly.

To get ready for a receive operation

1. Confirm that the watch is in the Timekeeping Mode. If it isn't, use **Ⓢ** to enter the Timekeeping Mode (page E-31).
2. The antenna of this watch is located on its 12 o'clock side. Position the watch with 12 o'clock facing towards a window as shown in the nearby illustration. Make sure there are no metal objects nearby.



- Signal reception normally is better at night.
- The receive operation takes from two to ten minutes, but in some cases it can take as long as 20 minutes. Take care that you do not perform any button operation or move the watch during this time.

E-22

- Signal reception may be difficult or even impossible under the conditions described below.



3. What you should do next depends on whether you are using auto receive or manual receive.

- Auto receive: Leave the watch over night in the location you selected in step 2. See "Auto Receive" below for details.
- Manual receive: Perform the operation under "To perform manual receive" on page E-24.

Auto Receive

- With auto receive, the watch performs the receive operation each day automatically up to six times (up to five times for the Chinese calibration signal) between the hours of midnight and 5 a.m. (according to the Timekeeping Mode time). When any receive operation is successful, none of the other receive operations for that day are performed.
- When a calibration time is reached, the watch will perform the receive operation only if it is in the Timekeeping Mode. The receive operation is not performed if a calibration time is reached while you are configuring settings.

E-23

* You can use the procedure under "To turn auto receive on or off" (page E-27) to enable or disable auto receive.

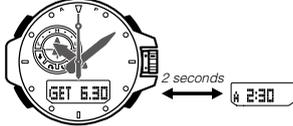
To perform manual receive



Receiving indicator

- Use (B) to enter the Receive Mode (R/C) as shown on page E-30.
- Hold down (A) for at least two seconds until RC flashes and then RC! appears on the digital display.
 - A signal level indicator (L1, L2, or L3, see page E-25) will appear on the display after reception starts. Do not allow the watch to move and do not perform any button operation until GET or ERR appears on the display.
 - If the receive operation is successful, the reception date and time appear on the display, along with the GET indicator.
 - The watch will immediately return to the Timekeeping Mode if you press any button, or if you do not perform any button operation for about two or three minutes.

Receive successful



Receive failed

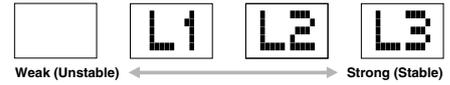


E-24

Signal Level Indicator



During calibration signal reception, the signal level indicator displays the signal level as shown below.



The level indication will change in accordance with reception conditions while reception is being performed.

As you watch the indicator, keep the watch in a location that best maintains stable reception.

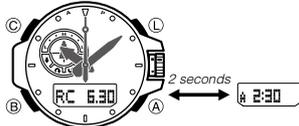
- Even under optimum reception conditions, it can take about 10 seconds for reception to stabilize.
- Note that weather, the time of day, surroundings, and other factors all can affect reception.

E-25

To check the latest signal reception results

Enter the Receive Mode (page E-30).

- R/C will be displayed for about one second, and then the date (month and day) and the time of the last signal reception will alternate on the digital display at two second intervals.
- Even if a signal receive operation is successful, RC will be displayed to the left of the date on the digital display.
- Dashes (- - - and - : - -) alternating in place of the date and time indicate there has been no successful signal reception yet (since you purchased the watch or had its battery replaced).



- To return to the Timekeeping Mode, press (B).

E-26

To turn auto receive on or off

- Enter the Receive Mode (page E-30).
 - R/C will be displayed for about one second, and then the date (month and day) and the time of the last signal reception will alternate on the digital display.
 - Dashes (- - - and - : - -) alternating in place of the date and time indicate there has been no successful signal reception yet (since you purchased the watch or had its battery replaced).
- Pull out the crown. This will cause the current auto receive status (ON or OFF) to flash on the digital display.
 - The timekeeping (hour, minute, second) hands will move to 2 o'clock.
 - Only AUTORC OFF is displayed for cities that do not support time calibration signal reception. AUTORC ON is not displayed.
- Rotate the crown to select either auto receive on (ON) or auto receive off (OFF).
- After the setting is the way you want, push the crown back in. This will return to the screen that was displayed in step 1 of this procedure.



On/Off status

E-27

Radio-controlled Atomic Timekeeping Precautions

- Strong electrostatic charge can result in the wrong time setting.
- The receive operation is disabled under any of the following conditions.
 - While power is at Level 3 (L) or lower (page E-15)
 - While the watch is in the power recovery mode (page E-17)
 - When the watch is in the function sleep state ("Power Saving", page E-19)
 - While the crown is pulled out
 - While barometric pressure change indicator is being measured
 - While a countdown timer operation is in progress (page E-90)
- A receive operation is cancelled if an alarm sounds while it is being performed.
- The watch is designed to update the date and day of the week automatically for the period January 1, 2000 to December 31, 2099. Updating of the date by signal reception will no longer be performed starting from January 1, 2100.
- Even if a receive operation is successful, certain conditions can cause the time setting to be off by up to one second.
- If you are in an area where signal reception is not possible, the watch keeps time with the precision noted in "Specifications".
- The Home City setting reverts to the initial default of TYO (Tokyo) whenever the battery power level drops to Level 5 or when you have the rechargeable battery replaced. If this happens, change the Home City to the setting you want (page E-34).

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Mode Reference Guide

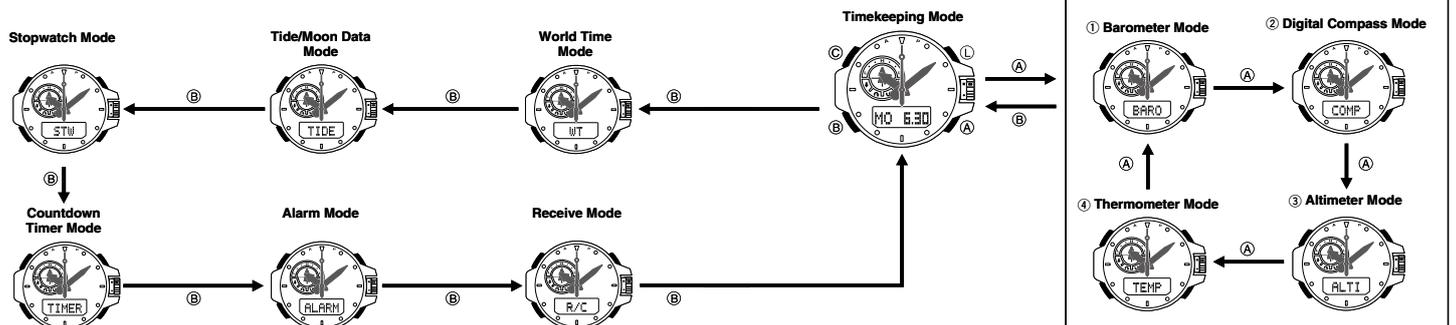
Your watch has 11 "modes". The mode you should select depends on what you want to do.

To do this:	Enter this mode:	See:
<ul style="list-style-type: none"> View the current time and date in the Home City Configure Home City and daylight saving time (DST) settings Configure time and date settings manually Enable auto signal reception 	Timekeeping Mode	E-33
<ul style="list-style-type: none"> View the barometric pressure at your current location View a graph of barometric pressure readings Enable alerts (display and beep) for noteworthy changes in barometric pressure 	Barometer Mode	E-43
Determine your current bearing or the direction angle from your current location to a destination	Digital Compass Mode	E-53
<ul style="list-style-type: none"> View the altitude at your current location Determine the altitude differential between two locations (reference point and current location) 	Altimeter Mode	E-62
View the temperature at your current location	Thermometer Mode	E-73
View the current time in 29 cities (29 time zones) and UTC (Universal Coordinated Time) time	World Time Mode	E-76
View the Tide Graph and Moon age for the currently specified date and time	Tide/Moon Data Mode	E-80
Use the stopwatch to measure elapsed time	Stopwatch Mode	E-88
Use the countdown timer	Countdown Timer Mode	E-90
Set an alarm time	Alarm Mode	E-92
<ul style="list-style-type: none"> Perform a manual time calibration signal receive operation Check whether the last receive operation was successful Configure auto receive settings 	Receive Mode	E-20

E-29

Selecting a Mode

- The illustration below shows which buttons you need to press to navigate between modes.
- To return to the Timekeeping Mode from any other mode, hold down (B) for about two seconds.



E-30

- Use the button operations below to navigate between the Timekeeping Mode and sensor (Barometer, Digital Compass, Altimeter, Thermometer) modes.

E-31

- When you go from the Timekeeping Mode to the sensor modes, the sensor mode that you last used before returning to the Timekeeping Mode will be entered first.
- Whenever you enter a sensor mode, the watch will beep the number of times indicated by the numbers in the figure above. This will let you know what sensor mode you are entering.
- To enter a sensor mode from the Tide/Moon Data, Stopwatch, Countdown Timer, Alarm, World Time, or Receive Mode, first enter the Timekeeping Mode and then press the applicable button.

General Functions (All Modes)

The functions and operations described in this section can be used in all of the modes.

Auto Return Features

- The watch automatically returns to the Timekeeping Mode from other modes if the crown is not pulled out and if no button operation is performed for a preset amount of time.

Mode Name	Approximate Elapsed Time
Tide/Moon Data, Alarm, Receive	3 minutes
Barometer, Thermometer	1 hour
Digital Compass	1 minute
Altimeter	1 hour minimum 12 hours maximum

Initial Screens

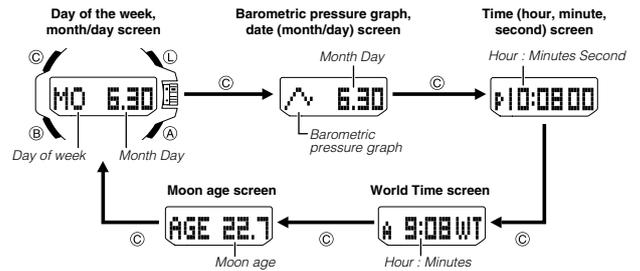
When you enter the Alarm or World Time Mode, the data you were viewing when you last exited the mode appears first.

E-32

Timekeeping

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

- Each press of (C) in the Timekeeping Mode will change screen contents as shown below.



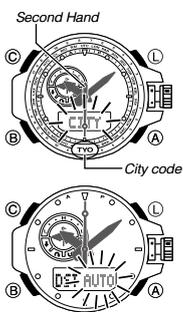
- Holding down (C) for at least two seconds while any screen is displayed will toggle the barometric pressure change indicator between ON and OFF. When ON, the barometric pressure graph is displayed along with the **BARO** indicator.
- For information about how to check for significant barometric pressure changes, refer to "Barometric Pressure Change Indications" (page E-49).

E-33

Configuring Home City Settings

There are two Home City settings: actually selecting the Home City and selecting either standard time or daylight saving time (DST).

To configure Home City and summer time settings



1. In the Timekeeping Mode, pull out the crown.
 - **CITY** will flash on the digital display indicating that the Home City setting can be changed.
2. Rotate the crown to move the second hand to the city code of the city you want to use as your Home City.
 - For details about city codes, see the "City Code Table" at the back of this manual.
3. Press (B) to display the DST setting screen.
4. Rotate the crown away from you to cycle through the DST settings as shown below.



- The displayed DST setting will not change if you rotate the crown towards you.
- After you change the Home City and/or DST setting, the hour and minute hands will automatically move to the appropriate time setting. The time shown on the digital display will also change accordingly.

E-34

- The Auto DST (**AUTO**) setting will be available only when a city code that supports time calibration signal reception (page E-20) is selected as the Home City. While Auto DST is selected the DST setting will be changed automatically in accordance with time calibration signal data.
- Note that you cannot switch between standard time and daylight saving time (DST) while UTC is selected as your Home City.

5. After the settings are the way you want, push the crown back in.

- Daylight Saving Time is turned on when the **DST** indicator is on the display.

Note

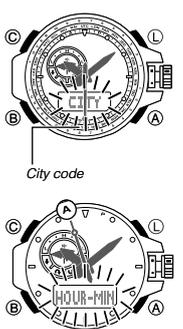
- After you specify a city code, the watch will use UTC* offsets in the World Time Mode to calculate the current time for other time zones based on the current time in your Home City. *Coordinated Universal Time, the world-wide scientific standard of timekeeping. The reference point for UTC is Greenwich, England.
- Selecting some city codes automatically makes it possible for the watch to receive the time calibration signal for the corresponding area. See page E-20 for details.

E-35

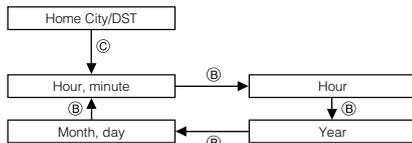
Configuring Current Time and Date Settings Manually

You can configure current time and date settings manually when the watch is unable to receive a time calibration signal.

To change the current time and date settings manually



1. In the Timekeeping Mode, pull out the crown. This will cause **CITY** to flash on the digital display.
2. Press (C).
 - This will cause **HOURL-MIN** to flash on the digital display.
 - The second hand will point to either **A** (a.m.) or **P** (p.m.)
 - This is the time setting mode.
 - In the following steps, each press of (B) cycles between settings as shown below.



3. Rotate the crown to change the minute setting.
 - You can also use HS1 and HS2 high-speed movement (page E-6) to move the hands forward or back at high speed.
 - The hour hand will move in accordance with minute hand movement. To set the hour hand separately, go to step 4 of this procedure.

4. Press (B).
 - This will cause **HOUR** to flash on the digital display.

5. Rotate the crown to change the hour setting.
 - You can also use HS1 and HS2 high-speed movement (page E-6) to move the hands forward or back at high speed.

6. Press (B).
 - This causes the currently set year, month, and day to appear on the digital display, with the year setting flashing.

7. Rotate the crown to adjust the year setting.
 - You can also use HS1 high-speed movement (page E-6) to change this setting.

8. Press (B).
 - This causes the currently set date (month, day) setting to flash on the display.

9. Rotate the crown to adjust the month and day setting.
 - You can also use HS1 high-speed movement (page E-6) to change this setting.
 - Pressing (B) will return to the hour and minute setting screen.

10. After the settings are the way you want, push the crown back in.
 - This will cause timekeeping to start from 0 seconds.



E-36

E-37

Note

- For information about selecting a Home City and configuring the DST setting, see "Configuring Home City Settings" (page E-34).
- While 12-hour timekeeping is in use, **P** (p.m.) is displayed from noon to midnight (11:59 p.m.) **A** (a.m.) is displayed from midnight to noon (11:59 a.m.). These indicators are not displayed while 24-hour timekeeping (displays times from 00:00 to 23:59) is being used.
- 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 rechargeable battery replaced or after power drops to Level 5 (page E-15).
- The day of the week changes automatically when the date changes.
- Refer to the pages shown below for more information on Timekeeping Mode settings.
 - Button operation tone on/off: "To turn the button operation tone on or off" (page E-99)
 - Illumination duration setting: "To change the illumination duration" (page E-96)
 - Enabling and disabling power saving: "To turn Power Saving on or off" (page E-99)

To switch between 12-hour and 24-hour timekeeping

1. Pull out the crown.
2. Press (B) five times.
 - This causes the current timekeeping setting (**12H** or **24H**) to flash on the digital display.
3. Rotate the crown to select either 12-hour (**12H**) or 24-hour (**24H**) timekeeping.
4. After the setting is the way you want, push the crown back in.



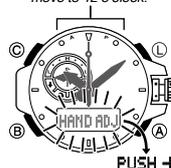
E-38

Hand Home Position Adjustment

If the watch is exposed to strong magnetism or impact, its hands can go out of alignment with the time on the digital display. This can result in incorrect time indication even though a time calibration signal is being received. Your watch has an auto hand position correction feature that normally adjusts the hands. Should you notice that the hand positions are not correct, perform the operation below to correct them manually.

To adjust home positions

Wait until all of the hands move to 12 o'clock.



1. In the Timekeeping Mode, pull out the crown.
2. Hold down (A) for at least five seconds until **HAND SET** flashes and then **HAND ADJ** appears on the digital display.
 - This will start home position adjustment, which causes all of the watch hands to move to 12 o'clock.
 - After the hands stop moving, **PUSH** will appear on the digital display.

Important!

- Before performing step 3, below, make sure that all hands have returned to the 12 o'clock position. Pushing the crown back in while any hand is not at the 12 o'clock position will not perform home position adjustment.

3. Push the crown back in.
 - This will cause all of the hands (small hand, hour hand, minute hand, second hand) to return to their normal positions.

Note

After performing home position adjustment, enter the Timekeeping Mode and check to make sure that the analog hands and the display indicate the same time. If they do not, perform home position adjustment again.

E-39

Moving the Hands for Easy Viewing of the Digital Dials

You can use the procedure below to move the analog hands in order to view the dial and the digital display better.

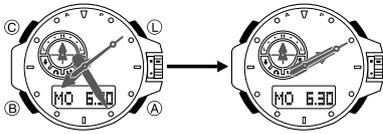
Note

- The analog hands will not move while battery power is low.

To shift the hands and view digital info

While holding down (L), press (B).

- This will cause the timekeeping (hours, minutes, seconds) hands to move to 2 o'clock.
- To return the hands to their normal positions, press (A), (B), or (C).



E-40

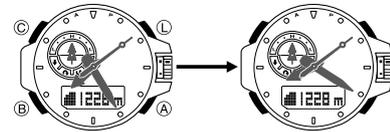
Note

- The hands will also return to their normal positions if you do not perform any operation for about 10 seconds.
- If the hands have moved to 2 o'clock because you pulled out the crown,* they will return to their normal positions when you push the crown back in. In this case, the hands will return to normal timekeeping when you push the crown back in.
- * The hands will not move to 2 o'clock if you pull out the crown while configuring the city code setting (pages E-34, E-77) or the summer time setting (pages E-34, E-77), or while manually configuring time and date settings (page E-36).

Auto Hand Shift

If the hour hand and/or minute hand is over the digital display when a displayed barometric pressure, altitude, or temperature reading is updated, the hand(s) will shift automatically (to 4 o'clock or 8 o'clock) and provide a better view of the information on the display.

The hands will return to their normal position after about three seconds.



E-41

Specifying Altitude, Barometric Pressure, and Temperature Units

Use the procedure below to specify the altitude, barometric pressure, and temperature units to be used in the Altimeter Mode, Barometer Mode and the Thermometer Mode.

Important!

When **TYO** (Tokyo) is selected as the Home City, the altitude unit is set automatically to meters (m), the barometric pressure unit to hectopascals (hPa), and the temperature unit to Celsius (°C). These settings cannot be changed.

To specify altitude, barometric pressure, and temperature units



- Make sure the watch is in the mode for the type of unit you want to specify (Altimeter, Barometer, or Thermometer Mode).
 - For information about changing modes, see "Selecting a Mode" (page E-30).
- Pull out the crown.
 - The timekeeping (hour, minute, second) hands will move to 2 o'clock.
- Press (B) as many times as necessary until **UNIT** appear on the digital display.
 - For altitude, press (B) three times. For barometric pressure and temperature, press (B) once.
- Rotate the crown to change the unit setting.
- After the settings are the way you want, push the crown back in.

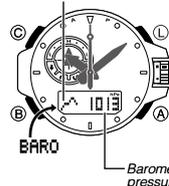
E-42

Taking Barometric Pressure Readings

This watch uses a pressure sensor to measure air pressure (barometric pressure).

To take barometric pressure readings

Barometric pressure graph



In the Timekeeping Mode or any sensor mode, press (A) a number of times until **BARO** (Barometer Mode) appears on the digital display.

- In a non-sensor mode, hold down (B) for about two seconds to enter the Timekeeping Mode. Next, perform the above step.
- About one second after entering the Barometer Mode (**BARO**), the first barometric pressure reading will be displayed.
- Readings are continuously taken for about one hour: every five seconds for the first three minutes and then every two minutes for the remainder of the hour.
- Pressing (C) or (L), or rotating the crown while a reading operation is in progress will extend the operation for approximately one hour from point the button was pressed or the crown was rotated.
- The watch will return to the Timekeeping Mode after the reading operation is complete (about one hour).
- Pressing (B) while a reading operation is in progress will stop the operation and enter the Timekeeping Mode.

E-43

Note

- When you enter the Barometer Mode, the second hand may indicate seconds (of the current time) or the barometric pressure differential (page E-45). The initial second hand function will be the same as what was selected the last time you took a barometric pressure reading. To toggle between the two second hand functions (indicating seconds or indicating the barometric pressure differential) press (C).

Barometric Pressure

- Barometric pressure is displayed in units of 1 hPa (or 0.05 inHg).
- The displayed barometric pressure value changes to --- if a measured barometric pressure falls outside the range of 260 hPa to 1,100 hPa (7.65 inHg to 32.45 inHg). The barometric pressure value will reappear as soon as the measured barometric pressure is within the allowable range.

Display Units

You can select either hectopascals (hPa) or inchesHg (inHg) as the display unit for the measured barometric pressure. See "To specify altitude, barometric pressure, and temperature units" (page E-42).

E-44

Checking Barometric Pressure Changes and Trends

Your watch provides the three methods below for checking barometric pressure changes and trends.

- Checking the latest change in barometric pressure (Barometric pressure differential pointer described below)
- Checking barometric pressure changes for the past 20 hours (Barometric Pressure Graph, page E-47)
- Checking for significant barometric pressure changes (Barometric Pressure Change Indicator, page E-49)

Barometric Pressure Differential Pointer

Your watch automatically takes barometric pressure measurements every two hours (at the 30 minute mark of each even numbered hour), regardless of the mode it is in.

The second hand of the watch indicates the difference between the current barometric reading and previous automatic reading, within the range of ± 10 hPa (1hPa unit). This keeps you informed about current barometric pressure changes in your area.

To show and hide barometric pressure differential

- In the Timekeeping Mode or any sensor mode, press (A) a number of times until **BARO** (Barometer Mode) appears on the digital display.
 - In a non-sensor mode, hold down (B) for about two seconds to enter the Timekeeping Mode. Next, perform the above step.
- Press (C).

Note

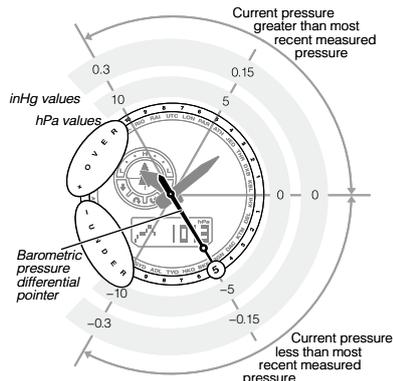
- Press (C) to toggle the second hand between its two functions (indicating seconds or indicating the barometric pressure differential).

E-45

Reading Barometric Pressure Differential Pointer

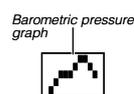
Pressure differential is indicated in the range of ± 10 hPa (0.3 inHg), in 1 hPa (0.03 inHg) units.

- The nearby screen shot, for example, shows what the second hand would indicate when the calculated pressure differential is approximately -5 hPa (approximately -0.15 inHg).
- The second hand will point to **+ OVER** or **- UNDER** if the barometric pressure differential is outside the allowable range of the scale.
- The second hand will move to 9 o'clock if a sensor reading could not be taken for some reason or if the reading is outside the allowable range.
- Barometric pressure is calculated and displayed using hPa as the standard. The barometric pressure differential also can be read in inHg units as shown in the illustration (1 hPa \approx 0.03 inHg).



E-46

Barometric Pressure Graph



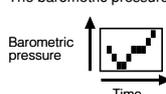
Your watch automatically takes barometric pressure measurements every two hours (at the 30 minute mark of each even numbered hour), regardless of the mode it is in.

While the watch is in the Barometer Mode or Timekeeping Mode, the digital display shows a graph of pressure change for the past 20 hours (10 readings). By monitoring these changes you can predict the weather with reasonable accuracy.

- To display the barometric pressure graph in the Timekeeping Mode, press (C) a number of times to cycle through digital display screens until it appears (page E-33).

Reading the Barometric Pressure Graph

The barometric pressure graph shows a chronological history of pressure readings.



- The vertical axis of the graph represents barometric pressure, with each dot standing for the relative difference between its reading and that of the dots next to it. Each dot represents 1 hPa.
- The latest automatic reading is indicated by the rightmost segment in the graph.

The following shows how to interpret the data that appears on the barometric pressure graph.



Rising barometric pressure indicates that upcoming weather will improve.

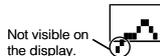


Falling barometric pressure indicates that upcoming weather will deteriorate.

E-47

Note

- The barometric pressure graph is not displayed while the barometric pressure change indicator is displayed.
- While the watch is in the Barometer Mode, the watch will update the display barometric pressure value at regular intervals (every five seconds for the first three minutes and then every two minutes for the remainder of the hour). Since the barometric pressure graph show automatic readings taken every two hours, the graph is updated only at two-hour intervals.
- Large changes in barometric pressure may cause past readings to run off the top or bottom of the graph display area.
- The following conditions cause the barometric pressure reading to be skipped, with the corresponding point on the barometric pressure graph being left blank.
 - Barometric reading that is out of range (260 hPa to 1,100 hPa or 7.65 inHg to 32.45 inHg)
 - Sensor malfunction



Barometric Pressure Change Indications

Whenever your watch detects a significant change in air pressure readings (due to sudden ascent or descent, or to the passage of a low pressure or high pressure area), it beeps to let you know. Also, an arrow flashes on the digital display and the small hand points to the arrow mark. All of this is intended to let you know what a significant pressure change has occurred so you can take any action that might be required.

The barometric pressure change indicator is displayed in the Barometer Mode and while the barometric pressure graph is displayed in the Timekeeping Mode (page E-33).

- For example, you could enable the barometric pressure change indicator after arriving at a lodge or campsite. Then, before setting out the following day, you could check for changes in barometric pressure, which will give you some idea of upcoming weather conditions.

Reading the Barometric Pressure Change Indicator

Small Hand and Digital Display	Meaning
	Sudden fall in pressure.
	Sudden rise in pressure.
	Sustained rise in pressure, changing to a fall.
	Sustained fall in pressure, changing to a rise.

- The barometric pressure change indicator is not displayed if there has been no noteworthy change in barometric pressure. In such a case, the small hand is at 6 o'clock.

E-48

E-49

Important!

- To ensure proper results, take barometric readings under conditions where the altitude remains constant.
- A change in altitude causes a change in barometric pressure. This means that correct barometric pressure readings are not possible while you are changing altitudes. To avoid possible confusion, it is probably best to disable the barometric pressure change indicator while you are on the move during your climb.

To enable or disable the barometric pressure change indicator

In the Barometer Mode or the Timekeeping Mode, hold down **(C)** for at least two seconds until **INFO** appears on the digital display, and the current indicator setting toggles between **ON** (enabled) and **OFF** (disabled).

- The small hand acts as a barometric pressure change indicator while **ON**, and a Tide Graph while **OFF**.
- BARO** is shown on the digital display while the indicator is enabled.
- Note that barometric pressure change indicator display will turn off automatically 24 hours after you turn it on or battery power goes low.
- Enabling or disabling the Barometric Pressure Change Indicator in the Barometer Mode will also toggle the second hand function between Barometric Pressure Differential Pointer (Barometric Pressure Change Indicator **ON**) and current second count indication (Barometric Pressure Change Indicator **OFF**) (page E-45). After selecting the Barometric Pressure Change Indicator setting you want, use **(C)** to select the second hand function setting you want.
- Note that time calibration signal reception and power saving (page E-19) are disabled while barometric pressure change indicator display is enabled.
- Note that barometric pressure change indicator display cannot be enabled while the watch's battery is low.

E-50

Pressure Sensor Calibration

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

Important!

- Incorrectly calibrating the barometric pressure sensor can result in incorrect readings. Before performing the calibration procedure, compare the readings produced by the watch with those of another reliable and accurate barometer.

To calibrate the pressure sensor



- Take a reading with another measurement device to determine the exact current barometric pressure.
- Use **(A)** to enter the Barometer Mode (**BARO**), as shown on page E-31.
- Pull out the crown. This will cause the current barometric pressure reading value to flash on the digital display.
 - The timekeeping (hour, minute, second) hands will move to 2 o'clock.
- Rotate the crown to adjust the barometric pressure value.
 - You can also use **HS1** high-speed movement (page E-6) to change this setting.
 - The calibration unit is 1 hPa (0.05 inHg).
 - To return the setting to **OFF** (uncalibrated), press **(A)** and **(C)** at the same time.
- After you complete calibration, push the crown back in.

E-51

Barometer Precautions

- The pressure sensor built into this watch measures changes in air pressure, which you can then apply to your own weather predictions. It is not intended for use as a precision instrument in official weather prediction or reporting applications.
- Extreme temperature changes can affect pressure sensor readings. Because of this, there may be some error in the readings produced by the watch.

E-52

Taking Direction Readings

You can use the Digital Compass Mode to determine the direction of north, and to check your bearing to a destination.

- For information about what you can do to improve digital compass reading accuracy, see "Calibrating the Bearing Sensor" (page E-56) and "Digital Compass Precautions" (page E-60).

To take a direction reading

- Place the watch on a flat surface. If you are wearing the watch, make sure that your wrist is horizontal (in relation to the horizon).
- Point the 12 o'clock position of the watch in the direction whose reading you want to take.
- In the Timekeeping Mode or any sensor mode, press **(A)** a number of times until **COMP** (Digital Compass Mode) appears on the digital display.
 - In a non-sensor mode, hold down **(B)** for about two seconds to enter the Timekeeping Mode. Next, perform the above step.
 - After you enter the Digital Compass Mode (**COMP**), the watch will start taking bearing readings.
 - Starting a digital compass operation will cause the second hand to move momentarily to the 12 o'clock position. Following the digital compass operation, the second hand will point in the direction of magnetic north. The bearing and direction angle will appear on the digital display.

E-53

Important!

- If the second hand does not point exactly at 12 o'clock after you perform step 3 above, perform the operation under "Hand Home Position Adjustment" (page E-39) to adjust it.
- If the digital display contents start to flash after you perform a reading operation, it means that abnormal magnetism has been detected. Move away from any potential source of strong magnetism and try taking a reading again. If the problem occurs when you try again, continue to keep away from the source of strong magnetism, perform bidirectional calibration, and then try taking a reading again. For more information, refer to "To perform bidirectional calibration" (page E-57) and "Location" (page E-60).

Digital Compass Readings

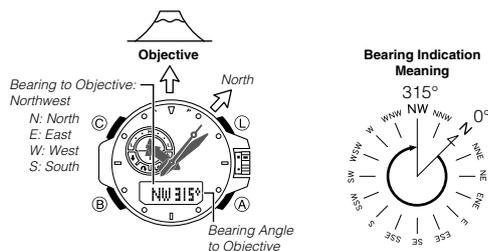
- After the first reading is obtained, the watch will continue to take digital compass readings automatically each second for up to 60 seconds. After that, the reading operation will stop automatically.
- The auto light switch is disabled during the 60 seconds that digital compass readings are being taken.
- The margin of error for the angle value and the direction indicator is ± 10 degrees while the watch is horizontal (in relation to the horizon). If the indicated direction is northwest (**NW**) and 315 degrees, for example, the actual direction can be anywhere from 305 to 325 degrees.
- Note that taking a direction reading while the watch is not horizontal (in relation to the horizon) can result in large direction reading error.
- You can calibrate the bearing sensor if you suspect the direction reading is incorrect.
- Any ongoing direction reading operation is paused temporarily while the watch is performing an alert operation (daily alarm, Hourly Time Signal, countdown timer alarm) or while illumination is turned on (by pressing **(D)**). The direction reading operation resumes for its remaining duration after the operation that caused it to pause is finished.
- See "Digital Compass Precautions" (page E-60) for important information about taking direction readings.

Note

- After the initial reading is displayed, the watch will continue to take readings and display results about every second for about the next 60 seconds.
- Pressing **(C)** or **(L)**, or rotating the crown while a reading operation is in progress will extend the operation for approximately 60 seconds from point the button was pressed or the crown was rotated.
- The watch will return to the Timekeeping Mode about 60 seconds after the direction reading operation is complete.
- Pressing **(B)** while a reading operation is in progress will stop the operation and enter the Timekeeping Mode.

E-54

E-55



- The direction indicated by the Digital Compass is magnetic north. You can use Magnetic Declination Correction to configure the watch to indicate true north, if you want. For details, see "Magnetic Declination Correction" below, "To perform magnetic declination correction" (page E-58), and "Magnetic North and True North" (page E-60).

Calibrating the Bearing Sensor

You should calibrate the bearing sensor whenever you feel that the direction readings being produced by the watch are off. You can use any one of two different bearing sensor calibration methods: bidirectional calibration or magnetic declination correction.

Bidirectional Calibration

Bidirectional calibration calibrates the bearing sensor in relation to magnetic north. Use bidirectional calibration when you want to take readings within an area exposed to magnetic force. This type of calibration should be used if the watch becomes magnetized for any reason.

Important!

- To ensure correct direction readings by this watch, be sure to perform bidirectional calibration before using it. The watch may produce incorrect direction readings if you do not perform bidirectional calibration.

Magnetic Declination Correction

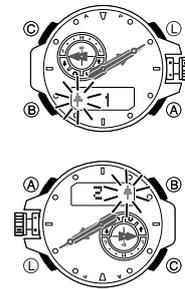
With magnetic declination correction, you select a declination angle direction and input a magnetic declination angle (difference between magnetic north and true north), which allows the watch to indicate true north. You can perform this procedure when the magnetic declination angle is indicated on the map you are using.

E-56

Precautions about bidirectional calibration

- You can use any two opposing directions for bidirectional calibration. You must, however, make sure that they are 180 degrees opposite each other. Remember that if you perform the procedure incorrectly, you will get wrong bearing sensor readings.
- Do not move the watch while calibration of either direction is in progress.
- You should perform bidirectional calibration in an environment that is the same as that where you plan to be taking direction readings. If you plan to take direction readings in an open field, for example, calibrate in an open field.

To perform bidirectional calibration

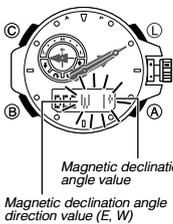


- In the Digital Compass Mode, pull out the crown.
 - This will cause **1** to appear on the digital display, with up arrow (↑) flashing.
 - The timekeeping (hour, minute, second) hands will move to 2 o'clock.
- While keeping the watch horizontal, press (A).
 - ↑ **WAIT** will be shown on the digital display while calibration is in progress. **OK Turn180°** will appear on the digital display if calibration is successful, and then **2** will appear.
 - If **ERR** appears on the display, press (A) again to restart the direction reading operation.
- Rotate the watch 180 degrees.

E-57

- Press (A) again to calibrate the second direction.
 - ↑ **WAIT** is shown on the display while calibration is being performed.
 - When calibration is successful, the display will show **OK** and then change to the Digital Compass Mode screen.
 - If **ERR** appears on the display, go back to step 1 of this procedure.
- After calibration is complete, push the crown back in.

To perform magnetic declination correction



- In the Digital Compass Mode, pull out the crown.
 - This will cause **1** to appear on the digital display, with up arrow (↑) flashing.
 - The timekeeping (hour, minute, second) hands will move to 2 o'clock.
- Press (B).
 - This will cause **DEC** and the current magnetic declination setting to appear on the digital display.

E-58

- Rotate the crown to change the magnetic declination direction and angle setting as required.

North Setting	Setting
Magnetic North	0°
True North	E 90° to W 90° E: East declination (Magnetic north is east of true north.) W: West declination (Magnetic north is west of true north.)

- Note that you can input the declination angle in whole degree units only, so you may need to round off the value specified on the map. If your map indicates the declination angle as 7.4°, you should input 7°. In the case of 7.6° input 8°, for 7.5° you can input 7° or 8°.
- You can also use HS1 high-speed movement (page E-6) to change this setting.
- You can return the setting to 0° by press (A) and (C) at the same time.
- The illustration, for example, shows the value you should input and the direction setting you should select when the map shows a magnetic declination of 1° west.

- After calibration is complete, push the crown back in.

Setting a map and finding your current location

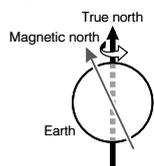
Having an idea of your current location is important when mountain climbing or hiking. To do this, you need to "set the map", which means to align the map so the directions indicated on it are aligned with the actual directions of your location. Basically what you are doing is aligning north on the map with north as indicated by the watch.

- Note that map reading skills and experience are required to determine your current location and destination on a map.

E-59

Digital Compass Precautions

Magnetic North and True North



The northerly direction can be expressed either as magnetic north or true north, which are different from each other. Also, it is important to keep in mind that magnetic north moves over time.

- Magnetic north is the north that is indicated by the needle of a compass.
- True north, which is the location of the North Pole of the Earth's axis, is the north that is normally indicated on maps.
- The difference between magnetic north and true north is called the "declination". The closer you get to the North Pole, the greater the declination angle.

Location

- Taking a direction reading when you are near a source of strong magnetism can cause large errors in readings. Because of this, you should avoid taking direction readings while in the vicinity of the following types of objects: permanent magnets (magnetic necklaces, etc.), concentrations of metal (metal doors, lockers, etc.), high tension wires, aerial wires, household appliances (TVs, personal computers, washing machines, freezers, etc.).
- Accurate readings are also impossible indoors, especially inside ferroconcrete structures. This is because the metal framework of such structures picks up magnetism from appliances, etc.
- Accurate direction readings are impossible while in a train, boat, air plane, etc.

E-60

Storage

- The precision of the bearing sensor may deteriorate if the watch becomes magnetized. Because of this, you should store the watch away from magnets or any other sources of strong magnetism, including: permanent magnets (magnetic necklaces, etc.), concentrations of metal (metal doors, lockers, etc.), and household appliances (TVs, personal computers, washing machines, freezers, etc.).
- Whenever you suspect that the watch may have become magnetized, perform the procedure under "To perform bidirectional calibration" (page E-57).

E-61

Using the Altimeter Mode

The watch takes altitude readings and displays results based on air pressure measurements taken by a built-in pressure sensor.

- The displayed altitude reading is a relative altitude that is calculated based on measurement of changes in barometric pressure by the watch's pressure sensor. This means that barometric pressure changes can cause readings taken at different times at the same location to be different. Also note that the value displayed by the watch may be different from the actual elevation and/or sea level elevation indicated for the area where you are located.
- When using the altimeter of this watch for mountain climbing or other activities, it is highly recommended that you check a map, local altitude indications, or some other source for your current correct altitude and regularly calibrate the altimeter with the latest information.

Important!

- See "To specify a reference altitude value" (page E-66) and "Altimeter Precautions" (page E-72) for information about how to minimize differences between readings produced by the watch and values provided by local altitude (elevation) indications.

Getting Ready

Before actually taking an altitude reading you need to select an altitude reading interval.

Selecting the Altimeter Measurement Time and Interval

You can either of the two settings described below.

- 0'05"**: Readings for about one hour; every second for the first three minutes, and then every five seconds for the remainder of the hour
- 2'00"**: Readings for about 12 hours; every second for the first three minutes, and then every two minutes for the remainder of the 12 hours

E-62

To specify the altitude reading interval



- In the Timekeeping Mode or any sensor mode, press (A) a number of times until **ALTI** (Altimeter Mode) appears on the digital display.
 - In a non-sensor mode, hold down (B) for about two seconds to enter the Timekeeping Mode. Next, perform the above step.
- Pull out the crown.
 - This will cause the current altitude reading value to appear.
 - The timekeeping (hour, minute, second) hands will move to 2 o'clock.
- Press (B).
 - This will cause **INT** to appear on the digital display, along with the flashing current reading interval setting.
- Rotate the crown to select either five second (**0'05**) or two minutes (**2'00**) as the interval setting.
- After the setting is the way you want, push the crown back in to exit the setting screen.

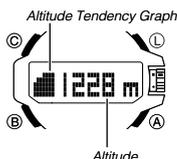
Taking Altitude Readings

Use the procedure below to take basic altitude readings.

- See "Using Reference Altitude Values" (page E-65) for information about how to make altimeter readings more accurate.
- See "How does the altimeter work?" (page E-71) for information about how the watch measures altitude.

E-63

To take altitude readings



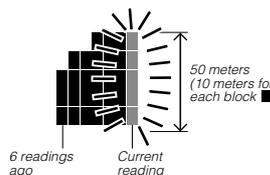
- In the Timekeeping Mode or any sensor mode, press (A) a number of times until **ALTI** (Altimeter Mode) appears on the digital display.
- In a non-sensor mode, hold down (B) for about two seconds to enter the Timekeeping Mode. Next, perform the above step.
 - After you enter the Altimeter Mode (**ALTI**), the watch will start taking altitude readings.
 - The current altitude value is displayed in units of 1 meter (5 feet).
 - For information about the measurement interval, see page E-62.

Note

- When you enter the Altimeter Mode, the second hand may indicate seconds (of the current time) or the altitude differential (page E-67). The initial second hand function will be the same as what was selected the last time you took an altitude reading. To toggle between the two second hand functions (indicating seconds or indicating the altitude differential) press (C).
- Pressing (C) or (L), or rotating the crown while a reading operation is in progress will extend the operation for approximately one hour or 12 hours (depending on the current measurement time and interval setting) from point the button was pressed or the crown was rotated.
- The watch will return to the Timekeeping Mode at the end of the applicable measurement time (one hour or 12 hours).
- Pressing (B) while a reading operation is in progress will stop the operation and return to the Timekeeping Mode.
- The measurement range for altitude is -700 to 10,000 meters (-2,300 to 32,800 feet).
- The displayed altitude value changes to - - - if an altitude reading falls outside the measurement range. An altitude value will reappear as soon as the altitude reading is within the allowable range.

E-64

- You can change the unit for displayed altitude values to either meters (m) or feet (ft). See "To specify altitude, barometric pressure, and temperature units" (page E-42).
- The altitude tendency graph shows changes in altitude over the past 6 readings while readings are being taken.



Using Reference Altitude Values

- To minimize the chance of reading error, you should update the reference altitude value before setting off on a trek or any other activity where you plan to take altitude readings. While mountain climbing, it is highly recommended that you check a map, local altitude indications, or some other source for your current correct altitude and regularly update the reference altitude value with the latest information.
- Reading error can be caused by changes in barometric pressure, and by temperature changes due to change in barometric pressure and/or elevation.
 - Though altitude readings can be taken without setting a reference altitude, doing so may produce readings that are very different from altitudes indicated by other altitude markers and indications.
 - Before performing the procedure below, look up the altitude of your current location on a map, the Internet, etc.

E-65

To specify a reference altitude value



- In the Altimeter Mode, pull out the crown.
 - This will cause the current altitude reading value to flash on the digital display.
 - The timekeeping (hour, minute, second) hands will move to 2 o'clock.
- Rotate the crown to change the altitude value in one-meter (five-foot) increments.
 - You can also use HS1 high-speed movement (page E-6) to change this setting.
 - Change the reference altitude value to an accurate altitude reading that you get from a map or other source.
 - You can set the reference altitude value within the range of -3,000 to 10,000 meters (-9,840 to 32,800 feet).
 - To return to the **OFF** setting so no reference altitude value is applied to readings, press (A) and (C) at the same time.
- After the setting is the way you want, push the crown back in to exit the setting screen.

E-66

Advanced Altimeter Mode Operations

Use the information in this section to obtain more accurate altimeter readings, especially while mountain climbing or trekking.

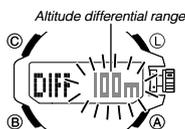
Using an Altitude Differential Value



- If you specify an altitude differential start point, the second hand of the watch will indicate the difference between the current altitude and the altitude differential start point. The displayed altitude differential value is updated each time the watch obtains a new altitude reading value.
- Depending on the currently selected display range, the allowable range for the altitude differential value is 100 meters to -100 meters (100 meters = 328 feet), or 1,000 meters to -1,000 meters (1,000 meters = 3,280 feet).
 - If a reading value is outside the allowable range either **+ OVER** or **- UNDER** appears on the digital display (page E-70).
 - The second hand will move to 9 o'clock if a sensor reading could not be taken for some reason or if the reading is outside the allowable range.
 - See "Using the Altitude Differential Value While Mountain Climbing or Hiking" (page E-68) for some real-life examples of how to use this feature.

E-67

Specifying the Altitude Differential Measurement Range



You can use the procedure below to select either ±100 meters or ±1,000 meters as the altitude differential measurement range.

Relative Altitude Measurement Range	Display Unit
±100 meters (±328 feet)	5 meters (16 feet)
±1,000 meters (±3,280 feet)	50 meters (164 feet)

To specify the altitude differential measurement range

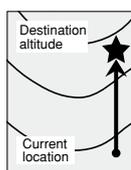
- In the Altimeter Mode, pull out the crown.
 - This will cause the current altitude reading value to appear.
 - The timekeeping (hour, minute, second) hands will move to 2 o'clock.
- Press (B) twice.
 - This will cause **DIFF** to appear on the digital display, along with the flashing current altitude differential measurement range setting.
- Rotate the crown to select either 100 meters (**100m**) or 1,000 meters (**1000m**) as the altitude differential measurement range.
- After the setting is the way you want, push the crown back in to exit the setting screen.

Using the Altitude Differential Value While Mountain Climbing or Hiking

After you specify the altitude differential start point while mountain climbing or hiking, you can easily measure the change in the altitude between that point and other points along the way.

E-68

To use the altitude differential value



- Use the contour lines on your map to determine the difference in altitude between your current location and your destination.
 - Knowing the difference in altitude helps you determine your current location and how much further you need to go to reach your destination.
- In the Altimeter Mode, hold down (C) for at least two seconds to specify your current location as the altitude differential start point.
 - **DIFF RESET** and then **RESET** will appear on the digital display, and then the second hand will move to ±0 (±0m) to indicate the altitude differential.
- While comparing the altitude difference you determined on the map and the watch's altitude differential value, advance towards your destination.
 - If the map shows that the difference in altitude between your location and your destination is +80 meters for example, you know you will be nearing your destination when the displayed altitude differential value shows +80 meters.

Altitude Differential (Reference location, so ±0 m is indicated.)

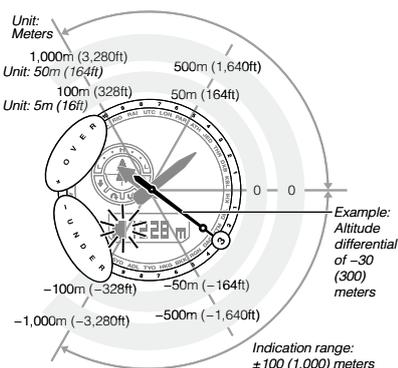


Current altitude

E-69

The altitude differential with the reference location is indicated by the second hand as shown in the nearby illustration.

- When **±100m** is selected for the altitude differential measurement range, the **+ OVER** indicator appears any time the differential is greater than +100 meters (+328 feet). The **- UNDER** indicator appears any time the differential is greater than -100 meters (-328 feet). If either of these indicators appears, change the range setting to **±1000m**.
- When **±1000m** is selected for the altitude differential measurement range, the **+ OVER** indicator appears any time the differential is greater than +1,000 meters (+3,280 feet). The **- UNDER** indicator appears any time the differential is greater than -1,000 meters (-3,280 feet).
- The second hand will move to 9 o'clock if a reading is outside the altimeter measurement range (-700 to +10,000 meters (-2,300 to 32,800 feet)), or if a reading error occurs.
- To toggle between the altitude differential and current time seconds count on the digital display, press (C).



E-70

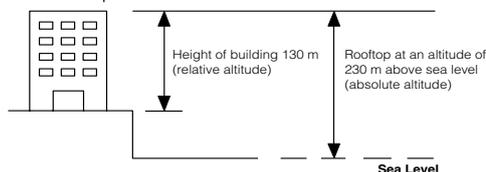
How does the altimeter work?

Generally, air pressure decreases as altitude increases. This watch bases its altitude reading on International Standard Atmosphere (ISA) values stipulated by the International Civil Aviation Organization (ICAO). These values define relationships between altitude and air pressure.

• Note that the following conditions will prevent you from obtaining accurate readings:

- When air pressure changes because of changes in the weather
- Extreme temperature changes
- When the watch itself is subjected to strong impact

There are two standard methods of expressing altitude: absolute altitude, which expresses an absolute height above sea level, and relative altitude, which expresses the difference between the altitudes of two different places. This watch expresses altitudes as relative altitude.



Regular calibration of the watch in accordance with values provided by local altitude (elevation) indications is recommended before taking readings in order to maximize reading accuracy (page E-65).

E-71

Altimeter Precautions

- This watch estimates altitude based on air pressure. This means that altitude readings for the same location may vary if air pressure changes.
- Do not use this watch for altitude reading or perform button operations while sky diving, hang gliding, or paragliding, while riding a gyrocopter, glider, or any other aircraft, or while engaging in any other activity where there is the chance of sudden altitude changes.
- Do not use this watch for measuring altitude in applications that demand professional or industrial level precision.
- Remember that the air inside of a commercial aircraft is pressurized. Because of this, the readings produced by this watch will not match the altitude readings announced or indicated by the flight crew.

The Effect of Temperature on Altitude Readings

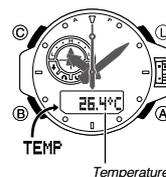
For the more accurate altitude readings, leaving the watch on your wrist is recommended in order to maintain the watch at a constant temperature.

- When taking altitude readings, keep the watch at as stable a temperature as possible. Changes in temperature can affect altitude readings.

Taking Temperature Readings

This watch uses a temperature sensor to measure temperature.

To take temperature readings



- In the Timekeeping Mode or any sensor mode, press (A) a number of times until **TEMP** (Thermometer Mode) appears on the digital display.
- In a non-sensor mode, hold down (B) for about two seconds to enter the Timekeeping Mode. Next, perform the above step.
 - About one second after entering the Thermometer Mode (**TEMP**), the first temperature reading will be displayed.
 - Readings are continuously taken for about one hour: every five seconds for the first three minutes and then every two minutes for the remainder of the hour.
 - Pressing (C) or (L), or rotating the crown while a reading operation is in progress will extend the operation for approximately one hour from point the button was pressed or the crown was rotated.
 - The watch will return to the Timekeeping Mode after the reading operation is complete (about one hour).
 - Pressing (B) while a reading operation is in progress will stop the operation and enter the Timekeeping Mode.

E-72

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Temperature

- Temperature is displayed in units of 0.1°C (or 0.2°F).
- The displayed temperature value changes to -- °C (or °F) if a measured temperature falls outside the range of -10.0°C to 60.0°C (14.0°F to 140.0°F). The temperature value will reappear as soon as the measured temperature is within the allowable range.

Display Units

You can select Celsius (°C) or Fahrenheit (°F) as the display unit for the measured temperature value. See "To specify altitude, barometric pressure, and temperature units" (page E-42).

Temperature Sensor Calibration

The temperature sensor built into the watch are calibrated at the factory and normally require 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



1. Take a reading with another measurement device to determine the exact current temperature.
2. Use (A) to enter the Thermometer Mode (**TEMP**), as shown on page E-31.
3. Pull out the crown. This will cause the current temperature reading value to flash on the digital display.
 - The timekeeping (hour, minute, second) hands will move to 2 o'clock.
4. Rotate the crown to adjust the temperature value.
 - You can also use HS1 high-speed movement (page E-6) to change this setting.
 - The calibration unit is 0.1°C (0.2°F).
 - To return the setting to **OFF** (uncalibrated), press (A) and (C) at the same time.
5. After you complete calibration, push the crown back in.

Thermometer Precautions

- Temperature readings are affected by your body temperature, direct sunlight, and moisture. To achieve a more accurate temperature reading, 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 surrounding temperature.

E-74

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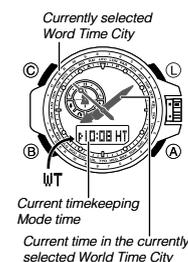
Checking the Current Time in a Different Time Zone

You can use the World Time Mode to display the current time in any one of 29 time zones (29 cities) around the world, and in the UTC (Universal Time Coordinated) time zone. The city that is currently selected in the World Time Mode is called the "World Time City".

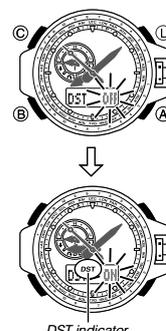
- Your watch includes functions for quickly swapping your Home City and World Time City settings, and for one-touch access to the UTC time zone.

To enter the World Time Mode

- Use (B) to select the World Time Mode (**WT**) as shown on page E-30. This causes **WT** to appear on the digital display. After one second, the hour and minute hands move to indicate the time in the current World Time City. The second hand points to the currently selected World Time City for three seconds, and then returns to indicating the seconds.
- The digital display shows the current time in the Home City.
 - To check whether the indicated World Time City time is a.m. or p.m., press (A). This will cause the second hand to move to **A** (a.m.) or **P** (p.m.) The second hand will return to regular timekeeping after about three seconds.
 - Pressing (C) will cause the second hand to move to the currently selected World Time City city code. The second hand will return to regular timekeeping after about three seconds.



To configure World Time City and summer time settings



1. In the World Time Mode, pull out the crown.
 - This will cause **CITY** to flash on the digital display.
 - The currently selected World Time City will be indicated by the second hand.
2. Rotate the crown to move the second hand to the City Code you want to select.
 - For details about city codes, see the "City Code Table" at the back of this manual.
3. Press (B).
 - This will cause the current DST setting (**DST ON** or **DST OFF**) to flash on the display.
4. Rotate the crown to select either on (**DST ON**) or off (**DST OFF**) for the DST setting.
 - **DST** is shown on the digital display while DST is turned on.
5. After the settings are the way you want, push the crown back in.
 - Note that you cannot switch between standard time/daylight saving time (DST) while **UTC** is selected as the World Time City.
 - Note that the standard time/daylight saving time (DST) setting affects only the currently selected time zone. Other time zones are not affected.

E-76

E-77

Swapping the Home City and World Time City

You can use the procedure below to swap your World Time City (whose time is indicated by the hands) with your Home Time City (whose time is indicated by the digital display). This function comes in handy for those who often travel between two different time zones.

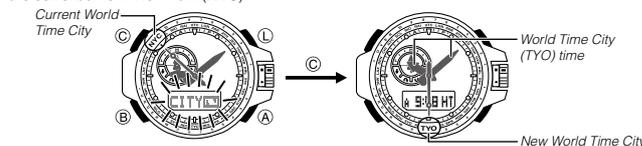
The following example shows what happens when the Home City and World Time City are swapped while the Home City originally is **TOKYO (TYO)** and the World Time City is **NEW YORK (NYC)**.

	Home City	World Time City
Before swapping	Tokyo 10:08 p.m. (Standard time)	New York 9:08 a.m. (Daylight saving time)
After swapping	New York 9:08 a.m. (Daylight saving time)	Tokyo 10:08 p.m. (Standard time)

- You need to configure starting Home City and World Time City settings before performing the procedure below.
 - Home City and summer time settings (page E-34)
 - World Time City and summer time settings (page E-77)

To swap your Home City and World Time City

- In the World Time Mode, hold down (C) for at least three seconds.
- After **CITY** flashes on the digital display, the watch will swap the Home City and World Time City settings and the second hand will move to the new World Time City. After that, the times indicated by the hand and on the digital display will be swapped with each other.
 - The second hand will return to regular timekeeping after about three seconds.
 - In the above example, the hands show current time in Tokyo (**TYO**), while the digital display shows the current time in New York (**NYC**).



To access the UTC (Universal Time Coordinated) time zone



- In the World Time Mode, hold down (A) for at least three seconds.
- After **UTC** flashes on the digital display, the second hand will move to UTC. After that, the hour hand and minute hand will move to the current time in the UTC zone.
 - The second hand will return to regular timekeeping after about three seconds.

E-78

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Checking the Tide Level and Moon Ages (Tide/Moon)

You can use the watch to check the current tide level and Moon age.

- The above information is displayed for the currently selected Home Time City. You can also check information for another city by changing to a different Home City (page E-34).
- Note that the tide and Moon information displayed by this watch is approximate and is intended as general information only. Never try to use it for marine navigation or any other purposes requiring accurate measurements.

Viewing the current tide level and Moon age

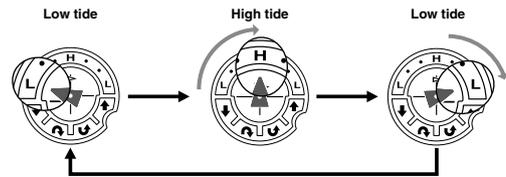
To view the current tide level



Tide (Tide Graph Hand)

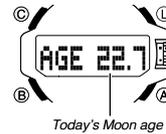
The small hand indicates the tide level in all modes.

- When the barometric pressure change indicator (page E-49) is enabled (**BARO** displayed), the small hand acts as the barometric pressure change indicator (lower half of the dial). You can disable the barometric pressure change indicator (**BARO** not displayed) by holding down **C** for at least of two seconds in the Timekeeping Mode or Barometer Mode.



- The tide in the Home City is indicated even while the watch is in the World Time Mode.
- If the Tide Graph hand indication is not correct, check the Timekeeping Mode time and date, and the Home City settings. If this does not correct the problem, refer to "Calibrating the High Tide Time" (page E-84).

To view a Moon age



In the Timekeeping Mode, press **C** as many times as necessary to display the Moon Age Screen.

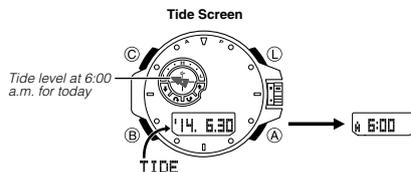
- The Moon age is for noon on the current date, regardless of the indicated time.
- Calculation error for the Moon age is ± 1 day.

E-80

E-81

To view tide level and Moon age for a specific date and time

- Use **B** to enter the Tide/Moon Data Mode as shown on page E-30.
 - This displays the Tide Screen, which displays information in the following sequence: **TIDE** → Today's date → 6:00AM.
 - Tide Graph hand indicates the tide at 6 a.m. for today.



- If you are using 12-hour timekeeping, the **P** (p.m.) and **A** (a.m.) indicators will also appear on the display.

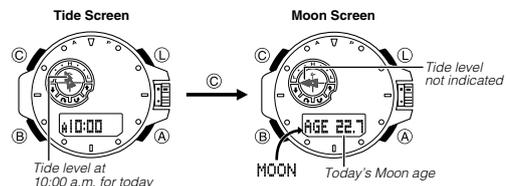
- Use **A** to specify the time you want.
 - Each press of **A** advances the time by one hour, causing the Tide Graph hand to change accordingly.
 - Holding down **A** for about two seconds scrolls the time at high speed.

You can use this screen to check the tide level at a specific time.

- To view tide level and Moon age information for another date, go to step 3 of this procedure. You cannot change the date while the Tide Screen is displayed.

E-82

- Press **C**.
 - This displays the Moon Screen, which displays information in the following sequence: **MOON** → Today's Moon age.
 - The Tide Graph hand moves to 9 o'clock.



- Use **A** to specify the time you want.
 - Pressing **A** causes today's date to appear on the digital display. Each press of **A** advances the day by 1.
 - Holding down **A** for about two seconds scrolls at high speed.
 - About two seconds after you display the desired date, the Moon age on that date appears.
 - You can select any date between January 1, 2000 and December 31, 2099.

You can use this screen to check the Moon age on the specified date.

- To view the tide level for a specified date and time, go to step 5 of this procedure.

E-82

E-83

- Press **C**.
 - This returns to the Tide Screen, which displays information in the following sequence: **TIDE** → Specified date → Specified time.
 - The Tide Graph hand indicates the tide for the specified date and time.

You can use this screen to check tide level for a specified date and time.

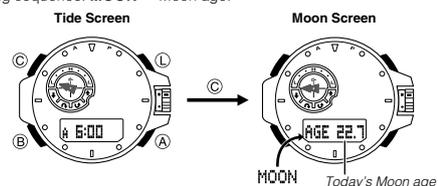
Calibrating the High Tide Time

You obtain more accurate tide indications by the watch by calibrating its high tide time with information you can find on the Internet or in a newspaper.

- Note that the high tide time differs according to your location and the current season.
- Use the Moon Screen to calibrate high tide times.

To calibrate the high tide time

- In the Tide/Moon Data Mode, display the Moon Screen.
 - If the Tide Screen is displayed, press **C** to change to the Moon Screen, which shows information in the following sequence: **MOON** → Moon age.



- Use **A** to specify the date you want.
 - Pressing **A** causes today's date to appear on the digital display. Each press of **A** advances the day by 1.
 - Holding down **A** for about two seconds scrolls at high speed.
 - About two seconds after you display the desired date, the Moon age on that date appears.
 - You can skip this step if you do not want to change the date setting.

E-84

E-85



Hour : Minutes

- Pull out the crown.
 - This will cause the hour and minute digits of the high tide time to flash.
 - The watch's hour, minute, and second hands will move to 2 o'clock.
 - If you are using 12-hour timekeeping, the **P** (p.m.) and **A** (a.m.) indicators will also appear on the display.
- Rotate the crown to change the minute setting.
 - Hour setting will change in accordance with minute setting changes. To set the hour hand separately, go to step 5 of this procedure.
 - You can also use HS1 high-speed movement (page E-6) to change this setting.
 - Any time during steps 4 through 6, you can discard your changes and return to the high tide time for the date that was previously selected by pressing **A** and **C** at the same time.
 - If there are two high tides on a date, set the time of the first high tide. The watch will automatically calculate the time of the second one.
 - If summer time is turned on for your Home Time (**DST** displayed), you should also use summer time when setting the high tide time (page E-34).
- Press **B**.
- Rotate the crown to change the hour setting.
 - You can also use HS1 high-speed movement (page E-6) to change this setting.

- Push the crown back in.
 - The Tide Screen reappears after calibration is complete.
 - Performing the above procedure allows the Tide Graph hand to indicate more accurate tide information.
 - The Tide Graph and Moon Age information you can view in the Tide/Moon Data Mode changes in accordance with the date you specify in step 2 of the above procedure. If you want to view Tide Graph and Moon Age information for a particular date, go back to step 2 and specify the date.
 - The calibration setting you make with this procedure is also applied to Tide Graph information indicated in other modes besides the Tide/Moon Data Mode.

E-86

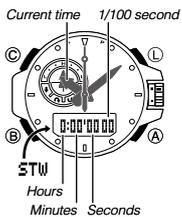
E-87

Using the Stopwatch

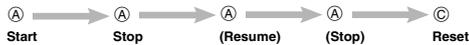
The stopwatch measures elapsed time, split times, and two finishes.

To enter the Stopwatch Mode

Use **(B)** to select the Stopwatch Mode (STW) as shown on page E-30.



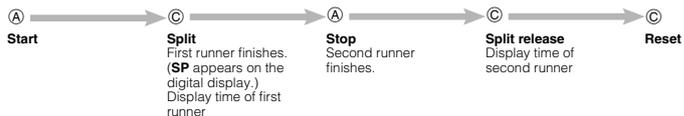
To perform an elapsed time operation



To pause at a split time



To measure two finishes



Note

- The Stopwatch Mode can indicate elapsed time up to 23 hours, 59 minutes, 59.99 seconds.
- Once started, stopwatch timing continues until you press **(A)** to stop it, even if you exit the Stopwatch Mode to another mode and even if timing reaches the stopwatch limit defined above.
- Exiting the Stopwatch Mode while a split time is frozen on the display clears the split time.

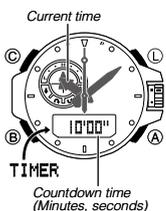
Using the Countdown Timer

The countdown timer can be configured to start at a preset time, and sound an alarm when the end of the countdown is reached.

To enter the Countdown Timer Mode

Use **(B)** to select the Countdown Timer Mode (TIMER) as shown on page E-30.

- About one second after **TIMER** appears on the display, the display will change to show the countdown time hours.



To specify the countdown start time

- In the Countdown Timer Mode, pull out the crown.
 - This will cause the current start time minutes digits to flash on the digital display.
 - The timekeeping (hour, minute, second) hands will move to 2 o'clock.
- Rotate the crown to adjust the minutes setting.
 - You can also use HS1 high-speed movement (page E-6) to change this setting.
 - To set a starting countdown time of 60 minutes, set 00'00.
- After the setting is the way you want, push the crown back in.

To perform a countdown timer operation



- Before starting a countdown timer operation, check to make sure that a countdown operation is not in progress (indicated by the seconds counting down). If it is, press **(A)** to stop it and then **(C)** to reset to the countdown start time.
- An alarm sounds for ten seconds when the end of the countdown is reached. This alarm will sound in all modes. The countdown time is reset to its starting value automatically when the alarm sounds.
- Pulling out the crown while a timer operation is in progress will stop the operation and reset the time to the start time.

To stop the alarm

Press any button.

Using the Alarm

You can set five independent daily alarms. When an alarm is turned on, an alarm will sound for about 10 seconds each day when the time in the Timekeeping Mode reaches the preset alarm time. This is true even if the watch is not in the Timekeeping Mode.

You can also turn on an Hourly Time Signal, which will cause the watch to beep twice every hour on the hour.

To enter the Alarm Mode

Use **(B)** to select the Alarm Mode (ALARM) as shown on page E-30.

- About one second after **ALARM** appears on the display, the display will change to show an alarm name (AL1 through AL5) or the SIG indicator. The alarm name indicates an alarm screen. **SIG** is shown when the Hourly Time Signal screen is on the display.
- When you enter the Alarm Mode, the data you were viewing when you last exited the mode appears first.

Alarm 1 screen



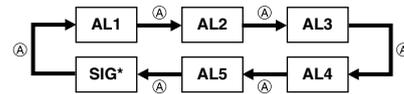
Hourly Time Signal screen



ALARM → AL1 OFF Alarm time (Hour : Minutes)
Alarm name (AL- or SIG)

To set an alarm time

- In the Alarm Mode, use **(A)** to scroll through the alarm screens until the one whose time you want to set is displayed.



* There is no time setting for the hourly time signal.

- Pull out the crown.
 - This will cause the hour and minute digits of the alarm time to flash.
 - The timekeeping (hour, minute, second) hands will move to 2 o'clock.
- Rotate the crown to adjust the minute setting.
 - You can also use HS1 high-speed movement (page E-6) to change this setting.
 - Hour setting will change in accordance with minute setting changes. To change the hour setting separately, go to step 4 of this procedure.
- Press **(B)**.
- Rotate the crown to adjust the hour setting.
 - You can also use HS1 high-speed movement (page E-6) to change this setting.
 - If you are using 12-hour timekeeping, the **P** (p.m.) and **A** (a.m.) indicators will also appear on the display.
- After the settings are the way you want, push the crown back in.
 - Setting an alarm time causes that alarm to turn on automatically.

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

- In the Alarm Mode, use **(A)** to select an alarm or the Hourly Time Signal.
- When the alarm or the Hourly Time Signal you want is selected, press **(C)** to turn it on and off.
 - The alarm on indicator (when any alarm is on), and the Hourly Time Signal on indicator (when the Hourly Time Signal is on) are shown on the display in all modes.



Alarm on indicator Hourly time signal on indicator

To stop the alarm

Press any button.

To test the alarm

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

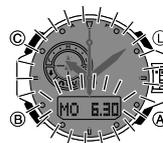
Illumination

The display of the watch is illuminated 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 (page E-97) for it to operate.

To turn on illumination manually

- Press **(L)** in any mode to illuminate the display.
- You can use the procedure below to select either 1.5 seconds or three seconds as the illumination duration. When you press **(L)**, the display will remain illuminated for about 1.5 seconds or three seconds, depending on the current illumination duration setting.
 - The above operation turns on illumination regardless of the current auto light switch setting.
 - Illumination will turn off automatically if an alarm starts to sound or if you perform a crown operation.
 - Illumination will not turn on if a calibration signal receive operation or hand movement operation is in progress. Also, illumination may not turn on while a sensor is taking a reading.



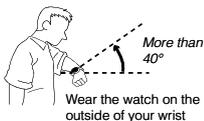
To change the illumination duration

1. In the Timekeeping Mode, pull out the crown.
2. Press **(B)** four times. This will cause **LIGHT** to appear on the digital display, along with a flashing value (1 or 3) indicating the current illumination duration setting.
3. Rotate the crown to select either **1** (1.5 seconds) or **3** (three seconds) for the illumination duration.
4. After the setting is the way you want, push the crown back in.

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.

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.



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.

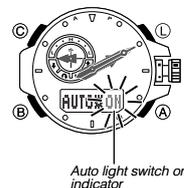
E-96

Note

- This watch features a "Full Auto Light", so the auto light switch operates only when available light is below a certain level. It does not illuminate the display under bright light.
- The auto light switch is always disabled, regardless of its on/off setting, when any one of the following conditions exists.
 - While the watch is in the Digital Compass Mode
 - While a receive operation is in progress
 - While a hand movement operation is in progress
- If you have Auto Light enabled, display illumination may be delayed if you angle the watch towards your face while a barometric pressure, altitude, or temperature reading operation is being performed.

To enable or disable the auto light switch

1. In the Timekeeping Mode, pull out the crown.
2. Press **(B)** three times. This will cause **AUTO** to appear on the left of the digital display, along with the flashing current auto light switch setting (**ON** or **OFF**) on the right.
3. Rotate the crown to select either enabled (**ON**) or disabled (**OFF**) for the auto light switch setting.
4. Push the crown back in.
 - Auto Light is automatically disabled whenever battery power drops to Level 4 (page E-15).



Illumination Precautions

- The LED that provides illumination loses power after very long use.
- Illumination may be hard to see when viewed under direct sunlight.
- Illumination turns off automatically whenever an alarm sounds.
- Frequent use of illumination runs down the battery.

Auto light switch precautions

- Wearing the watch on the inside of your wrist, movement of your arm, or vibration of your arm can cause frequent activation of the auto light switch and illumination of the display. To avoid running down the battery, turn off the auto light switch whenever engaging in activities that might cause frequent illumination of the display.
- Note that wearing the watch under your sleeve while the auto light switch is turned on can cause frequent illumination of the display and can run down the battery.



- 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 after the preset illumination duration (page E-96), 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 towards your face 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.
- 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.

E-98

Other Settings

The button operation tone sounds any time you press one of the watch's buttons. You can turn the button operation tone on or off as desired.

- Even if you turn off the button operation tone, the alarm, Hourly Time Signal, barometric pressure change indicator, and Countdown Timer Mode alarm all operate normally.

To turn the button operation tone on or off

1. In the Timekeeping Mode, pull out the crown.
2. Press **(B)** twice. This will cause the current button operation tone setting (**KEY** or **MUTE**) to flash on the digital display.
3. Rotate the crown to select either on (**KEY**) or off (**MUTE**) for the button operation tone setting.
4. Push the crown back in.



To turn Power Saving on or off

1. In the Timekeeping Mode, pull out the crown.
2. Press **(B)** six times. This will cause **P.SAVE** to appear on the digital display, along with the flashing current Power Saving setting (**ON** or **OFF**).
3. Rotate the crown to select either on (**ON**) or off (**OFF**) for the Power Saving setting.
4. Push the crown back in.



E-97

Troubleshooting

Time Setting

See "Radio Controlled Atomic Timekeeping" (page E-20) for information about adjusting the time setting according to a time calibration signal.

■ The current time setting is off by hours.

Your Home City setting may be wrong (page E-34). Check your Home City setting and correct it, if necessary.

■ The current time setting is off by one hour.

If you are using the watch in an area where time calibration signal reception is possible, see "To configure Home City and summer time settings" (page E-34).

If you are using in the watch in an area where time calibration signal reception is not possible, you may need to change your Home City's standard time/daylight saving time (DST) setting manually. Use the procedure under "To change the current time and date settings manually" (page E-36) to change the standard time/daylight saving time (DST) setting.

Altitude Readings

■ Altitude readings produce different results at the same location.

■ Readings produced by the watch are different from the elevation and/or sea level altitude indications in my area. (Negative sea level altitude values are produced in a location where the indicated elevation is a positive value.)

E-100

■ I can't get correct altitude readings.

Relative altitude is calculated based on changes in barometric pressure measurement by its pressure sensor. This means that barometric pressure changes can cause readings taken at different times at the same location to be different. Also note that the value displayed by the watch may be different from the actual elevation and/or sea level elevation indicated for the area where you are located.

When using the altimeter of this watch for mountain climbing or other activities, it is highly recommended that you check a map, local altitude indications, or some other source for your current correct altitude and regularly calibrate the altimeter with the latest information.

For more information, see "To specify a reference altitude value" (page E-66).

■ Following a relative altitude reading, the watch's second hand points to 9 o'clock.

- The reading value is outside of the allowable measurement range.
- Specify the reference altitude value so it is within the allowable measurement range (page E-66).
- This could indicate sensor error. If **ERR** (error) is on the digital display, refer to "Direction, Altitude, Barometric Pressure, and Temperature Readings" (page E-103) for more information.

Taking Direction Readings



■ Abnormal magnetism detection is indicated.

- Move away from any potential source of strong magnetism and try taking a reading again.
- If abnormal magnetism is detected again when you retry, it could mean that the watch itself has become magnetized. If this happens, continue to keep away from the source of strong magnetism, perform bidirectional calibration, and then try taking a reading again. For more information, refer to "To perform bidirectional calibration" (page E-57) and "Location" (page E-60).

E-101

■ ERR appears on the digital display during sensor reading operations.

There is something wrong with the sensor. This could be due to nearby strong magnetic force. Contact your original retailer or CASIO service center See "Location" (page E-60).

■ ERR appears following bidirectional calibration.

If the screen displays hyphens (---) followed by the **ERR** (error) indicator, it could mean there is something wrong with the sensor.

- Wait for about one second for the **ERR** indicator to disappear from the display, and then calibrate the sensor again.
- If **ERR** continues to appear even after multiple attempts to calibrate, contact your original retailer or CASIO service center.

■ The direction information indicated by the watch is different from that indicated by a backup compass.

- Move away from and potential source of strong magnetism, perform bidirectional calibration, and then try taking a reading again. For more information, refer to "To perform bidirectional calibration" (page E-57) and "Location" (page E-60).

■ Direction readings produce different results at the same location.

- Move away from any potential source of strong magnetism and try taking a reading again. See "Location" (page E-60).

■ I am having problems taking direction readings indoors.

- Move away from any potential source of strong magnetism and try taking a reading again. See "Location" (page E-60).

Whenever you have a sensor malfunction, take the watch to your original retailer or nearest authorized CASIO distributor as soon as possible.

E-102

Barometric Pressure Readings

■ Following a relative barometric pressure reading, the watch's second hand points to 9 o'clock.

- The reading value is outside of the allowable measurement range. See page E-44.
- Calibrate the pressure sensor (page E-51).
- There may be a problem with the sensor. If **ERR** (error) is on the digital display, refer to "Direction, Altitude, Barometric Pressure, and Temperature Readings" for more information.

Direction, Altitude, Barometric Pressure, and Temperature Readings

■ ERR appears on the digital display during sensor reading operations.

- This indicates that there is a problem with the sensor, making sensor readings impossible.
- If the error is indicated while a reading operation in progress, restart the operation. If **ERR** appears again, it could mean there is something wrong with the sensor.
- If **ERR** appears frequently, it could mean that the sensor is faulty. Contact your original retailer or CASIO service center

■ I can't change the temperature, barometric pressure, and altitude display units.

When **TYO** (Tokyo) is selected as the Home City, the altitude unit is set automatically to meters (m), the barometric pressure unit to hectopascals (hPa), and the temperature unit to Celsius (°C). These settings cannot be changed.

World Time Mode

■ The time for my World Time City is off in the World Time Mode.

This could be due to incorrect switching between standard time and daylight saving time. See "To configure World Time City and summer time settings" (page E-77) for more information.

E-103

Charging

■ The watch does not resume operation after I expose it to light.

This can happen after the power level drops to Level 5 (page E-15). Keep the watch exposed to light until it recharges sufficiently.

■ RECOVER is flashing on the digital display.

The watch is in the charge recovery mode. Wait until the recovery process is complete (about 15 minutes). The watch will recover more quickly if you place it in a brightly lit location.

Note

- Performing repeated illumination and/or sensor reading operations over a short time period can cause a sudden drop in watch's charge. This will cause the watch to enter the charge recover mode. The watch is in the charge recovery mode when **RECOVER** is flashing on the digital display. The charge recovery mode is the same as a low battery charge state, access to some functions is limited while the watch charge is recovering. Normal operation will resume after recovery is complete. For more information, refer to "Power Recovery Mode" (page E-17).
- A flashing **CHARGE** indicator means that the charge level of the watch has suddenly dropped. Immediately expose the watch to light to charge it.

Time Calibration Signal

The information in this section applies only when **LON, PAR, ATH, HKG, HNL, ANC, LAX, DEN, CHI, NYC, or TYO** is selected as the Home City. You need to adjust the current time manually when any other city is selected as the Home City.

E-104

E-105

■ The current time setting is off by one hour.

Possible Cause	Remedy	Page
Signal reception on a day for switching between standard time/daylight saving time (DST) may have failed for some reason.	Perform the operation under "To get ready for a receive operation". The time setting will be adjusted automatically as soon as signal reception is successful.	E-22
	If you are unable to receive the time calibration signal, change the standard time/daylight saving time (DST) setting manually.	E-36

■ Auto receive is not performed or you cannot perform manual receive.

Possible Cause	Remedy	Page
The watch is not in the Timekeeping Mode.	Auto receive is performed only while the watch is in the Timekeeping Mode. Enter the Timekeeping Mode.	E-31
Your Home City setting is wrong.	Check your Home City setting and correct it, if necessary.	E-34
There is not enough power for signal reception.	Expose the watch to light to charge it.	E-14

E-106

E-107

Specifications

Accuracy at normal temperature: ±15 seconds a month (with no signal calibration)

Digital Timekeeping: Hour, minutes, seconds, a.m. (A)/ p.m. (P), month, day, day of the week

Time format: 12-hour and 24-hour

Calendar system: Full Auto-calendar pre-programmed from the year 2000 to 2099

Other: Five display formats (day of the week, month, day; barometric pressure change, month, day; hour, minute, second; World Time hour, minute; Moon age); Home City code (can be assigned one of 29 city codes +UTC); standard time / daylight saving time (summer time)

Analog Timekeeping: Hour, minutes (hand moves every 10 seconds), seconds

Time Calibration Signal Reception: Auto receive 6 times a day (5 times a day for the Chinese calibration signal) ; Remaining auto receives cancelled as soon as one is successful; Manual receive; Receive Mode

Receiveable Time Calibration Signals: Mainflingen, Germany (Call Sign: DCF77, Frequency: 77.5 kHz); Anthon, England (Call Sign: MSF, Frequency: 60.0 kHz); Fort Collins, Colorado, the United States (Call Sign: WWVB, Frequency: 60.0 kHz); Fukushima, Japan (Call Sign: JJY, Frequency: 40.0 kHz); Fukuoka/Saga, Japan (Call Sign: JJY, Frequency: 60.0 kHz); Shangqiu City, Henan Province, China (Call Sign: BPC, Frequency: 68.5 kHz)

Barometer:

Measurement and display range:

260 to 1,100 hPa (or 7.65 to 32.45 inHg)

Display unit: 1 hPa (or 0.05 inHg)

Other: Calibration; Barometric pressure graph; Barometric pressure differential pointer; Barometric pressure change indicator

E-108

E-109

Bearing Sensor Precision:

Direction: Within ±10°

Values are guaranteed for a temperature range of 10°C to 40°C (50°F to 104°F).

North indicated by second hand: Within ±2 segments

Temperature Sensor Precision:

±2°C (±3.6°F) in range of -10°C to 60°C (14.0°F to 140.0°F)

World Time: 29 cities (29 time zones), UTC (Universal Time Coordinated); Home City/World Time City

switching; one-touch UTC zone access

Other: Daylight Saving Time/Standard Time

Tide/Moon Data: Tide levels (Tide Graph), Moon age; date selection; time selection (Tide Graph only)

Stopwatch:

Measuring unit: 1/100 second

Measuring capacity: 23:59' 59.99"

Measuring modes: Elapsed time, split time, two finishes

Countdown Timer:

Measuring unit: 1 second

Countdown range: 60 minutes

Setting unit: 1 minute

Alarms: 5 Daily alarms; Hourly time signal

Illumination: LED light; Selectable illumination duration (approximately 1.5 seconds or 3 seconds); Auto Light Switch (Full Auto Light operates only in the dark)

Other: Battery power indicator; Power Saving; Button operation tone on/off; alarm test; auto hand position adjustment; hand shift feature (to view digital info)

E-110

E-111

■ The display shows the ERR indicator when I check the result of the latest receive operation.

Possible Cause	Remedy	Page
<ul style="list-style-type: none"> You are wearing or moving the watch, or performing a button operation during the signal receive operation. The watch is in an area with poor reception conditions. 	Keep the watch in an area where reception conditions are good while the signal receive operation is performed.	E-22
You are in an area where signal reception is not possible for some reason.	See "Approximate Reception Ranges".	E-21
The calibration signal is not being transmitted for some reason.	<ul style="list-style-type: none"> Check the website of the organization that maintains the time calibration signal in your area for information about its down times. Try again later. 	-

■ The current time setting changes after I set it manually.

You may have the watch configured for auto receive of the time calibration signal (page E-23), which will cause the time to be adjusted automatically according to your currently selected Home City. If this results in the wrong time setting, check your Home City setting and correct it, if necessary (page E-34).

■ Signal reception is being performed successfully, but the time and/or day is wrong.

Possible Cause	Remedy	Page
Your Home City setting is wrong.	Check your Home City setting and correct it, if necessary.	E-34
The DST setting may be incorrect.	Change the DST setting to Auto DST.	E-34
Calibration signal interference caused the time and/or date setting to be adjusted incorrectly.	Perform manual calibration signal receive.	E-24

Digital Compass: 60 seconds continuous reading; 16 directions; Angle value 0° to 359°; Measurement unit: 1° (digital display)/6° (hand); North indicated by second hand; Compass calibration (bidirectional, magnetic declination angle)

Altimeter:

Measurement range: -700 to 10,000 m (or -2,300 to 32,800 ft.) without reference altitude

Display range: -3,000 to 10,000 m (or -9,840 to 32,800 ft.)

Negative values can be caused by readings produced based on a reference altitude or due to atmospheric conditions.

Measurement Unit: 1 m (or 5 ft.)

Current Altitude Data: 1 hour - every second for the first 3 minutes, followed by every 5 seconds for the remainder of the hour (0'05); 12 hours - every second for the first 3 minutes, followed by every 2 minutes for the remainder of the 12 hours (2'00)

Other: Reference altitude setting; Altitude differential (-100 to +100m/-1,000 to +1,000m); Altitude measurement interval (0'05 or 2'00)

Thermometer:

Measurement and display range: -10.0 to 60.0°C (or 14.0 to 140.0°F)

Display unit: 0.1°C (or 0.2°F)

Other: Calibration

Pressure Sensor Precision:

Measurement accuracy: Within ±3hPa (0.1 inHg) (Altimeter accuracy: Within ± 75m (246 ft.))

• Values are guaranteed for a temperature range of -10°C to 40°C (14°F to 104°F).

• Precision is lessened by strong impact to either the watch or the sensor, and by temperature extremes.

Power Supply: Solar panel and one rechargeable battery

Approximate battery operating time: 6 months (from full charge to Level 4) under the following conditions:

- Light: 1.5 seconds/day
- Beeper: 10 seconds/day
- Direction readings: 20 times/month
- Climbs: Once (approximately 1 hour of altitude readings)/month
- Barometric pressure change indicator readings: Approximately 24 hours/month
- Barometric pressure graph: Readings every 2 hours
- Time calibration receive: 4 minutes/day
- Display: 18 hours/day

Frequent use of illumination runs down the battery. Particular care is required when using the auto light switch (page E-98).



City Code Table



L-1

City Code Table

City Code	City	UTC Offset/ GMT Differential
PPG	Pago Pago	-11
HNL	Honolulu	-10
ANC	Anchorage	-9
LAX	Los Angeles	-8
DEN	Denver	-7
CHI	Chicago	-6
NYC	New York	-5
SCL	Santiago	-4
RIO	Rio De Janeiro	-3
RAI	Praia	-1
UTC	-	-
LON	London	0
PAR	Paris	+1
ATH	Athens	+2
JED	Jeddah	+3
THR	Tehran	+3.5
DXB	Dubai	+4

City Code	City	UTC Offset/ GMT Differential
KBL	Kabul	+4.5
KHI	Karachi	+5
DEL	Delhi	+5.5
KTM	Kathmandu	+5.75
DAC	Dhaka	+6
RGN	Yangon	+6.5
BKK	Bangkok	+7
HKG	Hong Kong	+8
TYO	Tokyo	+9
ADL	Adelaide	+9.5
SYD	Sydney	+10
NOU	Noumea	+11
WLG	Wellington	+12

- Based on data as of December 2013.
- The rules governing global times (GMT differential and UTC offset) and summer time are determined by each individual country.

L-2