Operation Guide 3172

CASIO

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.

About This Manual

- 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.

Things to check before using the watch

1. Check the battery power level.

Is "**H**" or "**M**" displayed for the battery power indicator?

Battery power indicator

NO

Does any one of the following conditions exist?
- Battery power indicator shows "**L**" and "**LOW**" is displayed in the upper left corner of the screen.
- "**C**" is displayed in the lower left corner of the screen.
- The face is blank.

YES

Power is low. Charge the watch by placing it in a location where it is exposed to light. For details, see "Charging the Watch".

YES

The watch is charged sufficiently.
For details about charging, see "Charging the Watch".

NEXT

Go to step 2.

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

Use the procedure under "To configure Home City settings" to configure your Home City and daylight saving time settings.

Important!

Proper time calibration signal reception, and World Time Mode and Sunrise/Sunset 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".
- To set the time manually
  See "Configuring Current Time and Date Settings Manually".

The watch is now ready for use.

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

Charging the Watch

The face of the watch is a solar cell 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 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

Important!

- Allowing the watch to become very hot can cause its liquid crystal display to black out. 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 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

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

Battery power indicator

Level	Battery Power Indicator	Function Status
1 (H)	BATT·L·M·H	All functions enabled.
2 (M)	BATT·L·M·H	All functions enabled.
3 (L)	LOW BATT·L·M·H	Auto and manual receive, illumination, beeper, and sensor operation disabled.
4 (C)	C BATT·L·M·H	Except for timekeeping and the **C** (charge) indicator, all functions and display indicators disabled.
5	BATT·L·M·H	All functions disabled.

- The flashing **LOW** 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.
- At Level 5, all functions are disabled and settings return to their initial factory defaults. 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**).
- 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.
- All data stored in memory is deleted, and 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.

Power Recovery Mode

- Performing multiple sensor, illumination, or beeper operations during a short period may cause all of the battery power indicators (**H**, **M**, and **L**) 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 battery power indicators (**H**, **M**, **L**) will stop flashing. This indicates that the functions listed above are enabled again.
- If all of the battery power indicators (**H**, **M**, **L**) are flashing and the **C** (charge) indicator also is flashing, it means the battery level is very 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/Thermometer Mode, or Altimeter Mode sensor may be disabled if there is not enough voltage available to power it sufficiently. This is indicated when all of the battery power indicators (**H**, **M**, **L**) are flashing.
- Frequent flashing of all of the battery power indicators (**H**, **M**, **L**) 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)	5 min.	2 hours			11 hours	3 hours
Sunlight through a window (10,000 lux)	24 min.	5 hours			54 hours	15 hours
Daylight through a window on a cloudy day (5,000 lux)	48 min.	8 hours			110 hours	30 hours
Indoor fluorescent lighting (500 lux)	8 hours	87 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.

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.

- There actually are two sleep state levels: "display sleep" and "function sleep".

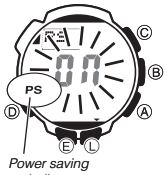
Elapsed Time in Dark	Display	Operation
60 to 70 minutes (display sleep)	Blank, with **PS** flashing	Display is off, but all functions are enabled.
6 or 7 days (function sleep)	Blank, with **PS** not flashing	All functions are disabled, but timekeeping is maintained.

- The watch will not enter a sleep state between 6:00 AM and 9:59 PM. If the watch is already in a sleep state when 6:00 AM 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.

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.

To turn Power Saving on and off



Power saving on indicator

1. In the Timekeeping Mode, hold down Ⓔ until the currently selected city code starts to flash. This is the city code setting screen.
   - Before the city code starts to flash, the message **SET Hold** will appear on the display. Keep Ⓔ depressed until **SET Hold** disappears and the city code starts to flash.
2. Use Ⓓ to display the Power Saving On/Off screen shown nearby.
3. Press Ⓐ to toggle Power Saving on (**On**) and off (**OFF**).
4. Press Ⓔ twice to exit the setting screen.
   - The Power Saving on indicator (**PS**) is on the display in all modes while Power Saving is turned on.

Radio Controlled Atomic Timekeeping

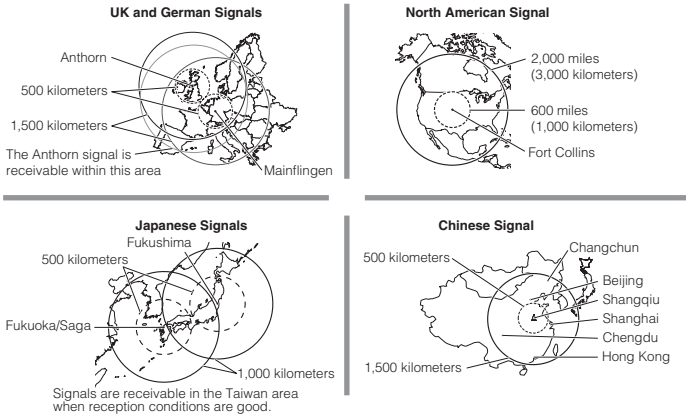
This watch receives a time calibration signal and updates its time setting accordingly. However, when using the watch outside of areas covered by time calibration signals, you will have to adjust the settings manually as required. See “Configuring Current Time and Date Settings Manually” for more information. 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:
LIS, LON, MAD, PAR, ROM, BER, STO, ATH, MOW	Anthorn (England), Mainflingen (Germany)
HKG, BJS	Shangqiu City (China)
TPE, SEL, TYO	Fukushima (Japan), Fukuoka/Saga (Japan)
HNL, ANC, YVR, LAX, YEA, DEN, MEX, CHI, NYC, YHZ, YYT	Fort Collins, Colorado (United States)

Important!

- The areas covered by **MOW**, **HNL** and **ANC** are quite far from the calibration signal transmitters, so certain conditions may cause reception problems.
- When **HKG** or **BJS** is selected as the Home City, only the time and date are adjusted according to the time calibration signal. You need to switch manually between standard time and daylight saving time (DST) if required. See “To configure Home City settings” for information about how to do this.

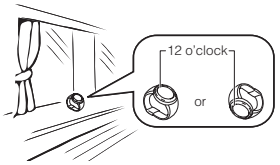
Approximate Reception Ranges



- 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 January 2009, 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.
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 seven minutes, but in some cases it can take as long as 14 minutes. Take care that you do not perform any button operation or move the watch during this time.

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

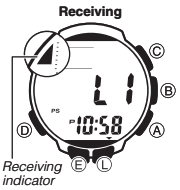
Inside or among buildings | Inside a vehicle | Near household appliances, office equipment, or a mobile phone | Near a construction site, airport, or other sources of electrical noise | Near high-tension power lines | Among or behind mountains

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”.

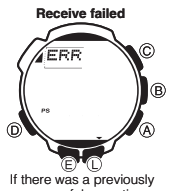
Auto Receive

- 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 or World Time Mode. The receive operation is not performed if a calibration time is reached while you are configuring settings.
- You can use the procedure under “To turn auto receive on and off” to enable or disable auto receive.

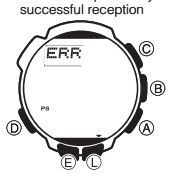
To perform manual receive



1. Use Ⓓ to select the Receive Mode (**R/C**) as shown in “Selecting a Mode”.
2. Hold down Ⓐ.
   - Keep Ⓐ depressed until **RC Hold** appears on the display and the receiving indicator starts flashing.
   - A signal level indicator (**L1**, **L2**, or **L3**, see “Signal Level Indicator”) appears on the display after reception starts. Do not move the watch or perform any button operation until **GET** or **ERR** appears in the upper left corner of the screen.
   - If the receive operation is successful, the reception date and time appear on the display, along with the **GET** indicator.
     The watch will return to the Timekeeping Mode if you press Ⓓ or if you do not perform any button operation for about two or three minutes.



If there was a previously successful reception



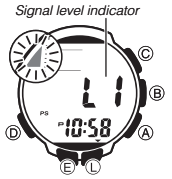
If no reception was successful

- If the current reception fails but a previous reception (within the last 24 hours) was successful, the display shows the receiving indicator and the **ERR** indicator. If the **ERR** indicator only is displayed (without the receiving indicator), it means that all of the receive operations over the past 24 hours have failed.
  The watch will return to the Timekeeping Mode without changing the time setting if you press Ⓓ or if you do not perform any button operation for about two or three minutes.

Note

To interrupt a receive operation and return to the Receive Mode, press Ⓐ.

Signal Level Indicator



During manual receive, the signal level indicator displays the signal level as shown below.

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.

To check the latest signal reception results

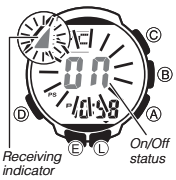
Enter the Receive Mode.

- When receive is successful, the display shows the time and date that receive was successful. **- : - -** indicates that none of the reception operations were successful.
- To return to the Timekeeping Mode, press Ⓓ.

Note

The receiving indicator will not be displayed if you have adjusted the time or date setting manually since the last receive operation.

To turn auto receive on and off



1. Enter the Receive Mode.
2. In the Receive Mode, hold down Ⓔ until the current auto receive setting (**On** or **OFF**) and receiving indicator start to flash. This is the setting screen.
   - Note that the setting screen will not appear if the currently selected Home City is one that does not support time calibration reception.
3. Press Ⓐ to toggle auto receive on (**On**) and off (**OFF**).
4. Press Ⓔ to exit the setting screen.

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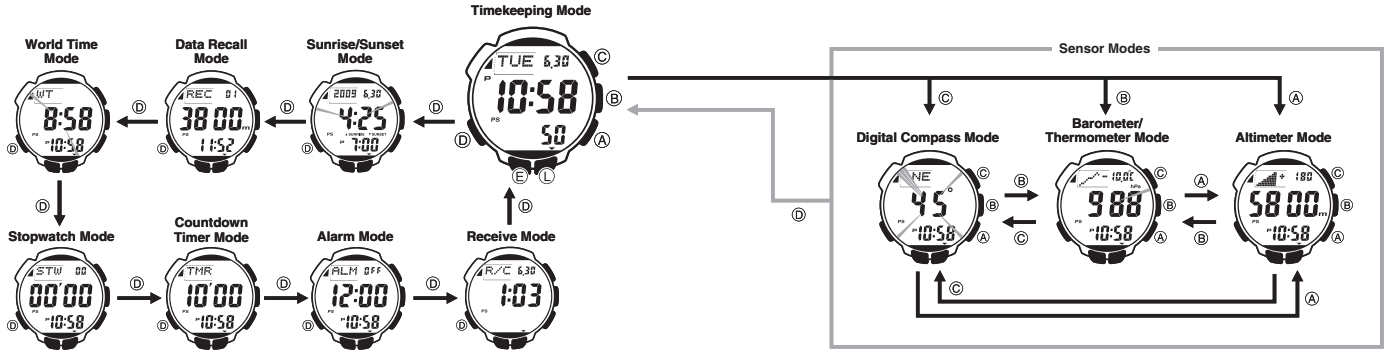
Radio-controlled Atomic Timekeeping Precautions
- Strong electrostatic charge can result in the wrong time setting.
- Even if a receive operation is successful, certain conditions can cause the time setting to be off by up to one second.
- The watch is designed to update the date and day of the week 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.
- If you are in an area where signal reception is not possible, the watch keeps time with the precision noted in “Specifications”.
- The receive operation is disabled under any of the following conditions.
  – While power is at Level 3 (**L**) or lower
  – While the watch is in the power recovery mode
  – While a sensor operation is being performed
  – When the watch is in the function sleep state (“Power Saving”)
  – While a countdown timer operation is in progress
- A receive operation is cancelled if an alarm sounds while it is being performed.
- 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.

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:
• View the current date in the Home City • Configure Home City and daylight saving time (DST) settings • Configure time and date settings manually	Timekeeping Mode
View the sunrise and sunset times for a specific date	Sunrise/Sunset Mode
• Determine your current bearing or the direction from your current location to a destination as a direction indicator and angle value • Determine your current location using the watch and a map	Digital Compass Mode
• View the barometric pressure and temperature at your current location • View a graph of barometric pressure readings	Barometer/Thermometer Mode
• View the altitude at your current location • Determine the altitude differential between two locations (reference point and current location) • Record an altitude reading with the measurement time and date	Altimeter Mode
Recall records created in the Altimeter Mode	Data Recall Mode
View the current time in one of 48 cities (31 time zones) around the globe	World Time Mode
Use the stopwatch to measure elapsed time	Stopwatch Mode
Use the countdown timer	Countdown Timer Mode
Set an alarm time	Alarm Mode
• Perform a time calibration receive operation • Check whether the last receive operation was successful	Receive Mode

Selecting a Mode
- The illustration below shows which buttons you need to press to navigate between modes.
- For about one second after you enter a mode by pressing Ⓓ, a pointer will appear on the display pointing the applicable mode name on the watch’s bezel.
- In any mode, press Ⓛ to illuminate the display.



- You can use buttons Ⓐ, Ⓑ, and Ⓒ to enter a sensor mode directly from the Timekeeping Mode or from another sensor mode. To enter a sensor mode from the Sunrise/Sunset Mode, Data Recall, World Time, Stopwatch, Countdown Timer, Alarm, 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.

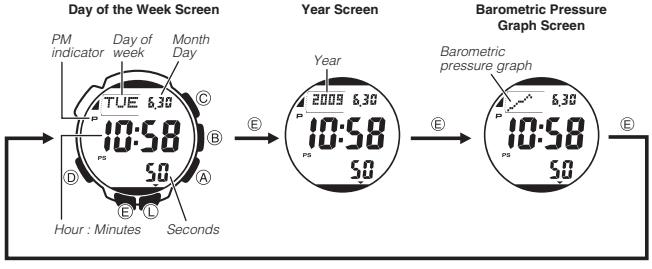
Auto Return Features
- The watch returns to the Timekeeping Mode automatically if you do not perform any button operation for two or three minutes in the Sunrise/Sunset, Data Recall, Alarm, Receive, or Digital Compass Mode.
- If you leave a screen with flashing digits on the display for two or three minutes without performing any operation, the watch exits the setting screen automatically.

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

Scrolling
The Ⓐ and Ⓒ buttons are used on the setting screen to scroll through data on the display. In most cases, holding down these buttons during a scroll operation scrolls through the data at high speed.

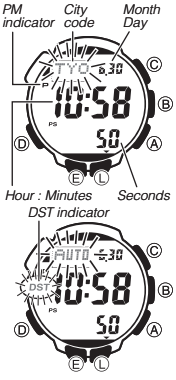
Timekeeping

Use the Timekeeping Mode to set and view the current time and date.
- In the Timekeeping Mode, an indicator moves along the ring around the display as seconds advance.
- Pressing Ⓔ while in the Timekeeping Mode will cycle through the Timekeeping Mode display formats as shown below.



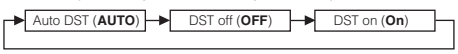
Configuring Home City Settings

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 settings

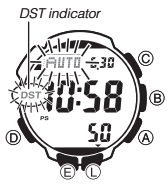
1. In the Timekeeping Mode, hold down Ⓔ until the currently selected city code starts to flash. This is the city code setting screen.
   - Before the city code starts to flash, the message **SET Hold** will appear on the display. Keep Ⓔ depressed until **SET Hold** disappears and the city code starts to flash.
   - The watch will exit the setting mode automatically if you do not perform any operation for about two or three minutes.
   - For details about city codes, see the “City Code Table”.
2. Press Ⓐ (East) and Ⓒ (West) to select the city code you want to use as your Home City.
   - Keep pressing Ⓐ or Ⓒ until the city code you want to select as your Home City appears on the display.
3. Press Ⓓ to display the DST setting screen.
4. Use Ⓐ to cycle through the DST settings in the sequence shown below.



   - The Auto DST (**AUTO**) setting will be available only when a city code that supports time calibration signal reception 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 all the settings are the way you want, press Ⓔ twice to return to the Timekeeping Mode.
   - The **DST** indicator appears to indicate that Daylight Saving Time is turned on.

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 “Radio Controlled Atomic Timekeeping” for details.

To change the Daylight Saving Time (summer time) setting



1. In the Timekeeping Mode, hold down Ⓔ until the currently selected city code starts to flash. This is the city code setting screen.
   - Before the city code starts to flash, the message **SET Hold** will appear on the display. Keep Ⓔ depressed until **SET Hold** disappears and the city code starts to flash.
2. Press Ⓓ to display the DST setting screen.
3. Use Ⓐ to cycle through the DST settings in the sequence shown below.

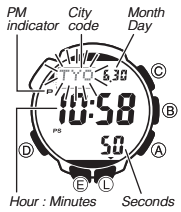
Auto DST (**AUTO**) → DST off (**OFF**) → DST on (**On**)

   - The Auto DST (**AUTO**) setting will be available only when a city code that supports time calibration signal reception 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.
4. After all the settings are the way you want, press Ⓔ twice to return to the Timekeeping Mode.
   - The **DST** indicator appears to indicate that Daylight Saving Time is turned on.

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, hold down Ⓔ until the currently selected city code starts to flash. This is the city code setting screen.
   - Before the city code starts to flash, the message **SET Hold** will appear on the display. Keep Ⓔ depressed until **SET Hold** disappears and the city code starts to flash.
2. Use Ⓐ and Ⓒ to select the city code you want.
   - Select your Home City code before changing any other setting.
   - For full information on city codes, see the "City Code Table".
3. Press Ⓓ to move the flashing in the sequence shown below to select the other settings.

City Code → DST → 12/24-Hour Format → Seconds → Hour → Minutes → Year → Month → Day → Button Operation Tone On/Off → Illumination Duration → Power Saving → Thermometer/Barometer/ Altitude unit → City Code

   - The following steps explain how to configure timekeeping settings only.
4. When the timekeeping setting you want to change is flashing, use Ⓐ and/or Ⓒ to change it as described below.

Screen	To do this:	Do this:
TYO	Change the city code	Use Ⓐ (East) and Ⓒ (West).
AUTO	Cycle between Auto DST (**AUTO**), Daylight Saving Time (**On**) and Standard Time (**OFF**).	Press Ⓐ.
12H	Toggle between 12-hour (**12H**) and 24-hour (**24H**) timekeeping.	Press Ⓐ.
50	Reset the seconds to **00**	Press Ⓐ.
P 10:58	Change the hour or minutes	Use Ⓐ (+) and Ⓒ (–).
2009 6.30	Change the year, month, or day	

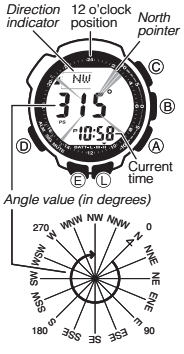
5. Press Ⓔ twice to exit the setting screen.

Note

- For information about selecting a Home City and configuring the DST setting, see "Configuring Home City Settings".
- While 12-hour format is selected for timekeeping, a **P** (PM) indicator will appear for times from noon to 11:59 p.m. No indicator appears for times from midnight to 11:59 a.m. With 24-hour format, time is displayed from 0:00 to 23:59, without any **P** (PM) indicator.
- 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.

Digital Compass

In the Digital Compass Mode, a built-in bearing sensor detects magnetic north at regular intervals and indicates one of 16 directions on the display.



To take a digital compass reading

1. Make sure the watch is in the Timekeeping Mode or any one of the sensor modes.
   - The sensor modes are: Digital Compass Mode, Barometer/ Thermometer Mode, and Altimeter Mode.
2. 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).
3. Point the 12 o'clock position of the watch in the direction you want to measure.
4. Press Ⓒ to start digital compass measurement.
   - **COMP** will appear on the display to indicate that a digital compass operation is in progress.
   - See "Digital Compass Readings" for information about what appears on the display.

   Note
   - If a value appears to the right of the direction indicator, it means that the bearing memory screen is displayed. If this happens, press Ⓔ to exit the bearing memory screen.
5. After you are finished using the digital compass, press Ⓓ to return to the Timekeeping Mode.

Digital Compass Readings

- When you press Ⓒ to start digital compass measurement, **COMP** will appear on the display initially to indicate that a digital compass operation is in progress.
- About two seconds after you start a digital compass measurement operation, letters on the display will indicate the direction that the 12 o'clock position of the watch is pointing. Four pointers that indicate magnetic north, south, east, and west also will appear.
- After the first reading is obtained, the watch will continue to take digital compass readings automatically each second for up to 20 seconds. After that, measurement will stop automatically.
- The direction indicator and angle value will show **- - -** to indicate that digital compass readings are complete.
- The auto light switch is disabled during the 20 seconds that digital compass readings are being taken.
- The following table shows the meanings of each of the direction abbreviations that appear on the display.

Direction	Meaning	Direction	Meaning	Direction	Meaning	Direction	Meaning
N	North	**NNE**	North-northeast	**NE**	Northeast	**ENE**	East-northeast
E	East	**ESE**	East-southeast	**SE**	Southeast	**SSE**	South-southeast
S	South	**SSW**	South-southwest	**SW**	Southwest	**WSW**	West-southwest
W	West	**WNW**	West-northwest	**NW**	Northwest	**NNW**	North-northwest

- The margin of error for the angle value and the direction indicator is ±11 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 304 to 326 degrees.
- Note that taking a measurement while the watch is not horizontal (in relation to the horizon) can result in large measurement error.
- You can calibrate the bearing sensor if you suspect the direction reading is incorrect.
- Any ongoing direction measurement 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 Ⓛ). The measurement operation resumes for its remaining duration after the operation that caused it to pause is finished.
- See "Digital Compass Precautions" for important information about taking direction readings.

Calibrating the Bearing Sensor

You should calibrate the bearing sensor whenever you feel that the direction readings being produced by the watch are off. There are three different calibration methods available: magnetic declination correction, bidirectional calibration, and northerly calibration.

• Magnetic Declination Correction

With magnetic declination correction, you 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. 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°.

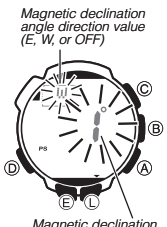
• Bidirectional Calibration and Northerly Calibration

Bidirectional calibration and northerly calibration calibrate the accuracy of 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. With northerly calibration, you "teach" the watch which way is north (which you have to determine with another compass or some other means).

Important!

The more correctly you perform bidirectional calibration, the better the accuracy of the bearing sensor readouts. You should perform bidirectional calibration whenever you change environments where you use the bearing sensor, and whenever you feel that the bearing sensor is producing incorrect readings.

To perform magnetic declination correction

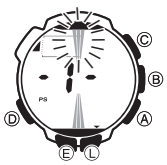


1. In the Digital Compass Mode, hold down Ⓔ until the current magnetic declination settings start to flash on the display. This is the setting screen.
   - Before the magnetic declination settings start to flash, the message **SET Hold** will appear on the display. Keep Ⓔ depressed until **SET Hold** disappears and the magnetic declination settings start to flash.
2. Use Ⓐ (East) and Ⓒ (West) to change the settings.
   - The following explains magnetic declination angle direction settings.
     OFF: No magnetic declination correction performed. The magnetic declination angle with this setting is 0°.
     E: When magnetic north is to the east (east declination)
     W: When magnetic north is to the west (west declination)
   - You can select a value within the range of W 90° to E 90° with these settings.
   - You can turn off (**OFF**) magnetic declination correction by pressing Ⓐ and Ⓒ 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.
3. When the setting is the way you want, press Ⓔ to exit the setting screen.

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

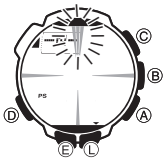


1. In the Digital Compass Mode, hold down Ⓔ until the current magnetic declination settings start to flash on the display. This is the setting screen.
   - Before the magnetic declination settings start to flash, the message **SET Hold** will appear on the display. Keep Ⓔ depressed until **SET Hold** disappears and the magnetic declination settings start to flash.
2. Press Ⓓ to display the bidirectional calibration screen.
   - At this time, the north pointer flashes at the 12 o'clock position and the display will show **-1-** to indicate that the watch is ready to calibrate the first direction.
3. Place the watch on a level surface facing any direction you want, and press Ⓒ to calibrate the first direction.
   - **- - -** is shown on the display while calibration is being performed. When calibration is successful, the display will show **OK** and **-2-**, and the north pointer flashing at the 6 o'clock position. This means that the watch is ready for calibration of the second direction.
4. Rotate the watch 180 degrees.
5. Press Ⓒ again to calibrate the second direction.
   - **- - -** 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.

To perform northerly calibration

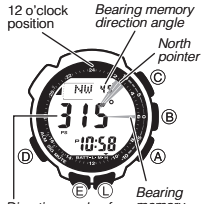
Important!

If you want to perform both northerly and bidirectional calibration, perform bidirectional calibration first, and then perform northerly calibration. This is necessary because bidirectional calibration cancels any existing northerly calibration setting.



1. In the Digital Compass Mode, hold down Ⓔ until the current magnetic declination settings start to flash on the display. This is the setting screen.
   • Before the magnetic declination settings start to flash, the message **SET Hold** will appear on the display. Keep Ⓔ depressed until **SET Hold** disappears and the magnetic declination settings start to flash.
2. Press Ⓓ twice to display the northerly calibration screen.
   • At this time, **-N-** (north) appears on the display.
3. Place the watch on a level surface, and position it so that its 12 o'clock position points north (as measured with another compass).
4. Press Ⓒ to start the calibration operation.
   • **- - -** 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.

Bearing Memory



Bearing Memory Screen

Bearing Memory lets you store a direction reading and display that reading as you take subsequent digital compass measurements. The Bearing Memory screen displays the direction angle for the stored direction, along with an indicator on the display that also indicates the stored direction.

When you take digital compass measurements while the Bearing Memory screen is on the display, the direction angle of the current digital compass measurement (as read from the 12 o'clock position of the watch) and the currently stored Bearing Memory direction information will both be displayed.

To store a direction angle reading in Bearing Memory

1. Press Ⓒ to start a digital compass measurement operation.
   • If a bearing memory direction angle value is already displayed, it means that the bearing memory screen is displayed. If this happens, press Ⓔ to clear the value currently in Bearing Memory and exit the bearing memory screen.
2. During the 20 seconds that digital compass measurement is in progress, press Ⓔ to store the current direction angle reading in Bearing Memory.
   • The Bearing Memory direction angle flashes for about one second as it is stored in Bearing Memory. After that, the Bearing Memory screen (which shows the bearing memory direction angle) will appear, and a 20-second direction reading operation will start.
   • While the Bearing Memory screen is displayed, you can press Ⓒ to start a new 20-second direction reading operation, which displays the direction angle for the direction that the 12 o'clock position of the watch is pointed. The direction angle of the current readings will disappear from the display after the direction reading operation is complete.
   • During the first 20 seconds after you display the Bearing Memory screen or during the 20-second direction reading operation while the Bearing Memory screen is on the display, the direction stored in memory is indicated by a Bearing Memory pointer.
   • Pressing Ⓔ while the Bearing Memory screen is displayed will clear the direction angle currently in Bearing Memory and start a 20-second direction reading operation.

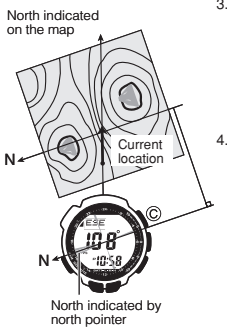
Using the Digital Compass While Mountain Climbing or Hiking

This section provides three practical applications for using the watch's built-in digital compass.

• 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.
• Finding the bearing to an objective
• Determining the direction angle to an objective on a map and heading in that direction

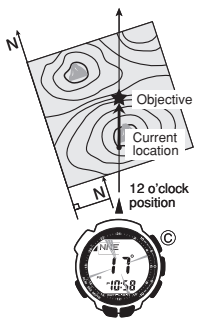
To set a map and find your current location

1. With the watch on your wrist, position it so the face is horizontal.
2. While in the Timekeeping Mode or in any of the sensor modes, press Ⓒ to take a compass reading.
   • The reading will appear on the display after about two seconds.



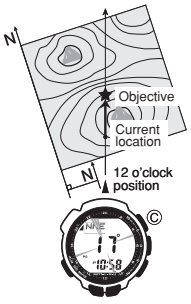
3. Rotate the map without moving the watch so the northerly direction indicated on the map matches north as indicated by the watch.
   • If the watch is configured to indicate magnetic north, align the map's magnetic north with the watch indication. If the watch has been configured with a declination to correct to true north, align the map's true north with the watch indication. For details, see "Calibrating the Bearing Sensor".
   • This will position the map in accordance with your current location.
4. Determine your location as you check the geographic contours around you.

To find the bearing to an objective

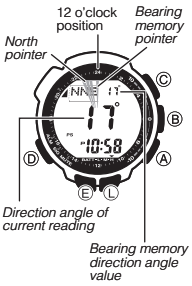


1. Set the map so its northerly indication is aligned with north as indicated by the watch, and determine your current location.
   • See "To set a map and find your current location" for information about how to perform the above step.
2. Set the map so the direction you want to travel on the map is pointed straight in front of you.
3. With the watch on your wrist, position it so the face is horizontal.
4. While in the Timekeeping Mode or in any of the sensor modes, press Ⓒ to take a compass reading.
   • The reading will appear on the display after about two seconds.
5. Still holding the map in front of you, turn your body until north as indicated by the watch and the northerly direction on the map are aligned.
   • This will position the map in accordance with your current location, so the bearing to your objective is straight ahead of you.

To determine the direction angle to an objective on a map and head in that direction



1. Set the map so its northerly indication is aligned with north as indicated by the watch, and determine your current location.
   • See "To set a map and find your current location" for information about how to perform the above step.
2. As shown in the illustration to the left, change your position so you (and the 12 o'clock position of the watch) are pointed in the direction of objective, while keeping the northerly direction indicated on the map aligned with north as indicated by the watch.
   • If you find it difficult to perform the above step while keeping everything aligned, first move into the correct position (12 o'clock position of the watch pointed at the objective) without worrying about the orientation of the map. Next, perform step 1 again to set the map.



3. While in the Timekeeping Mode or in any of the sensor modes, press Ⓒ to take a compass reading.
4. While direction angle readings are in progress, press Ⓔ to record the currently displayed direction in Bearing Memory.
   • The direction angle value and pointer stored in Bearing Memory will remain on the display for about 20 seconds.
   • See "Bearing Memory" for more information.
5. Now you can advance while monitoring the Bearing Memory pointer to ensure that it remains in the 12 o'clock position.
   • To re-display the Bearing Memory direction angle value and Bearing Memory pointer, press Ⓒ.
   • Pressing Ⓔ while the Bearing Memory direction angle value and Bearing Memory pointer are on the display will clear the Bearing Memory data you saved in step 3 and save the current direction reading in Bearing Memory.

Note

• When mountain climbing or hiking, conditions or geographic contours may make it impossible for you to advance in a straight line. If this happens, return to step 1 and save a new direction to the objective.

Digital Compass Precautions

This watch features a built-in magnetic bearing sensor that detects terrestrial magnetism. This means that north indicated by this watch is magnetic north, which is somewhat different from true polar north. The magnetic north pole is located in northern Canada, while the magnetic south pole is in southern Australia. Note that the difference between magnetic north and true north as measured with all magnetic compasses tends to be greater as one gets closer to either of the magnetic poles. You should also remember that some maps indicate true north (instead of magnetic north), and so you should make allowances when using such maps with this watch.

Location

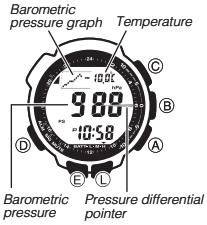
• Taking a direction reading when you are near a source of strong magnetism can cause large errors in readings. Because of this, you should avoid taking direction readings while in the vicinity of the following types of objects: permanent magnets (magnetic necklaces, etc.), concentrations of metal (metal doors, lockers, etc.), high tension wires, aerial wires, household appliances (TVs, personal computers, washing machines, freezers, etc.).
• Accurate direction readings are impossible while in a train, boat, air plane, 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.

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.) 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".

Barometer/Thermometer

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



To enter and exit the Barometer/Thermometer Mode

1. While in the Timekeeping Mode or in any of the sensor modes, press Ⓑ to enter the Barometer/Thermometer Mode.
   • **BARO** will appear on the display, indicating that barometric pressure and temperature measurements are in progress. The measurement results will appear on the display after about five seconds.
   • After you press Ⓑ, the watch will take readings every five seconds for the first five minutes, and then every two minutes after that.
2. Press Ⓓ to return to the Timekeeping Mode.
   • The watch will return to the Timekeeping Mode automatically if you do not perform any operation for about one hour after entering the Barometer/Thermometer Mode.

To take barometric pressure and temperature readings

While in the Timekeeping Mode or in any of the sensor modes, press Ⓑ.

• This starts barometric pressure and temperature measurements automatically.
• You also can perform a barometric pressure and temperature measurement at any time by pressing Ⓑ in the Barometer/Thermometer Mode.
• It can take up to four or five seconds for the barometric pressure reading to appear after you enter the Barometer/Thermometer Mode .

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.

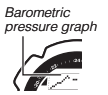
Temperature

• 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 either hectopascals (hPa) or inchesHg (inHg) as the display unit for the measured barometric pressure, and Celsius (°C) or Fahrenheit (°F) as the display unit for the measured temperature value. See “To specify temperature, barometric pressure, and altitude units”.

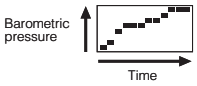
Barometric Pressure Graph



Barometric pressure indicates changes in the atmosphere. By monitoring these changes you can predict the weather with reasonable accuracy. This watch takes barometric pressure measurements automatically every two hours (at the 30th minute of every even numbered hour). Measurement results are used to produce barometric pressure graph and barometric pressure differential pointer readings.

Reading the Barometric Pressure Graph

The barometric pressure graph shows readings of previous measurements for up to 24 hours.



- The horizontal axis of the graph represents time, with each dot standing for two hours. The rightmost dot represents the most recent reading.
- 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 following shows how to interpret the data that appears on the barometric pressure graph.

A rising graph generally means improving weather.

A falling graph generally means deteriorating weather.

Note

- If there are sudden changes in weather or temperature, the graph line of past measurements may run off the top or bottom of the display. The entire graph will become visible once barometric conditions stabilize.
- The following conditions cause the barometric pressure measurement 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

Not visible on the display.

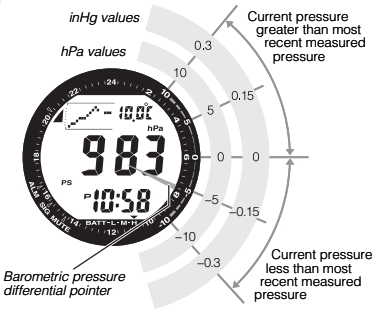
Barometric Pressure Differential Pointer

This pointer indicates the relative difference between the most recent barometric pressure reading indicated on the barometric pressure graph, and the current barometric pressure value displayed in the Barometer/Thermometer Mode.

Reading Barometric Pressure Differential Pointer

Pressure differential is indicated in the range of ±10 hPa, in 1-hPa units.

- The nearby screen shot, for example, shows what the pointer would indicate when the calculated pressure differential is approximately –5 hPa (approximately –0.15 inHg).
- 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 ≒ 0.03 inHg).



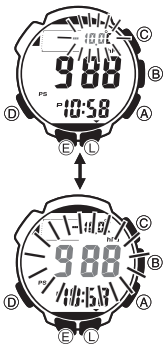
Pressure Sensor and Temperature Sensor Calibration

The pressure sensor and temperature 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 and temperature 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.
- 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 pressure sensor and the temperature sensor



1. While in the Timekeeping Mode or in any of the sensor modes, press Ⓑ to enter the Barometer/Thermometer Mode.
2. Hold down Ⓔ until the current temperature value starts to flash on the display. This is the setting screen.
   - Before the temperature value starts to flash, the message **SET Hold** will appear on the display. Keep Ⓔ depressed until **SET Hold** disappears.
3. Press Ⓓ to move the flashing between the temperature value and barometric pressure value, to select the one you want to calibrate.
4. Use Ⓐ (+) and Ⓒ (–) to set the calibration value in the units shown below.
   Temperature 0.1°C (0.2°F)
   Barometric Pressure 1 hPa (0.05 inHg)
   - To return the currently flashing value to its initial factory default setting, press Ⓐ and Ⓒ at the same time. **OFF** will appear at the flashing location for about one second, followed by the initial default value.
5. Press Ⓔ to return to the Barometer/Thermometer Mode screen.

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

Altimeter

The watch displays altitude values based on air pressure readings taken by a built-in pressure sensor.

How the Altimeter Measures Altitude

The altimeter can measure altitude based on its own preset values (initial default method) or using a reference altitude specified by you.

When you measure altitude based on preset values

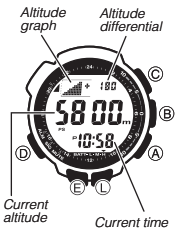
Data produced by the watch’s barometric pressure sensor is converted to approximate altitude based on ISA (International Standard Atmosphere) conversion values stored in watch memory.

When you measure altitude using a reference altitude specified by you

After you specify a reference altitude, the watch uses that value to convert barometric pressure readings to altitude.

- When mountain climbing, you can specify a reference altitude value in accordance with a marker along the way or altitude information from a map. After that, the altitude readings produced by the watch will be more accurate than they would without a reference altitude value.

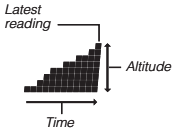
To take an altimeter reading



1. Make sure the watch is in the Timekeeping Mode or any one of the sensor modes.
   - The sensor modes are: Digital Compass Mode, Barometer/ Thermometer Mode, and Altimeter Mode.
2. Press Ⓐ to start Altimeter measurement.
   - **ALTI** will appear on the display, indicating that Altimeter measurement is in progress. The first reading will appear on the display after about four or five seconds.
   - The current altitude value is displayed in units of 5 meters (20 feet).
   - After the first reading is obtained, the watch continues to take altimeter readings automatically every five seconds for the first three minutes, and then every two minutes after that (under initial default settings).
   - If you leave the watch in the Altimeter Mode, it will update the displayed altitude value regularly and indicate reading-to-reading changes in graph form.
   - You can use the procedure under “Selecting an Altitude Auto Measurement Method” to specify the altitude auto measurement method you want to use.
3. After you are finished using the Altimeter, press Ⓓ to return to the Timekeeping Mode and stop auto measurement.
   - The watch will return to the Timekeeping Mode automatically if you do not perform any operation for about 24 hours after entering the Altimeter Mode (under initial default settings).

Reading the Altitude Graph

The altitude graph shows Altimeter Mode auto measurement readings over time.



- The vertical axis of the graph represents altitude, and each dot stands for 10 meters (40 feet).
- The horizontal axis represents time. For the altitude readings taken during the first three minutes after you start an altimeter measurement operation, each dot represents five seconds. After that, each dot represents two minutes (under initial default settings).
- An out of range reading or a measurement error will cause the column of dots for that reading to be blank (skipped).

Note

- 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.
- Normally, displayed altitude values are based on the watch’s preset conversion values. You also can specify a reference altitude value, if you want. See “Specifying a Reference Altitude Value”.
- You can change the unit for displayed altitude values to either meters (m) or feet (ft). See “To specify temperature, barometric pressure, and altitude units”.

Selecting an Altitude Auto Measurement Method

You can select either of the following two altitude auto measurement methods.

0’05: Readings at five-second intervals for one hour
2’00: Readings at five-second intervals for the first three minutes followed by two-minute intervals for approximately 24 hours

Note

If you do not perform any button operation while in the Altimeter Mode, the watch will return to the Timekeeping Mode automatically after 24 hours (altitude auto measurement method: **2’00**) or after one hour (altitude auto measurement method: **0’05**).

To select the altitude auto measurement method

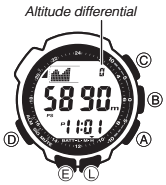
1. In the Altimeter Mode, hold down Ⓔ until the current reference altitude value starts to flash. This is the setting screen.
   - Before the reference altitude starts to flash, the message **SET Hold** will appear on the display. Keep Ⓔ depressed until **SET Hold** disappears.
2. Press Ⓓ to display the current altitude auto measurement method setting.
   - This will cause either **0’05** or **2’00** to flash on the display.
3. Press Ⓐ to toggle the altitude auto measurement method setting between **0’05** and **2’00**.
4. Press Ⓔ to exit the setting screen.

Using the Altitude Differential Value

The Altimeter Mode screen includes an altitude differential value that shows the change in altitude from a reference point you specify. The altitude differential value is updated each time the watch takes an altitude reading.

- The range of the altitude differential value is –3,000 meters (–9,980 feet) to 3,000 meters (9,980 feet).
- **- - -** is displayed in place of the altitude differential value whenever the measured value is outside the allowable range.
- See "Using the Altitude Differential Value While Mountain Climbing or Hiking" for some real-life examples of how to use this feature.

To specify the altitude differential start point



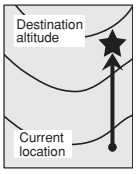
In the Altimeter Mode, press Ⓔ.

- The watch will take an altitude reading and register the result as the altitude differential value start point. The altitude differential value will be reset to zero at this time.

Using the Altitude Differential Value While Mountain Climbing or Hiking

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

To use the altitude differential value



1. In the Altimeter Mode, check to make sure that an altitude reading is on the display.
   - If an altitude reading is not displayed, press Ⓐ to take one. See "To take an altimeter reading" for details.
2. Use the contour lines on your map to determine the difference in altitude between your current location and your destination.
3. In the Altimeter Mode, press Ⓔ to specify your current location as the altitude differential start point.
   - The watch will take an altitude reading and register the result as the altitude differential value start point. The altitude differential value will be reset to zero at this time.

4. 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.

Specifying a Reference Altitude Value

The altitude readings produced by this watch are subject to error caused by changes in air pressure. Because of this, we recommend that you update the reference altitude value whenever one is available during your climb. After you specify a reference altitude value, the watch adjusts its air-pressure-to-altitude conversion calculation accordingly.

To specify a reference altitude value

1. In the Altimeter Mode, hold down Ⓔ until the current reference altitude value starts to flash. This is the setting screen.
   - Before the reference altitude value starts to flash, the message **SET Hold** will appear on the display. Keep Ⓔ depressed until **SET Hold** disappears.
2. Press Ⓐ (+) or Ⓒ (–) to change the current reference altitude value by 5 meters (or 20 feet).
   - Specify a reference altitude value based on accurate altitude information about your current location from a map, etc.
   - You can set the reference altitude value within the range of –10,000 to 10,000 meters (–32,800 to 32,800 feet).
   - Pressing Ⓐ and Ⓒ at the same time returns to **OFF** (no reference altitude value), so the watch performs air pressure to altitude conversions based on preset data only.
3. Press Ⓔ to exit the setting screen.

Types of Altitude Data

The watch can maintain two types of altitude data in its memory: manual measurement records, and auto save values (minimum, maximum, vertical ascent, vertical descent).

- Use the Data Recall Mode to view data stored in memory. See "Viewing Altitude Records" for details.

Manual Measurement Records

Any time you perform the procedure below in the Altimeter Mode, the watch will create and store a record with the currently displayed altitude reading, along with the date and time the reading was taken. There is enough memory to store up to 25 manual measurement records, which are numbered from **REC01** through **REC25**.

To save a manual measurement

1. In the Altimeter Mode, check to make sure that an altitude reading is on the display.
   - If an altitude reading is not displayed, press Ⓐ to take one. See "To take an altimeter reading" for details.
2. Hold down Ⓐ until **REC Hold** appears on the display and then disappears. Release Ⓐ after **Hold** disappears.
   - This will save the currently displayed altitude reading in a manual measurement record, along with the measurement time and date.
   - The watch will return to the Altimeter Mode screen automatically after the save operation is complete.
   - There is enough memory to store up to 25 manual measurement records. If there are already 25 manual measurement records in memory, the above operation will cause the oldest record to be deleted automatically to make room for the new one.

Auto Save Values

Two sets of auto save values (Set 1 and Set 2) are maintained in watch memory.

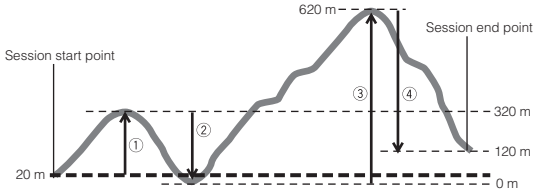
Set 1	Set 2
Maximum Altitude (**MAX-1**) Minimum Altitude (**MIN-1**) Vertical Ascent (**ASC-1**) Vertical Descent (**DSC-1**)	Maximum Altitude (**MAX-2**) Minimum Altitude (**MIN-2**) Vertical Ascent (**ASC-2**) Vertical Descent (**DSC-2**)

- These values are checked and updated automatically by the watch as altitude auto measurements are taken.

How Maximum and Minimum Values Are Updated

While the watch is in the Altimeter Mode, altitude readings are taken automatically at the interval specified by the altitude auto measurement method. With each reading, the watch compares the current reading against the **MAX** (**MAX-1** and **MAX-2**) and **MIN** (**MIN-1** and **MIN-2**) values. It will replace the **MAX** value if the current reading is greater than **MAX**, or the **MIN** value if the current reading is less than **MIN**.

How Vertical Ascent/Descent Values Are Updated



The total Vertical Ascent and Vertical Descent values produced by an Altimeter Mode measurement session during the example climb illustrated above are calculated as follows.
Vertical Ascent: ① (300 m) + ③ (620 m) = 920 m
Vertical Descent: ② (320 m) + ④ (500 m) = 820 m

- Entering the Altimeter Mode starts a new altitude auto measurement session, but it does not reset the current **ASC** (**ASC-1** and **ASC-2**) and **DSC** (**DSC-1** and **DSC-2**) values or change them in any way. This means that the starting **ASC** and **DSC** values for a new Altimeter Mode auto measurement session are the values that currently are in memory. Each time you complete an Altimeter Mode auto measurement session by returning to the Timekeeping Mode, the vertical ascent value of the current session (920 meters in the above example) is added to the session's starting **ASC** value. Also, the vertical descent value of the current auto measurement session (–820 meters in the above example) is added to the session's starting **DSC** value.
- Note that any change in elevation when ascending that is less than 15 meters (49 feet) is not added to the vertical ascent value for the current Altimeter Mode auto measurement session. Also, any change in elevation when descending that is less than –15 meters (–49 feet) is not added to the vertical descent value for the current Altimeter Mode auto measurement session.

Note

- The maximum altitude, minimum altitude, vertical ascent, and vertical descent values are retained in memory when you exit the Altimeter Mode. To clear values, perform the procedure under "To clear the contents of a specific memory area".

Using Auto Save Values

The watch maintains two independent sets of auto save values as shown below.

Set 1	Set 2
Maximum Altitude (**MAX-1**) Minimum Altitude (**MIN-1**) Vertical Ascent (**ASC-1**) Vertical Descent (**DSC-1**)	Maximum Altitude (**MAX-2**) Minimum Altitude (**MIN-2**) Vertical Ascent (**ASC-2**) Vertical Descent (**DSC-2**)

The values in Set 1 and Set 2 can be cleared independently of each other. This means you can use them to keep track of daily and cumulative data as described in the example below.

Example: Keeping track of data on a three-day climb

Day 1
Clear both Set 1 and Set 2, and start your Day 1 climb.
At the end of the day, both sets of auto save values contain the same data (**MAX-1** = **MAX-2**, **MIN-1** = **MIN-2**, etc.).

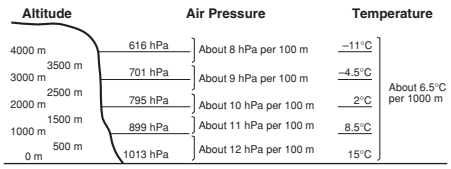
Day 2
Clear only Set 1, and start your Day 2 climb. At the end of the day, the values in Set 1 (**MAX-1**, **MIN-1**, **ASC-1**, **DSC-1**) will show the results of Day 2 only. In Set 2, **MAX-2** and **MIN-2** will show the maximum and minimum altitudes reached over the two-day span. **ASC-2** will show the total vertical ascent for the two days (Day 1 + Day 2) and **DSC-2** will show the total vertical descent for the two days.

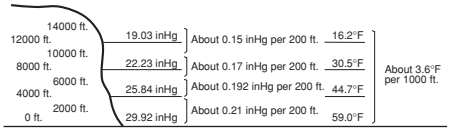
Day 3
Clear only Set 1, and start your Day 3 climb. At the end of the day, the values in Set 1 will show the results of Day 3 only. In Set 2, **MAX-2** and **MIN-2** will show the maximum and minimum altitudes reached over the three-day span. **ASC-2** will show the total vertical ascent for the three days (Day 1 + Day 2 + Day 3) and **DSC-2** will show the total vertical descent for the three days.

- For details about clearing altitude data, see "To clear the contents of a specific memory area".

How does the altimeter work?

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

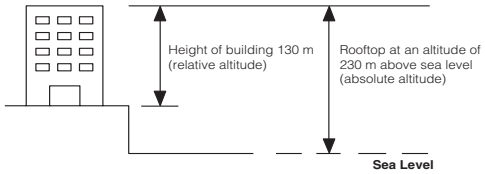




Source: International Civil Aviation Organization

- 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 and relative altitude. Absolute altitude expresses an absolute height above sea level. Relative altitude expresses the difference between the height of two different places.

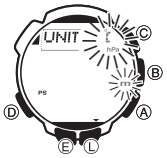


Altimeter Precautions

- This watch estimates altitude based on air pressure. This means that altitude readings for the same location may vary if air pressure changes.
- The semiconductor pressure sensor used by the watch for altitude measurements is also affected by temperature. When taking altitude measurements, do not subject the watch to temperature changes.
- Do not rely upon this watch for altitude measurements 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 the flight crew.

Specifying Temperature, Barometric Pressure, and Altitude Units

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

1. In the Timekeeping Mode, hold down Ⓔ until the currently selected city code starts to flash. This is the city code setting screen.
   - Before the city code starts to flash, the message **SET Hold** will appear on the display. Keep Ⓔ depressed until **SET Hold** disappears and the city code starts to flash.
2. Keep pressing Ⓓ until **UNIT** appears in the upper left corner of the screen.
   - See step 3 under "To change the current time and date settings manually" for information about how to scroll through setting screens.
3. Perform the operations below to specify the units you want.

To specify this unit:	Press this key:	To toggle between these settings:
Altitude	Ⓐ	**m** (meters) and **ft** (feet)
Barometric Pressure	Ⓑ	**hPa** (hectopascals) and **inHg** (inches of mercury)
Temperature	Ⓒ	**°C** (Celsius) and **°F** (Fahrenheit)

4. After the settings are the way you want, press Ⓔ twice to exit the setting screen.

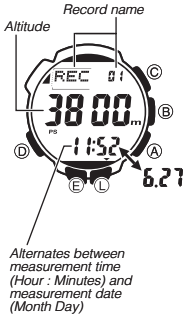
Precautions Concerning Simultaneous Measurement of Altitude and Temperature

Though you can perform altitude and temperature measurements at the same time, you should remember that each of these measurements requires different conditions for best results. With temperature measurement, it is best to remove the watch from your wrist in order to eliminate the effects of body heat. In the case of altitude measurement, on the other hand, it is better to leave the watch on your wrist, because doing so keeps the watch at a constant temperature, which contributes to more accurate altitude measurements.

- To give altitude measurement priority, leave the watch on your wrist or in any other location where the temperature of the watch is kept constant.
- To give temperature measurement priority, remove the watch from your wrist and allow it to hang freely from your bag or in another location where it is not exposed to direct sunlight. Note that removing the watch from your wrist can affect pressure sensor readings momentarily.

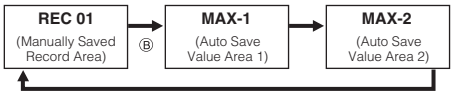
Viewing Altitude Records

Use the Data Recall Mode to view manually saved altitude readings and automatically saved high altitude, low altitude, total ascent, and total descent values. Altitude data records are created and saved in the Altimeter Mode.

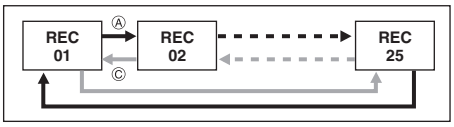


To view altitude records

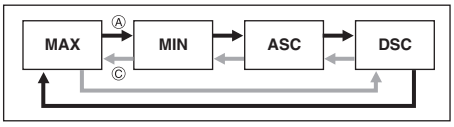
1. Use Ⓓ to select the Data Recall Mode (**REC**) as shown in "Selecting a Mode".
   - About one second after **REC** appears on the display, the display will change to show the first record of the memory area you were viewing when you last exited the Data Recall Mode.
2. Use Ⓑ to select the memory area you want.



3. Use Ⓐ and Ⓒ to scroll through the screens for an area and display the one you want.



Manually saved records



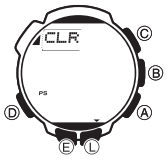
Auto saved values

- While a manually saved record (**REC 01** through **REC 25**) is displayed, the bottom of the screen will alternate between the date (month, day) and time (hour, minute) the record was created.
- While **MAX** or **MIN** auto saved values are displayed, the bottom of the screen will alternate between the date (month, day) and time (hour, minute) the value was recorded.
- While **ASC** or **DSC** auto saved values are displayed, the bottom of the screen will alternate between the date (month, day) and year that the **ASC** or **DSC** record was first created.
- For detailed information about auto saved values, see "Auto Save Values".

4. After you are finished viewing data, use Ⓓ to exit the Data Recall Mode.
   - **----** will be displayed if data has been deleted or if there is no corresponding data due to error, etc. In such cases, total ascent (**ASC**) and total descent (**DSC**) values will show zero.
   - When the total ascent (**ASC**) or total descent (**DSC**) exceeds 99,995 meters (or 327,980 feet), the applicable value will restart from zero.

- If the total ascent (**ASC**) or total descent (**DSC**) value becomes five digits, the leftmost (ten thousand) digit will appear in the upper right of the display. The nearby illustration shows the display when the **ASC-1** value is 99995 meters.

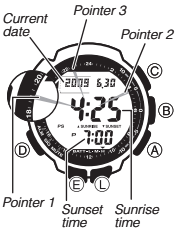
To clear the contents of a specific memory area



1. Use Ⓓ to enter the Data Recall Mode.
2. Use Ⓑ to select the memory area you want to clear.
   - Note that the contents of the memory area you select will be deleted as soon as you perform step 3 below. The clear operation cannot be undone, so double check to make sure you really want to delete the contents of the memory area you select here.
3. Hold down Ⓔ until **CLR Hold** appears on the display and then disappears. Release Ⓔ after **CLR** disappears.
   - This will clear the memory area you selected in step 2 and then return to the data display screen, which now shows **----**. This indicates there is nothing stored in the currently displayed memory area.

Looking up Sunrise and Sunset Times

You can use the Sunrise/Sunset Mode to look up the sunrise and sunset times for a particular date (year, month, day) and location.



To enter the Sunrise/Sunset Mode

While in the Timekeeping Mode, press Ⓓ to enter the Sunrise/Sunset Mode.

- This will display the sunrise and sunset times for the current date based the currently specified city code, latitude, and longitude.
- The three Daylight Pointers described below are on the display in the Sunrise/Sunset Mode.
  Pointer 1: Sunset time in 24-hour format
  Pointer 2: Sunrise time in 24-hour format
  Pointer 3: This flashing pointer appears only when Pointer 1 and Pointer 2 are indicating the sunrise and sunset times for the current Timekeeping Mode date. It indicates the current Timekeeping Mode time in 24-hour format.
- Before trying to use the Sunrise/Sunset Mode, you need to configure settings for the city code, longitude, and latitude for the location whose sunrise and sunset times you want to view.
- The factory default configuration of the location is: City Code: **TYO** (Tokyo); Latitude: North 36 degrees; Longitude: East 140 degrees.
- You can find latitude and longitude for various cities around the globe in the "Site Data List".

To view the sunrise/sunset time for a particular date

1. Enter the Sunrise/Sunset Mode.
   - This will display the sunrise and sunset times for the current date at the location specified by the city code, latitude, and longitude.
2. While the sunrise/sunset time are on the display, use Ⓐ (+) and Ⓒ (–) to scroll through the dates.
   - The sunrise and sunset times for the selected date will be indicated by values and pointers.
   - You can select any date between January 1, 2000 and December 31, 2099.

Note

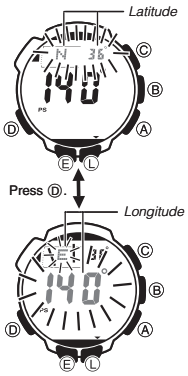
- Sunrise/sunset time is displayed in 5-minute units.
- If you think that the sunrise and/or sunset times are not correct for some reason, check the watch's city code, longitude and latitude settings.
- The sunrise and sunset times displayed by this watch are times at sea level. Sunrise and sunset times are different at altitudes other than sea level.

To look up the sunrise and sunset times for a specific city code

Important!
- You do not need to perform this procedure to look up the sunrise and sunset times in your currently selected Home City.
- If you select a different city code to look up the sunrise and sunset times there, return to the city code of your Home City (your current location) when you are finished. Otherwise, the time shown in the Timekeeping Mode will not be correct.
- For information about the Home City setting, see "Configuring Home City Settings".

1. In the Timekeeping Mode, hold down Ⓔ until the currently selected city code starts to flash. This is the city code setting screen.
   - Before the city code starts to flash, the message **SET Hold** will appear on the display. Keep Ⓔ depressed until **SET Hold** disappears and the city code starts to flash.
2. Use Ⓐ (East) and Ⓒ (West) to select the city code whose sunrise and sunset times you want to view.
   - For details about city codes, see the "City Code Table".
3. Press Ⓔ twice to exit the setting screen.

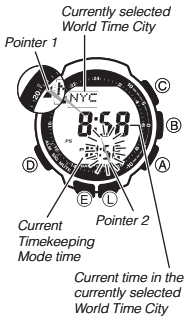
To configure longitude and latitude settings



1. In the Timekeeping Mode, hold down Ⓔ until the currently selected city code starts to flash. This is the city code setting screen.
   - Before the city code starts to flash, the message **SET Hold** will appear on the display. Keep Ⓔ depressed until **SET Hold** disappears and the city code starts to flash.
2. Press Ⓔ to display the longitude/latitude setting screen, with the latitude setting flashing.
3. Use Ⓓ to move the flashing between the latitude and the longitude setting.
4. Use Ⓐ (+) and Ⓒ (–) to change the flashing setting.
   - You can configure the longitude and latitude setting within following ranges.
     Latitude Range: 65°S (South 65 degrees) to 0°N – 65°N (North 65 degrees)
     Longitude Range: 179°W (West 179 degrees) to 0°E – 180°E (East 180 degrees)
   - Latitude and longitude values are rounded off to the nearest degree.
   - You can find latitude and longitude for various cities around the globe in the "Site Data List".
5. Press Ⓔ to return to the Timekeeping Mode.

Checking the Current Time in a Different Time Zone

You can use the World Time Mode to view the current time in one of 31 time zones (48 cities) around the globe. The city that is currently selected in the World Time Mode is called the "World Time City".



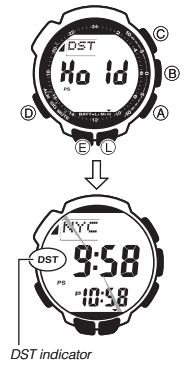
To enter the World Time Mode

Use Ⓓ to select the World Time Mode (**WT**) as shown in "Selecting a Mode".
- About one second after **WT** appears on the display, the display will change to show the city code of the currently selected World Time City.
- The two pointers described below are on the display in the World Time Mode.
  Pointer 1 (not flashing): Indicates the current time in the currently selected World Time City in 24-hour format.
  Pointer 2 (flashing): Indicates the current Timekeeping Mode time in 24-hour format.

To view the time in another time zone

In the World Time Mode, use Ⓐ (East) and Ⓒ (West) to scroll through city codes.

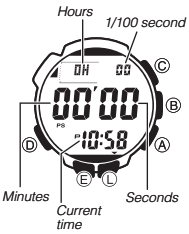
To specify standard time or daylight saving time (DST) for a city



1. In the World Time Mode, use Ⓐ (East) and Ⓒ (West) to display the city code (time zone) whose Standard Time/Daylight Saving Time setting you want to change.
2. Hold down Ⓔ until **DST Hold** appears on the display and then disappears. Release Ⓔ after **DST Hold** disappears.
   - This toggles the city code you selected in step 1 between Daylight Saving Time (**DST** indicator displayed) and standard time (**DST** indicator not displayed).
   - Using the World Time Mode to change the DST setting of the city code that is selected as your Home City also will change the Timekeeping Mode time DST setting.
   - 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.

Using the Stopwatch

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



To enter the Stopwatch Mode

Use Ⓓ to select the Stopwatch Mode (**STW**) as shown in "Selecting a Mode".
- About one second after **STW** appears on the display, the display will change to show the stopwatch hours.

To perform an elapsed time operation

Ⓐ **Start** → Ⓐ **Stop** → Ⓐ **(Restart)** → Ⓐ **(Stop)** → Ⓒ **Reset**

To pause at a split time

Ⓐ **Start** → Ⓒ **Split** (**SPL** displayed) → Ⓒ **Split release** → Ⓐ **Stop** → Ⓒ **Reset**

To measure two finishes

Ⓐ **Start** → Ⓒ **Split** First runner finishes. Display time of first runner → Ⓐ **Stop** Second runner finishes. → Ⓒ **Split release** Display time of second runner → Ⓒ **Reset**

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 Ⓒ 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 and returns to elapsed time measurement.

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 Ⓓ to select the Countdown Timer Mode (**TMR**) as shown in "Selecting a Mode".
- About one second after **TMR** appears on the display, the display will change to show the countdown time hours.

To specify the countdown start time

1. Enter the Countdown Timer Mode.
   - If a countdown is in progress (indicated by the seconds counting down), press Ⓐ to stop it and then press Ⓒ to reset to the current countdown start time.
   - If a countdown is paused, press Ⓒ to reset to the current countdown start time.
2. Hold down Ⓔ until the hour setting of the current countdown start time starts to flash. This is the setting screen.
   - Before the hour setting starts to flash, the message **SET Hold** will appear on the display. Keep Ⓔ depressed until **SET Hold** disappears and the hour setting starts to flash.
3. Press Ⓓ to move the flashing between the hour and minute settings.
4. Use Ⓐ (+) and Ⓒ (–) to change the flashing item.
   - To set the starting value of the countdown time to 24 hours, set **0H 00'00**.
5. Press Ⓔ to exit the setting screen.

To perform a countdown timer operation

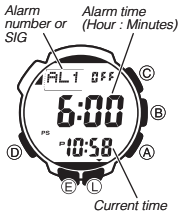
Ⓐ **Start** → Ⓐ **Stop** → Ⓐ **(Restart)** → Ⓐ **(Stop)** → Ⓒ **Reset**

- 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 Ⓐ to stop it and then Ⓒ to reset to the countdown start time.
- An alarm sounds for five 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.

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 Ⓓ to select the Alarm Mode (**ALM**) as shown in "Selecting a Mode".
- About one second after **ALM** appears on the display, the display will change to show an alarm number (**AL1** through **AL5**) or the **SIG** indicator. The alarm number 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.

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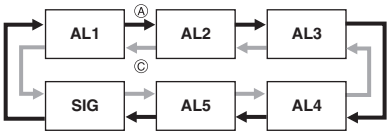
CASIO

To set an alarm time

1. In the Alarm Mode, use Ⓐ and Ⓒ to scroll through the alarm screens until the one whose time you want to set is displayed.



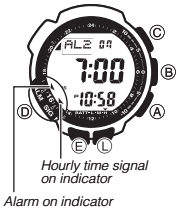
2. Hold down Ⓔ until the alarm time starts to flash. This is the setting screen.
   - Before the alarm time starts to flash, the message **SET Hold** will appear on the display. Keep Ⓔ depressed until **SET Hold** disappears and the alarm time starts to flash.
3. Press Ⓓ to move the flashing between the hour and minute settings.
4. While a setting is flashing, use Ⓐ (+) and Ⓒ (–) to change it.
   - When setting the alarm time using the 12-hour format, take care to set the time correctly as a.m. (no indicator) or p.m. (**P** indicator).
5. Press Ⓔ to exit the setting screen.

To test the alarm

In the Alarm Mode, hold down Ⓐ to sound the alarm.

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

1. In the Alarm Mode, use Ⓐ and Ⓒ to select an alarm or the Hourly Time Signal.
2. When the alarm or the Hourly Time Signal you want is selected, press Ⓑ to turn it on and off.



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

To stop the alarm

Press any button.

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 for it to operate.

To turn on illumination manually

Press Ⓛ in any mode to illuminate the display.

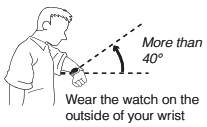
- You can use the procedure below to select either one second or three seconds as the illumination duration. When you press Ⓛ, the display will remain illuminated for about one second or three seconds, depending on the current illumination duration setting.
- The above operation turns on illumination regardless of the current auto light switch setting.
- Illumination is disabled during time calibration signal reception, while configuring sensor measurement mode settings, and during bearing sensor calibration.

To change the illumination duration

1. In the Timekeeping Mode, hold down Ⓔ until the currently selected city code starts to flash. This is the city code setting screen.
   - Before the city code starts to flash, the message **SET Hold** will appear on the display. Keep Ⓔ depressed until **SET Hold** disappears and the city code starts to flash.
2. Keep pressing Ⓓ until **LT1** or **LT3** is displayed in the upper left corner of the display.
   - See step 3 under "To change the current time and date settings manually" for information about how to scroll through setting screens.
3. Press Ⓐ to toggle the illumination duration between three seconds (**LT3** displayed) and one second (**LT1** displayed).
4. After the settings are the way you want, press Ⓔ twice to exit the setting screen.

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.**

Note

- This watch features a "Full Auto EL 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 an alarm is sounding
  During sensor measurement
  While a bearing sensor calibration operation is being performed in the Digital Compass Mode
  While a receive operation is in progress in the Receive Mode
  While a sunrise or sunset time is being calculated

To turn the auto light switch on and off

In the Timekeeping Mode, hold down Ⓛ for about three seconds to toggle the auto light switch on (**A.EL** displayed) and off (**A.EL** not displayed).

- The auto light switch on indicator (**A.EL**) is on the display in all modes while the auto light switch is turned on.
- The auto light switch turns off automatically whenever battery power drops to Level 4.

Illumination Precautions

- Frequent display illumination can run down the battery quickly and require charging. The following guidelines give an idea of the charging time required to recover from a single illumination operation.
  Approximately five minutes exposure to bright sunlight coming in through a window
  Approximately 50 minutes exposure to indoor fluorescent lighting
- The electro-luminescent panel 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.

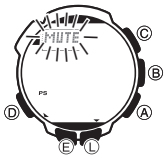
- Illumination may not turn on if the face of the watch is more than 15 degrees above or below parallel. Make sure that the back of your hand is parallel to the ground.
- Illumination turns off after the preset illumination duration, even if you keep the watch pointed towards your face.
- Static electricity 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.

Button Operation Tone

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, and Countdown Timer Mode alarm all operate normally.

To turn the button operation tone on and off



1. In the Timekeeping Mode, hold down Ⓔ until the currently selected city code starts to flash. This is the city code setting screen.
   - Before the city code starts to flash, the message **SET Hold** will appear on the display. Keep Ⓔ depressed until **SET Hold** disappears and the city code starts to flash.
2. Keep pressing Ⓓ until **MUTE** or **KEY ♪** is displayed in the upper left corner of the display.
   - See step 3 under "To change the current time and date settings manually" for information about how to scroll through setting screens.
3. Press Ⓐ to toggle the button operation tone on (**KEY ♪**) and off (**MUTE**).
4. After the settings are the way you want, press Ⓔ twice to exit the setting screen.

Note

- The mute indicator is displayed in all modes when the button operation tone is turned off.

Troubleshooting

Time Setting

See "Radio Controlled Atomic Timekeeping" 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. 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 settings".

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" to change the standard time/daylight saving time (DST) setting.

Sensor modes

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

■ "ERR" appears on the display while I am using a sensor .

Subjecting the watch to strong impact can cause sensor malfunction or improper contact of internal circuitry. When this happens, **ERR** (error) will appear on the display and sensor operations will be disabled.

Digital Compass Measurement

Barometric Pressure/Temperature Measurement

Altitude Measurement

- If **ERR** appears while a measurement operation is being performed in a sensor mode, restart the measurement. If **ERR** appears on the display again, it can mean there is something wrong with the sensor.

• Even if battery power is at Level 1 (**H**) or Level 2 (**M**), the Digital Compass Mode, Barometer/ Thermometer Mode, or Altimeter Mode sensor may be disabled if there is not enough voltage available to power it sufficiently. In this case, **ERR** will appear on the display. This does not indicate malfunction, and sensor operation should resume once battery voltage returns to its normal level.
• If **ERR** keeps appearing during measurement, it could mean there is a problem with the applicable sensor.

■ ERR appears on the display after I perform bidirectional calibration or northerly calibration.

If **- - -** appears and then changes to **ERR** (error) on the calibration screen, it means that there is something wrong with the sensor.
• If **ERR** disappears after about one second, try performing the calibration again.
• If **ERR** keeps appearing, contact your original dealer or nearest authorized CASIO distributor to have the watch checked.

■ ERR appears on the display after I perform northerly calibration.

The **ERR** message indicates there may be some problem with the sensor. The **ERR** message also may be due to movement of the watch while the calibration procedure is being performed. Try performing calibration again, taking care to ensure that the watch is not moved.
If this does not solve the problem, the problem may be due to some nearby source of terrestrial magnetism. Try performing the calibration procedure again from the beginning.

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

■ What causes incorrect direction readings?

• Incorrect bidirectional calibration. Perform bidirectional calibration.
• Nearby source of strong magnetism, such as a household appliance, a large steel bridge, a steel beam, overhead wires, etc., or an attempt to perform direction measurement on a train, boat, etc. Move away from large metal objects and try again. Note that digital compass operation cannot be performed inside a train, boat, etc.

■ What causes different direction readings to produce different results at the same location?

Magnetism generated by nearby high-tension wires is interfering with detection of terrestrial magnetism. Move away from the high-tension wires and try again.

■ Why am I having problems taking direction readings indoors?

A TV, personal computer, speakers, or some other object is interfering with terrestrial magnetism readings. Move away from the object causing the interference or take the direction reading outdoors. Indoor direction readings are particularly difficult inside ferro-concrete structures. Remember that you will not be able to take direction readings inside of trains, airplanes, etc.

■ The barometric pressure differential pointer does not appear on the display when I enter the Barometer/Thermometer Mode.

• This could indicate sensor error. Try pressing Ⓑ again.
• The barometric pressure differential pointer is not displayed when the displayed current barometric value is outside of the allowable measurement range (260 to 1,100 hPa).

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 specify standard time or daylight saving time (DST) for a city” for more information.

Charging

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

This can happen after the power level drops to Level 5. Continue exposing the watch to light until the battery power indicator shows “**H**” or “**M**”.

Time Calibration Signal

The information in this section applies only when **LIS**, **LON**, **MAD**, **PAR**, **ROM**, **BER**, **STO**, **ATH**, **MOW**, **HKG**, **BJS**, **HNL**, **ANC**, **YVR**, **LAX**, **YEA**, **DEN**, **MEX**, **CHI**, **NYC**, **YHZ**, **YYT**, **SEL**, or **TYO** is selected at the Home City. You need to adjust the current time manually when any other city is selected as the Home City.

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

Possible Cause	Remedy
• 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.
You are in an area where signal reception is not possible for some reason.	See “Approximate Reception Ranges”.
The calibration signal is not being transmitted for some reason.	• 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, 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.

■ The current time setting is off by one hour.

Possible Cause	Remedy
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.
	If you are unable to receive the time calibration signal, change the standard time/daylight saving time (DST) setting manually.

■ Auto Receive is not performed or you cannot perform Manual Receive.

Possible Cause	Remedy
The watch is not in the Timekeeping Mode or World Time Mode.	Auto receive is performed only while the watch is in the Timekeeping Mode or World Time Mode. Switch to either of these two modes.
Your Home City setting is wrong.	Check your Home City setting and correct it, if necessary.
There is not enough power for signal reception.	Expose the watch to light to charge it.

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

Possible Cause	Remedy
Your Home City setting is wrong.	Check your Home City setting and correct it, if necessary.
The DST setting may be incorrect.	Change the DST setting to Auto DST.

Specifications

Accuracy at normal temperature: ±15 seconds a month (with no signal calibration)
Timekeeping: Hour, minutes, seconds, p.m. (P), year, 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: 3 display formats (Day of the week, Year, Barometric pressure graph); Home City code (can be assigned one of 48 city codes); Standard Time / Daylight Saving Time (summer time)
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
Receivable Time Calibration Signals: Mainflingen, Germany (Call Sign: DCF77, Frequency: 77.5 kHz); Anthorn, 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)
Digital Compass: 20 seconds continuous measurement; 16 directions; Angle value 0° to 359°; Four direction pointers; Calibration (bidirectional, northerly); Magnetic declination correction; Bearing Memory
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)
Measurement timing: Daily from midnight, at two hour intervals (12 times per day); Every five seconds in the Barometer/Thermometer Mode
Other: Calibration; Manual measurement (button operation); Barometric pressure graph; Barometric pressure differential pointer
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)
Measurement timing: Every five seconds in the Barometer/Thermometer Mode
Other: Calibration; Manual measurement (button operation)
Altimeter:
Measurement range: –700 to 10,000 m (or –2,300 to 32,800 ft.) without reference altitude
Display range: –10,000 to 10,000 m (or –32,800 to 32,800 ft.)
Negative values can be caused by readings produced based on a reference altitude or due to atmospheric conditions.
Display unit: 5 m (or 20 ft.)
Current Altitude Data: 5-second intervals for 1 hour (**0’05**), or 5-second interval for first 3 minutes followed by 2-minute interval for next 24 hours (**2’00**)
Altitude Memory Data:
Manually saved records: 25 (altitude, date, time)
Auto saved values: Two sets (memory areas) each of high altitude and its measurement date and time, low altitude and its measurement date and time, total ascent and its save start date and time, total descent and its save start date and time
Other: Reference altitude setting; Altitude graph; Altitude differential; Altitude auto measurement method (**0’05** or **2’00**)
Bearing Sensor Precision:
Direction: Within ±10°
Values are guaranteed for a temperature range of –10°C to 40°C (14°F to 104°F).
North pointer: Within ±2 digital segments
Pressure Sensor Precision:

	Conditions (Altitude)	Altimeter	Barometer
Fixed temperature	0 to 6000 m 0 to 19680 ft.	± (altitude differential × 2% + 15 m) m ± (altitude differential × 2% + 50 ft.) ft.	± (pressure differential × 2% + 2 hPa) hPa ± (pressure differential × 2% + 0.059 inHg) inHg
	6000 to 10000 m 19680 to 32800 ft.	± (altitude differential × 2% + 25 m) m ± (altitude differential × 2% + 90 ft.) ft.	
Effect of variable temperature	0 to 6000 m 0 to 19680 ft.	± 50 m every 10°C ± 170 ft. every 50°F	± 5 hPa every 10°C ± 0.148 inHg every 50°F
	6000 to 10000 m 19680 to 32800 ft.	± 70 m every 10°C ± 230 ft. every 50°F	

• 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.

Temperature Sensor Precision:
±2°C (±3.6°F) in range of –10°C to 60°C (14.0°F to 140.0°F)
Sunrise/Sunset: Sunrise time and sunset time for specific date, Daylight pointers
World Time: 48 cities (31 time zones)
Other: Daylight Saving Time/Standard Time
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 start time setting range: 1 minute to 24 hours (1-hour increments and 1-minute increments)
Alarms: 5 Daily alarms; Hourly time signal
Illumination: EL Backlight (electro-luminescent panel); Selectable illumination duration (approximately 1 second or 3 seconds); Auto Light Switch (Full Auto EL Light operates only in the dark)
Other: Battery power indicator; Power Saving; Low-temperature resistance (–10°C/14°F); Button operation tone on/off
Power Supply: Solar cell and one rechargeable battery
Approximate battery operating time: 5 months (from full charge to Level 4) under the following conditions:
• Watch not exposed to light
• Internal timekeeping
• Display on 18 hours per day, sleep state 6 hours per day
• 1 illumination operation (1.5 seconds) per day
• 10 seconds of alarm operation per day
• 10 digital compass operations per week
• 1 hour of altimeter measurement at 5-second interval, once per month
• 2 hours of barometric pressure measurement per day
• 6 minutes of signal reception per day

Frequent use of illumination runs down the battery. Particular care is required when using the auto light switch.

Site Data List

Site	Longitude	Latitude
Abu Dhabi	54°E	24°N
Addis Ababa	39°E	9°N
Adelaide	139°E	35°S
Amsterdam	5°E	52°N
Anchorage	150°W	61°N
Athens	24°E	38°N
Bangkok	100°E	14°N
Beirut	35°E	34°N
Boston	71°W	42°N
Brasilia	48°W	16°S
Buenos Aires	58°W	35°S
Cairo	31°E	30°N
Chicago	88°W	42°N
Christchurch	173°E	43°S
Dakar	17°W	15°N
Damascus	36°E	33°N
Delhi	77°E	29°N
Denver	105°W	40°N
Detroit	83°W	42°N
Dhaka	90°E	24°N
Dubai	55°E	25°N
Dublin	6°W	53°N
Edmonton	114°W	54°N
El Paso	106°W	32°N
Fernando de Noronha	32°W	4°S
Frankfurt	9°E	50°N
Guam	145°E	13°N
Hamburg	10°E	54°N
Hanoi	106°E	21°N
Helsinki	25°E	60°N
Hong Kong	114°E	22°N
Honolulu	158°W	21°N
Houston	95°W	30°N
Istanbul	29°E	41°N
Jakarta	107°E	6°S
Jeddah	39°E	21°N
Kabul	69°E	35°N
Karachi	67°E	25°N
Kathmandu	85°E	28°N
Kuala Lumpur	102°E	3°N
Kuwait	48°E	29°N
Las Vegas	115°W	36°N
Lima	77°W	12°S

Site	Longitude	Latitude
Lisbon	9°W	39°N
London	0°E	51°N
Los Angeles	118°W	34°N
Madrid	4°W	40°N
Manila	121°E	15°N
Melbourne	145°E	38°S
Mexico City	99°W	19°N
Miami	80°W	26°N
Milan	9°E	45°N
Montreal	74°W	45°N
Nairobi	37°E	1°S
Nauru	167°E	1°S
New Orleans	90°W	30°N
New York	74°W	41°N
Noumea	166°E	22°S
Pago Pago	171°W	14°S
Panama City	80°W	9°N
Papeete	150°W	18°S
Paris	2°E	49°N
Perth	116°E	32°S
Phnom Penh	105°E	12°N
Port Vila	168°E	18°S
Praia	24°W	15°N
Pyongyang	126°E	39°N
Rio De Janeiro	43°E	23°S
Rome	12°E	42°N
San Francisco	122°W	38°N
Santiago	71°W	33°S
Sao Paulo	47°W	24°S
Seattle	122°W	48°N
Seoul	127°E	38°N
Singapore	104°E	1°N
St. Johns	53°W	48°N
Stockholm	18°E	59°N
Sydney	151°E	34°S
Taipei	122°E	25°N
Tehran	51°E	36°N
Tokyo	140°E	36°N
Vancouver	123°W	49°N
Vienna	16°E	48°N
Wellington	175°E	41°S

• Based on data as of December 2008.

City Code Table

City Code	City	UTC Offset/ GMT Differential
PPG	Pago Pago	–11
HNL	Honolulu	–10
ANC	Anchorage	–9
YVR	Vancouver	–8
LAX	Los Angeles	
YEA	Edmonton	–7
DEN	Denver	
MEX	Mexico City	–6
CHI	Chicago	
NYC	New York	–5
SCL	Santiago	–4
YHZ	Halifax	
YYT	St. Johns	–3.5
RIO	Rio De Janeiro	–3
FEN	Fernando de Noronha	–2
RAI	Praia	–1
UTC		0
LIS	Lisbon	
LON	London	
MAD	Madrid	+1
PAR	Paris	
ROM	Rome	
BER	Berlin	
STO	Stockholm	
ATH	Athens	+2
CAI	Cairo	
JRS	Jerusalem	

City Code	City	UTC Offset/ GMT Differential
MOW	Moscow	+3
JED	Jeddah	
THR	Tehran	+3.5
DXB	Dubai	+4
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
SIN	Singapore	+8
HKG	Hong Kong	
BJS	Beijing	
TPE	Taipei	
SEL	Seoul	+9
TYO	Tokyo	
ADL	Adelaide	+9.5
GUM	Guam	+10
SYD	Sydney	
NOU	Noumea	+11
WLG	Wellington	+12

• Based on data as of December 2008.
• The rules governing global times (GMT differential and UTC offset) and summer time are determined by each individual country.