

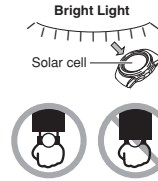
# Operation Guide 5161

## Getting Acquainted

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

- This watch does not have a city code that corresponds to the UTC offset of -3.5 hours. Because of this, the radio-controlled atomic timekeeping function will not display the correct time for Newfoundland, Canada.

## Keep the watch exposed to bright light



The electricity generated by the solar cell of the watch is stored by a rechargeable battery. Leaving or using the watch where it is not exposed to light causes the battery to run down. Make sure the watch is exposed to light as much as possible.

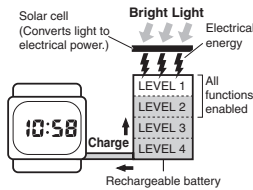
- When you are not wearing the watch on your wrist, position the face so it is pointed at a source of bright light.
- You should try to keep the watch outside of your sleeve as much as possible. Charging is reduced significantly if the face is covered only partially.

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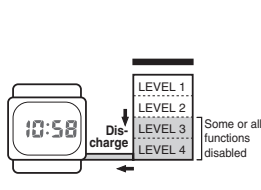
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- The watch continues to operate, even when it is not exposed to light. Leaving the watch in the dark can cause the battery to run down, which will result in some watch functions to be disabled. If the battery goes dead, you will have to re-configure watch settings after recharging. To ensure normal watch operation, be sure to keep it exposed to light as much as possible.

### Battery charges in the light.



### Battery discharges in the dark.



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- The actual level at which some functions are disabled depends on the watch model.
- 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 5 minutes exposure to bright sunlight coming in through a window*  
*Approximately about 8 hours exposure to indoor fluorescent lighting*

- Be sure to read "Power Supply" (page E-45) for important information you need to know when exposing the watch to bright light.

### If the display of the watch is blank...

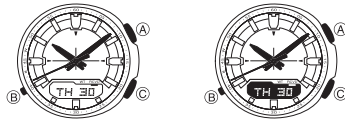
If the display of the watch is blank, it means that the watch's Power Saving function has turned off the display to conserve power.

- See "Power Saving Function" (page E-69) for more information.

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

- Depending on the model of your watch, display text appears either as dark figures on a light background, or light figures on a dark background. All sample displays in this manual are shown using dark figures on a light background.
- Button operations are indicated using the letters shown in the illustration.
- Each section of this manual provides you with the information you need to perform operations in each mode. Further details and technical information can be found in the "Reference" section.



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## Procedure Lookup

The following is a handy reference list of all the operational procedures contained in this manual.

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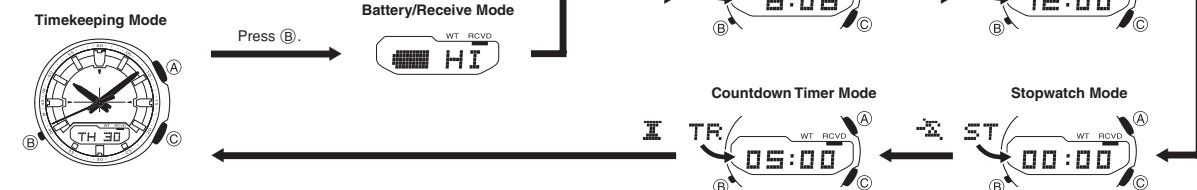
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## General Guide

- Press (B) to change from mode to mode.
- In any mode, press (A) to illuminate the face of the watch.
- Holding down (B) for at least two seconds at any time will return directly to the Timekeeping Mode.

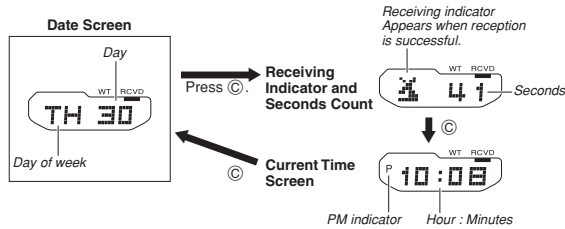


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## Switching the Display Screen

In the Timekeeping Mode, each press of **C** changes the contents of the digital display.



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- The U.S. time calibration signal can be picked up by the watch while in North America. The term "North America" in this manual refers to the area that consists of Canada, the continental United States, and Mexico.
- As of March 2010, 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.
- Using this watch in a country covered by a time calibration that is different from the countries it supports may result in incorrect time indication due to local application of summer time, etc.

## To specify your Home City

- In the Timekeeping Mode, hold down **A** for about three seconds. You can release the button after "ADJ" appears on the display.
  - At this time, "12H" (12-hour timekeeping) or "24H" (24-hour timekeeping) also will be flashing on the display.



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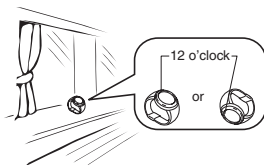
- Press **A** to exit the setting screen.
- Normally, your watch should show the correct time as soon as you select your Home City code. If it does not, it should adjust automatically after the next auto receive operation (in the middle of the night). You also can perform manual receive (page E-25) or you can set the time manually (page E-54).
- The watch will receive the time calibration signal automatically from the applicable transmitter (in the middle of the night) and update its settings accordingly. For information about the relationship between city codes and transmitters, see page E-18 and "Transmitters" (page E-72).
- See the maps under "Approximate Reception Ranges" (page E-19) for information about the reception ranges of the watch.
- You can disable time signal reception, if you want. See "To turn auto receive on and off" on page E-27 for more information.
- Under factory default settings, auto receive is turned off for all of the following city codes: **HNL** (Honolulu) and **ANC** (Anchorage). For details about turning on auto receive for these city codes, see "To turn auto receive on and off" on page E-27.

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## Important!

- When getting ready to receive the time calibration signal, position the watch as shown in the nearby illustration, with its 12 o'clock side pointing towards a window. This watch is designed to receive a time calibration signal late at night. Because of this, you should place the watch near a window as shown in the illustration when you take it off at night. Make sure there are no metal objects nearby.



- Make sure the watch is facing the right way.

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- The time calibration signal the watch will attempt to pick up depends on its current Home City code setting as shown below.

Home City Code	Transmitter	Frequency
LON, PAR, ATH	Anthorn (England) Mainflingen (Germany)	60.0 kHz 77.5 kHz
HKG	Shangqiu City (China)	68.5 kHz
TYO	Fukushima (Japan) Fukuoka/Saga (Japan)	40.0 kHz 60.0 kHz
HNL*, ANC*, LAX, DEN, CHI, NYC	Fort Collins, Colorado (the United States)	60.0 kHz

- The areas covered by the **HNL** and **ANC** city codes are quite far from the time calibration signal transmitters, and so certain conditions may cause problems with signal reception.
- Calibration signal reception is disabled while a countdown timer operation is in progress.

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## Radio-controlled Atomic Timekeeping

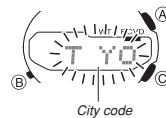
This watch receives a time calibration signal and updates its time setting accordingly.

- This watch is designed to pick up the time calibration signals transmitted in Germany (Mainflingen), England (Anthorn), the United States (Fort Collins), China (Shangqiu), and Japan (Fukushima, Fukuoka/Saga).

## Current Time Setting

This watch adjusts its time setting automatically in accordance with a time calibration signal. You also can perform a manual procedure to set the time and date, when necessary.

- The first thing you should do after purchasing this watch is to specify your Home City (the city where you normally will use the watch). For more information, see "To specify your Home City" (page E-12).
- When using the watch outside the areas covered by the time signal transmitters, you will have to adjust the current time setting manually as required. See "Timekeeping" (page E-53) for more information about manual time settings.



- Press **B**.
  - The city code of the current Home City will flash, which indicates the setting screen.
- Press **C** (east) to select the city code you want to use as your Home City.
  - LON : London
  - PAR : Paris
  - ATH : Athens
  - HKG : Hong Kong
  - TYO : Tokyo
  - HNL : Honolulu
  - ANC : Anchorage
  - LAX : Los Angeles
  - DEN : Denver
  - CHI : Chicago
  - NYC : New York

## Time Calibration Signal Reception

There are two different methods you can use to receive the time calibration signal: auto receive and manual receive.

### Auto Receive

With auto receive, the watch receives the time calibration signal automatically up to 6 times a day (5 times a day for the Chinese calibration signal). When any auto receive is successful, the remaining auto receive operations are not performed. For more information, see "About Auto Receive" (page E-22).

### Manual Receive

Manual receive lets you start a time calibration receive operation with the press of a button. For more information, see "To perform manual receive" (page E-25).

- Proper signal reception can be difficult or even impossible under the conditions listed below.

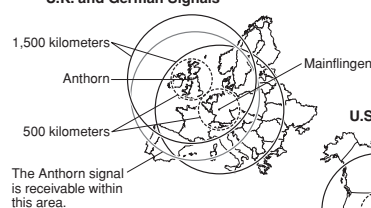


- Signal reception normally is better at night than during the day.
- Time calibration signal reception takes from three to eight minutes, but in some cases it can take as long as 16 minutes. Take care that you do not perform any button operations or move the watch during this time.

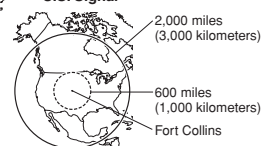
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## Approximate Reception Ranges

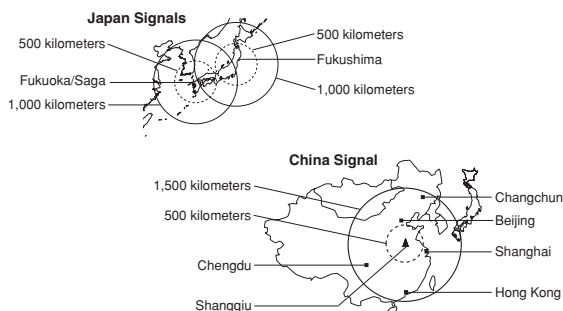
### U.K. and German Signals



### U.S. Signal



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- Signal reception may not be possible at the distances noted below during certain times of the year or day. Radio interference also may 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: 1,500 kilometers (910 miles)
- Even when the watch is within the reception range of the transmitter, signal reception will be impossible if the signal is blocked by mountains or other geological formations between the watch and signal source.
- Signal reception is affected by weather, atmospheric conditions, and seasonal changes.
- See the information under "Signal Reception Troubleshooting" (page E-29) if you experience problems with time calibration signal reception.

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### About Auto Receive

The watch receives the time calibration signal automatically up to 6 times a day (5 times a day for the Chinese calibration signal). When any auto receive is successful, the remaining auto receive operations are not performed. The reception schedule (calibration times) depends on your currently selected Home City, and whether standard time or Daylight Saving Time is selected for your Home City.

Your Home City	Auto Receive Start Times						
	1	2	3	4	5	6	
LON	Standard Time	1:00 am	2:00 am	3:00 am	4:00 am	5:00 am	Midnight*
	Daylight Saving Time	2:00 am	3:00 am	4:00 am	5:00 am	Midnight*	1:00 am*
PAR	Standard Time	2:00 am	3:00 am	4:00 am	5:00 am	Midnight*	1:00 am*
	Daylight Saving Time	3:00 am	4:00 am	5:00 am	Midnight*	1:00 am*	2:00 am*
ATH	Standard Time	3:00 am	4:00 am	5:00 am	Midnight*	1:00 am*	2:00 am*
	Daylight Saving Time	4:00 am	5:00 am	Midnight*	1:00 am*	2:00 am*	3:00 am*
HKG	Standard Time and Daylight Saving Time	1:00 am	2:00 am	3:00 am	4:00 am	5:00 am	

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Your Home City		Auto Receive Start Times					
		1	2	3	4	5	6
TYO	Standard Time	Midnight	1:00 am	2:00 am	3:00 am	4:00 am	5:00 am
HNL	Standard Time and Daylight Saving Time	Midnight	1:00 am	2:00 am	3:00 am	4:00 am	5:00 am
ANC							
LAX							
DEN							
CHI							
NYC							

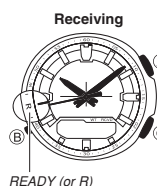
\*Next day

### Note

- When a calibration time is reached, the watch will receive the calibration signal only if it is in either the Timekeeping Mode or World Time Mode. Reception is not performed if a calibration time is reached while you are configuring settings.
- Auto receive of the calibration signal is designed to be performed early in the morning, while you sleep (provided that the Timekeeping Mode time is set correctly). Before going to bed for the night, remove the watch from your wrist, and put it in a location where it can receive the signal easily.
- Remember that reception of the calibration signal depends on the current time in the Timekeeping Mode. The receive operation will be performed whenever the display shows any one of the calibration times, regardless of whether or not the displayed time actually is the correct time.

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### To perform manual receive



READY (or R)

- While in the Timekeeping Mode or Battery/Receive Mode, hold down (C) for about two seconds.
- The second hand will move to **READY (R)** and signal reception will start.
- The digital display will go blank at this time.
- The second hand will indicate the current reception status.
  - READY (or R)**: Unstable
  - WORK (or W)**: Stable
- Keep the watch in a location where reception is stable while a receive operation is in progress.
- Signal reception takes from three to eight minutes, but in some cases it can take as long as 16 minutes. Take care that you do not perform any button operations or move the watch during this time.
- Even under optimum reception conditions, it can take about 30 seconds for reception to stabilize.

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- Check the second hand position to find out the status of a receive operation and to determine the best location for signal reception.
- Note that weather, the time of day, surroundings, and other factors all can affect reception.

### Note

To cancel an ongoing signal receive operation, press any button.

### When reception is successful

- Receive successful**
  - "GET" appears when reception is complete, and the watch adjusts its current time setting.
  - To return to the Timekeeping Mode after "GET" appears, press (B) or (C), or do not perform any operation for one or two minutes.
  - The receive successful indicator is displayed after a successful receive operation.

Receive successful indicator

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### When reception fails

- The watch displays "ERROR" without adjusting the current time setting.
- To return to the Timekeeping Mode after "ERROR" appears, press (B) or (C), or do not perform any operation for one or two minutes.
- Once any receive operation is successful, the receive successful indicator will remain on the display for the rest of the day, even if other receive operations fail.

### To turn auto receive on and off

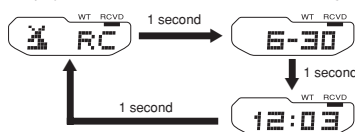
- In the Timekeeping Mode, press (B) to enter the Battery/Receive Mode.
- Press (C) to display the date and time of the last successful signal reception.
- Hold down (A) until the current auto receive setting (**ON** or **OFF**) starts to flash. This is the setting screen.
  - Note that the setting screen will not appear if the currently selected Home City is the one that does not support time calibration reception.
  - For information about city codes that support signal receive, see "To specify your Home City" (page E-12).

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- Press (C) to toggle auto receive on (**ON**) and off (**OFF**). After the setting is the way you want, press (A) to exit the setting mode.
- To return to the Timekeeping Mode, hold down (B) for at least two seconds.

### To view the latest signal reception results

- In the Timekeeping Mode, press (B) to enter the Battery/Receive Mode.
- Press (C) to display the date and time of the last successful signal reception.



- To return to the Timekeeping Mode, hold down (B) for at least two seconds.
- If there have been no successful receptions, the time will show "--:--".

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### Signal Reception Troubleshooting

Check the following points whenever you experience problems with signal reception.

Problem	Probable Cause	What you should do
Cannot perform manual receive.	<ul style="list-style-type: none"> <li>The watch is not in the Timekeeping Mode.</li> <li>Your current Home City is not one of the following: LON, PAR, ATH, HKG, TYO, HNL, ANC, LAX, DEN, CHI, or NYC</li> <li>A countdown timer operation is in progress.</li> </ul>	<ul style="list-style-type: none"> <li>Enter the Timekeeping Mode and try again.</li> <li>Select LON, PAR, ATH, HKG, TYO, HNL, ANC, LAX, DEN, CHI, or NYC as your Home City (page E-12).</li> <li>Enter the Countdown Timer Mode and stop the countdown (page E-42).</li> </ul>
Auto receive is turned on, but the receive successful indicator does not appear on the display.	<ul style="list-style-type: none"> <li>You changed the time setting manually.</li> <li>The DST setting was changed manually.</li> <li>You pressed a button while signal receive was in progress.</li> </ul>	<ul style="list-style-type: none"> <li>Perform manual signal receive or wait until the next auto signal receive operation is performed.</li> </ul>

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Problem	Probable Cause	What you should do
Auto receive is turned on, but the receive successful indicator does not appear on the display.	<ul style="list-style-type: none"> <li>Even if reception is successful on a particular day, the receive successful indicator will disappear when the first auto receive operation is performed on the following day.</li> <li>Time data (hour, minutes, seconds) only was received during the last receive operation. The receive successful indicator appears only when time data and date data (year, month, day) are both received.</li> </ul>	<ul style="list-style-type: none"> <li>Check to make sure the watch is in a location where it can receive the signal (page E-16).</li> </ul>

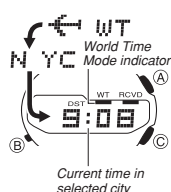
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Problem	Probable Cause	What you should do
Time setting is incorrect following signal reception.	<ul style="list-style-type: none"> <li>If the time is one hour off, the DST setting may be incorrect.</li> <li>The Home City code setting is not correct for the area where you are using the watch.</li> </ul>	<ul style="list-style-type: none"> <li>Change the DST setting to Auto DST (page E-59).</li> <li>Select the correct Home City code (page E-12).</li> </ul>

- For further information, see "Important!" (page E-16) and "Radio-controlled Atomic Timekeeping Precautions" (page E-70).

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## World Time



World Time shows the current time in 29 cities (29 time zones) around the world.

- The times kept in the World Time Mode are synchronized with the time being kept in the Timekeeping Mode. If you feel that there is an error in any World Time Mode time, check to make sure you have the correct city selected as your Home City. Also check to make sure that the current time as shown in the Timekeeping Mode is correct.
- The World Time Mode indicator is displayed in the World Time Mode.
- Select a city code in the World Time Mode to display the current time in any particular time zone around the globe. See the "City Code Table" at the back of this manual for information about the UTC differential settings that are supported.

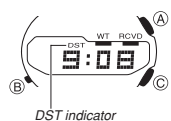
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- All of the operations in this section are performed in the World Time Mode, which you enter by pressing (B).

**To view the time in another city**  
In the World Time Mode, press (C).  
This will cause the city code of the currently selected World Time City to appear for about two seconds, followed by the current time in that city.  
Pressing (C) while a city code is displayed will scroll to the next city code, in the sequence noted in the "City Code Table" at the back of this manual.

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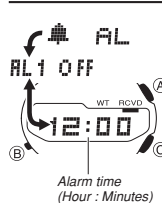
## To toggle a city code time between Standard Time and Daylight Saving Time



- In the World Time Mode, use (C) to display the city code (time zone) whose Standard Time/Daylight Saving Time setting you want to change.
- Hold down (A) to toggle between Daylight Saving Time (DST indicator displayed) and Standard Time (DST indicator not displayed).
- The DST indicator is shown on the World Time Mode screen while Daylight Saving Time is turned on.
- Note that the Standard Time/Daylight Saving Time setting affects only the currently displayed city code. Other city codes are not affected.
- Selecting Daylight Saving Time for the city that is currently selected as the Home City, will also apply Daylight Saving Time to the Timekeeping Mode time.
- Note that you cannot switch between Standard Time and Daylight Saving Time while UTC is selected as the city code.

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## Alarms



The Alarm Mode lets you configure five daily alarms. You also can use it to turn the Hourly Time Signal on or off.

- The watch beeps for about 10 seconds when an alarm time is reached.
- Turning on the Hourly Time Signal causes the watch to beep on the hour every hour.
- All of the operations in this section are performed in the Alarm Mode, which you enter by pressing (B) (page E-9).

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## To set an alarm time



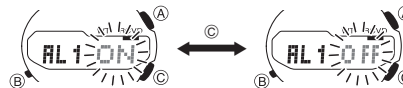
- In the Alarm Mode, use (C) to scroll through the alarm screens until the one whose time you want to set is displayed.



- The alarm screens are AL1, AL2, AL3, AL4, and AL5.
- Hold down (A) until the hour digits of the current alarm time start to flash. This is the setting mode.
    - Entering the setting mode automatically turns on the displayed alarm.

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- Press (C) to scroll the hour value, until it displays the value you want.
  - Set the time correctly as a.m. or p.m. (P indicator) when using 12-hour timekeeping, or you specify the correct 24-hour time.
  - The same 12-hour/24-hour format you select for the Timekeeping Mode time (page E-54) is also applied in the Alarm Mode.
- After the hour setting is the way you want, press (B) to move the flashing to the minutes.
  - Press (C) to scroll the minute value.
- When the minute setting is the way you want, press (B). This will cause "ON" to flash on the display.
  - Press (C) to toggle the alarm setting between ON and OFF.



- After the setting is the way you want, press (A) to exit the setting mode.

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## Alarm Operation

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

- Alarm and Hourly Time Signal operations are performed in accordance with the Timekeeping Mode time.
- To stop the alarm tone after it starts to sound, press any button.

## To turn the Hourly Time Signal on and off

- In the Alarm Mode, use (C) to select the Hourly Time Signal.
- Hold down (A) for about three seconds until "ON" flashes on the display. This is the setting mode.
  - Entering the setting mode automatically turns on the Hourly Time Signal.

- Press (C) to toggle the Hourly Time Signal between on and off.



- Press (A) to exit the setting screen.

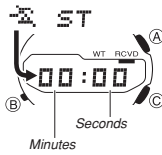
## To turn off all alarms and the Hourly Time Signal

- In the Alarm Mode, hold down (C) for about three seconds.
- "ALL OFF" will appear on the display indicating all alarms and the Hourly Time Signal are turned off.

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## Stopwatch



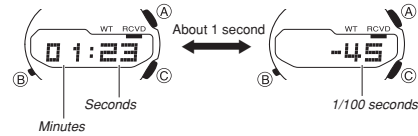
- The stopwatch lets you measure elapsed times.
- The display range of the stopwatch is 59 minutes, 59.99 seconds.
  - The stopwatch continues to run, restarting from zero after it reaches its limit, until you stop it.
  - The stopwatch measurement operation continues even if you exit the Stopwatch Mode.
  - All of the operations in this section are performed in the Stopwatch Mode, which you enter by pressing (B) (page E-9).

### To measure times with the stopwatch

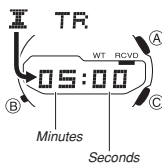


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While an elapsed time operation is stopped, the display alternates between two screens that show the current minutes and seconds, and the 1/100 seconds count.



## Countdown Timer



- You can set the countdown timer within a range of one to 100 minutes. An alarm sounds when the countdown reaches zero.
- All of the operations in this section are performed in the Countdown Timer Mode, which you enter by pressing (B) (page E-9).

### Countdown End Beeper

The countdown end beeper lets you know when the countdown reaches zero. The beeper stops after about 10 seconds or when you press any button.

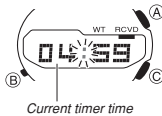
E-42

### To configure the countdown timer



- While the countdown start time is on the display in the Countdown Timer Mode, hold down (A) until the current countdown start time starts to flash, which indicates the setting screen.
  - If the countdown start time is not displayed, use the procedure under "To use the countdown timer" (page E-44) to display it.
- Press (C) to scroll the minute setting value.
  - To specify a countdown time of 100 minutes, set 00:00.
- Press (A) to exit the setting screen.

### To use the countdown timer



- Press (C) while in the Countdown Timer Mode to start the countdown timer.
- The countdown timer operation continues even if you exit the Countdown Timer Mode.
  - Press (C) while a countdown operation is in progress to pause it. Press (C) again to resume the countdown.
  - To stop a countdown operation completely, hold down (C) for about one second until the countdown time returns to its starting value.

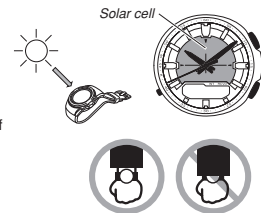
E-44

## Power Supply

This watch is equipped with a solar cell and a rechargeable battery that is charged by the electrical power produced by the solar cell. The illustration shown below shows how you should position the watch for charging.

**Example:** Orient the watch so its face is pointing at a light source.

- The illustration shows how to position a watch with a resin band.
- Note that charging efficiency drops when any part of the solar cell is blocked by clothing, etc.
- You should try to keep the watch outside of your sleeve as much as possible. Charging is reduced significantly if the face is covered only partially.



E-43

### Important!

- 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 rechargeable battery power to run down. Be sure that the watch is exposed to bright light whenever possible.
- This watch uses a rechargeable battery to store power produced by the solar cell, so regular battery replacement is not required. However, after very long use, the rechargeable battery may lose its ability to achieve a full charge. If you experience problems getting the rechargeable battery to charge fully, contact your dealer or CASIO distributor about having it replaced.
- Never try to remove or replace the watch's rechargeable battery yourself. Use of the wrong type of battery can damage the watch.
- The current time and all other settings return to their initial factory defaults whenever battery power drops to Level 5 (pages E-47 and E-48) and when you have the battery replaced.
- Turn on the watch's Power Saving function (page E-69) and keep it in an area normally exposed to bright light when storing it for long periods. This helps to keep the rechargeable battery from going dead.

E-46

### Battery Power Indicator and Recover Indicator

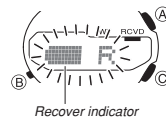
In the Timekeeping Mode, press (B) to enter the Battery/Receive Mode. The battery power indicator on the display shows you the current status of the rechargeable battery's power.

Level	Battery Power Indicator	Function Status
1	HI	All functions enabled.
2	MID	All functions enabled.
3	LO (Charge Soon Alert)	Watch enters Timekeeping Mode and second hand jumps every two seconds. Auto and manual receive, illumination, and beeper disabled.
4	RECOVER	All hands stop at 12 o'clock, all functions and display indicators disabled.
5	RECOVER	All functions disabled.

E-47

- The flashing LO indicator at Level 3 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 after falling to Level 5, reconfigure the current time, date, and other settings.
- The watch's Home City code setting will change automatically to **TYO** (Tokyo) whenever the battery drops to Level 5. With this Home City code setting, the watch is configured to receive the time calibration signals of Japan. If you are using the watch in North America or Europe, or China you will need to change the Home City code setting to match your location whenever the battery drops to Level 5.
- Display indicators reappear as soon as the battery is charged from Level 5 to Level 2.
- 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.

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- Performing illumination, or beeper operations during a short period may cause R (recover) to appear on the display. After some time, battery power will recover and R (recover) will disappear, indicating that the above functions are enabled again.
- If R (recover) appears frequently, it probably means that remaining battery power is low. Leave the watch in bright light to allow it to charge.

E-49



### Charging Precautions

Certain charging conditions can cause the watch to become very hot. Avoid leaving the watch in the areas described below whenever charging its rechargeable battery. Also note that 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.

#### Warning!

Leaving the watch in bright light to charge its rechargeable battery 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

E-50

### Charging Guide

The following table shows the amount of time the watch needs to be exposed to light each day in order to generate enough power for normal daily operations.

Exposure Level (Brightness)	Approximate Exposure Time
Outdoor Sunlight (50,000 lux)	8 minutes
Sunlight Through a Window (10,000 lux)	30 minutes
Daylight Through a Window on a Cloudy Day (5,000 lux)	48 minutes
Indoor Fluorescent Lighting (500 lux)	8 hours

- For details about the battery operating time and daily operating conditions, see the "Power Supply" section of the Specifications (page E-78).
- Stable operation is promoted by frequent exposure to light.

E-51

### Recovery Times

The table below shows the amount exposure that is required to take the battery from one level to the next.

Exposure Level (Brightness)	Approximate Exposure Time			
	Level 5	Level 4	Level 3	Level 2
Outdoor Sunlight (50,000 lux)	2 hours		16 hours	5 hours
Sunlight Through a Window (10,000 lux)	4 hours		58 hours	16 hours
Daylight Through a Window on a Cloudy Day (5,000 lux)	7 hours		94 hours	26 hours
Indoor Fluorescent Lighting (500 lux)	76 hours		-----	-----

- The above exposure time values are all for reference only. Actual required exposure times depend on lighting conditions.

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### Timekeeping

#### Read This Before You Set the Time and Date!

This watch is preset with a number of city codes, each of which represents the time zone where that city is located. When setting the time, it is important that you first select the correct city code for your Home City (the city where you normally use the watch). If your location is not included in the preset city codes, select the preset city code that is in the same time zone as your location.

- Note that all of the times for the World Time Mode city codes (page E-32) are displayed in accordance with the time and date settings you configure in the Timekeeping Mode.
- The watch automatically adjusts its analog setting to match the current digital setup of your Home City. If the analog time is not correct even though you are sure the digital setup of your Home City is correct and the watch is performing signal reception properly, check the home positions of the hands and make adjustments if necessary (page E-63).

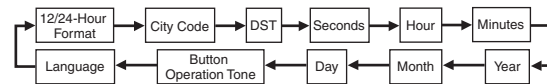
E-53

### To set the time and date manually

- In the Timekeeping Mode, hold down (A) for about three seconds. You can release the button after "ADJ" appears on the display.
  - At this time, "12H" (12-hour timekeeping) or "24H" (24-hour timekeeping) also will be flashing on the display.
  - The second hand will move to 12 o'clock and stop there.
- Press (C) to toggle between 12-hour (12H) and 24-hour (24H) timekeeping.
- Press (B) and the city code of the current Home City will flash on the display.
- Use (C) to select the city code you want.
  - Make sure you select your Home City code before changing any other setting.
  - For full information on city codes, see the "City Code Table" at the back of this manual.

E-54

- Press (B) to move the flashing in the sequence shown below to select the other settings.



- The following steps explain how to configure timekeeping settings only.
- When the timekeeping setting you want to change is flashing, use (C) to change it as described below.

Screen:	To do this:	Do this:
12 H T YO	Toggle between 12-hour (12 H) and 24-hour (24 H) timekeeping	Press (C).
	Change the city code	

E-55

Screen:	To do this:	Do this:
DST AT	Cycle between Auto DST (AT), Daylight Saving Time (ON) and Standard Time (OFF).	Press (C).
50	Reset the seconds to 00	
P 10:08	Change the hour and minutes	
20 11 6-30	Change the year, month, or day	
KE Y / MU TE	Toggle the button operation tone between KE Y (on) and MU TE (off)	
EN	Change the language of the day of the week EN : English DE : German ES : Spanish CN : Chinese JP : Japanese	

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- Press (A) to exit the setting screen.

- Auto DST (AT) can be selected only while LON, PAR, ATH, TYO, HNL, ANC, LAX, DEN, CHI, or NYC is selected as the Home City code. For more information, see "Daylight Saving Time (DST)" below.
- The day of the week is displayed automatically in accordance with the date (year, month, and day) settings.

### 12-hour and 24-hour timekeeping

- With the 12-hour format, the P (PM) indicator appears to the left of the hour digits for times in the range of noon to 11:59 p.m. and no indicator appears to the left of the hour digits for times in the range of midnight to 11:59 a.m.
- With the 24-hour format, times are displayed in the range of 0:00 to 23:59, without any indicator.
- The 12-hour/24-hour timekeeping format you select in the Timekeeping Mode is applied in all other modes.

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### Daylight Saving Time (DST)

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

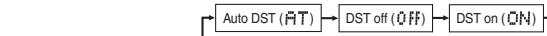
The time calibration signals transmitted from Mainflingen (Germany), Anthorn (England), or Fort Collins (the United States) include both Standard Time and DST data. When the Auto DST setting is turned on, the watch switches between Standard Time and DST (summer time) automatically in accordance with the signals.

- Though the time calibration signals transmitted by the Fukushima and Fukuoka/Saga, Japan transmitters include summer time data, summer time currently is not implemented in Japan (as of 2010).
- The default DST setting is Auto DST (AT) whenever you select LON, PAR, ATH, TYO, ANC, LAX, DEN, CHI, or NYC as your Home City code.
- If you experience problems receiving the time calibration signal in your area, it probably is best to switch between Standard Time and Daylight Saving Time (summer time) manually.

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### To change the Daylight Saving Time (summer time) setting

- In the Timekeeping Mode, hold down (A) for about three seconds. You can release the button after "ADJ" appears on the display.
  - At this time, "12H" (12-hour timekeeping) or "24H" (24-hour timekeeping) also will be flashing on the display.
- Press (B) to enter the Daylight Saving Time setting mode.
- Use (C) to cycle through the DST settings in the sequence shown below.



#### AT (AUTO)

This setting causes the watch to switch between standard time and summer time automatically, in accordance with time calibration signal data. This setting is available only when a city code that supports signal reception is selected as the Home City.

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**OFF**

This setting turns off summer time, and displays the current time normally.

**ON**

This setting turns on summer time. Turning on summer time advances the current time by one hour.

- If you change your Home City to one that is within the same transmitter area, the current DST setting will be retained. If you change to a city that is outside your current transmitter area, DST will be turned off automatically.

Transmitter	Covered City Codes
Japan	TYO
China	HKG
U.S.	HNL, ANC, LAX, DEN, CHI, NYC
Europe (U.K., Germany)	LON, PAR, ATH
None	All other city codes

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- Depending on how much the hands have to move in order to adjust to the digital time, it may take some time before they stop moving.

- When the setting you want is selected, press (A) to exit the setting screen.
- The DST indicator appears to indicate that Daylight Saving Time is turned on.

**Analog Timekeeping**

The analog time of this watch is synchronized with the digital time. The analog time setting is adjusted automatically whenever you change the digital time.

**Note**

- The hands for the analog timepiece move to adjust to a new setting whenever any of the following occurs.

*When you change the digital time setting manually*

*When the digital time setting is changed by time calibration signal reception*

*When you change the Home City code and/or DST setting*

- If the analog time does not match the digital time for any reason, use the procedure described under "To adjust home positions" (page E-64) to match the analog setting to the digital setting.
- Whenever you need to adjust both the digital and the analog time settings manually, make sure you adjust the digital setting first.

**Adjusting Home Positions**

Strong magnetism or impact can cause the hands of the watch to be off, even if the watch is able to perform the signal receive operation. If this happens, perform the applicable home position adjustment procedures in this section.

- Hand home position adjustment is not required if the analog time and digital time are the same in the Timekeeping Mode.
- Holding down the (C) button during the adjustment procedures in this section will cause the applicable hand to start high-speed hand movement. Once started, high-speed hand movement will continue even if you release the (C) button. To stop high-speed hand movement, press any button.

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**To adjust home positions**



Correct second hand position

- In the Timekeeping Mode, hold down (A) for about six seconds. You can release the button after "H-SET" appears on the display.
  - Though "ADJ" will appear on the display after about three seconds, do not release the button yet. Keep it depressed until "H-SET" appears.
  - The second hand should move to 12 o'clock (its home position), and "SEC 00" will flash on the display.
  - If the second hand does not point to 12 o'clock, use the (C) button to adjust it. Each press of (C) advances the hand by one second.



Correct hour and minute hand positions

- After the second hand is in the proper home position, press (B).
  - The hour and minute hands should move to 12 o'clock (their home position), and "+0:00" will flash on the display.
- What you should do next depends on whether the hour and minute hands are to the left or to the right of 12 o'clock.

- **If the hands point to 12 o'clock**  
Go to step 4 of this procedure.

- **If the hands point to the left of 12 o'clock**  
Use the (C) button to move the hands clockwise until they point to 12 o'clock.
  - Each press of (C) moves the hands 10 seconds.

- **If the hands point to the right of 12 o'clock**  
Press (B), which will cause the flashing display to change to "-0:00". Next, use the (C) button to move the hands counterclockwise until they point to 12 o'clock.
  - Each press of (C) moves the hands 10 seconds.

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- After everything is the way you want, press (A) to return to the Timekeeping Mode.
- After performing home position adjustment, enter the Timekeeping Mode and check to make sure that the analog hands and the digital display indicate the same time. If they do not, perform home position adjustment again.

**Reference**

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

**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, alarms, the Hourly Time Signal, and other beepers all operate normally.

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**To turn the button operation tone on and off**



- In the Timekeeping Mode, hold down (A) for about three seconds. You can release the button after "ADJ" appears on the display.
  - At this time, "12H" (12-hour timekeeping) or "24H" (24-hour timekeeping) also will be flashing on the display.
- Press (B) nine times until the current button operation tone setting (K E Y 12 or M U T E) appears.
- Press (C) to toggle the setting between K E Y 12 (tone on) and M U T E (tone off).
- Press (A) to exit the setting screen.

**Power Saving Function**

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

Elapsed Time in Dark	Display	Operation
60 to 70 minutes	Blank	Second hand moves to 12 o'clock and stops, all functions enabled, display blank.
6 or 7 days	Blank	All hands stop at 12 o'clock. Auto receive, beeper tone, illumination, and display are disabled.

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- Wearing the watch inside the sleeve of clothing can cause it to enter the sleep state.
- The watch will not enter the sleep state between 6:00 AM and 9:59 PM. If the watch is already in the sleep state when 6:00 AM arrives, however, it will remain in the sleep state.

**To recover from the sleep state**

- Perform any one of the following operations.
- Move the watch to a well-lit area.
  - Press any button.

**Radio-controlled Atomic Timekeeping Precautions**

- Strong electrostatic charge can result in the wrong time being set.
- The time calibration signal bounces off the ionosphere. Because of this, such factors as changes in the reflectivity of the ionosphere, as well as movement of the ionosphere to higher altitudes due to seasonal atmospheric changes or the time of day may change the reception range of the signal and make reception temporarily impossible.

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- The Home City setting reverts to the initial default of **TYO** (Tokyo) whenever the battery power level drops to Level 5 or when you have the rechargeable battery replaced. If this happens, change the Home City to the setting you want (page E-12).

**Transmitters**

The time calibration signal received by this watch depends on the currently selected Home City code (page E-12).

- When a U.S. time zone is selected, the watch receives the time calibration signal transmitted from the United States (Fort Collins).
- When a Japanese time zone is selected, the watch receives the time calibration signal transmitted from Japan (Fukushima and Fukuoka/Saga).
- When a European time zone is selected, the watch receives the time calibration signals transmitted from Germany (Mainflingen) and England (Anthorn).
- When a China time zone is selected, the watch receives the time calibration signals transmitted from China (Shangqiu City).

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**Initial Screens**

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

**Timekeeping**

- Resetting the seconds to 00 while the current count is in the range of 30 to 59 causes the minutes to be increased by 1. In the range of 00 to 29, the seconds are reset to 00 without changing the minutes.
- The year can be set in the range of 2000 to 2099.
- The watch's built-in full automatic calendar makes allowances for different month lengths and leap years. Once you set the date, there should be no reason to change it except after you have the watch's battery replaced.
- The current time for all city codes in the Timekeeping Mode and World Time Mode is calculated in accordance with the Coordinated Universal Time (UTC) for each city, based on your Home City time setting.

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**Specifications**

**Accuracy at normal temperature:** ± 15 seconds a month

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

Time system: Switchable between 12-hour and 24-hour formats

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

Other: Home City code (can be assigned one of 29 city codes); Daylight Saving Time (summer time)/Standard Time

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

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

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)

E-76

- Even if the time calibration signal is received properly, certain conditions can cause the time setting to be off by up to one second.
- The current time setting in accordance with the time calibration signal takes priority over any time settings you make manually.
- The watch is designed to update the date and day of the week automatically for the period January 1, 2000 to December 31, 2099. Setting of the date by the time calibration signal cannot be performed starting from January 1, 2100.
- This watch can receive signals that differentiate between leap years and non-leap years.
- Though this watch is designed to receive both time data (hour, minutes, seconds) and date data (year, month, day), certain signal conditions can limit reception to time data only.
- If you are in an area where proper time calibration signal reception is impossible, the watch keeps the time with the precision noted in "Specifications".
- If you have problems with proper time calibration signal reception or if the time setting is wrong after signal reception, check your current city code, and DST (summer time) settings (page E-54), and auto receive settings (page E-27).

- When your Home City is **LON, PAR, ATH** (which can receive both the Anthorn and Mainflingen signals), the watch first tries to pick up the signal it last successfully received. If that fails, it tries the other signal. For the first receive after you select your Home City, the watch tries the nearest signal first (Anthorn for **LON**, Mainflingen for **PAR** and **ATH**).
- When your Home City is **TYO** (which can receive both 40 kHz and 60 kHz signals), the watch first tries to pick up the signal it last successfully received. If that fails, it tries the other signal.

**Auto Return**

If you do not perform any operation for about two or three minutes while a setting screen (with a flashing setting) is on the display, the watch will exit the setting screen automatically.

**Scrolling**

The **Ⓢ** button is used in various modes and setting screens to scroll through data on the display. In most cases, holding down this button during a scroll operation scrolls at high speed.

**World Time**

- The seconds count of the World Time is synchronized with the seconds count of the Timekeeping Mode.

**Illumination Precautions**

An LED (light-emitting diode) and a light guide panel illuminate the face of the watch for easy reading in the dark. In any mode, press **(A)** to illuminate the face of the watch for about one second.

- The illumination provided by the light may be difficult to see when viewed under direct sunlight.
- Illumination turns off automatically whenever an alarm sounds.
- Frequent use of illumination shortens the battery operating time.

**World Time:** 29 cities (29 time zones)

Other: Daylight Saving Time/Standard Time

**Alarms:** 5 daily alarms; Hourly Time Signal

**Stopwatch:**

Measuring unit: 1/100 seconds

Measuring capacity: 59' 59.99"

Measuring mode: Elapsed time

**Countdown Timer:**

Measuring unit: 1 second

Input range: 1 minute to 100 minutes (1-minute increments)

**Illumination:** LED (light-emitting diode)

**Other:** Power Saving, Battery power indicator, Button operation tone on/off, day of the week language selection

E-77

**Power Supply:** Solar cell and one rechargeable battery

Approximate battery operating time: 4 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 second) per day
- 10 seconds of alarm operation per day
- Approximately 4 minutes of signal reception per day

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**City Code Table**

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

City Code	City	UTC Offset/ GMT Differential
ATH	Athens	+2
JED	Jeddah	+3
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
HKG	Hong Kong	+8
TYO	Tokyo	+9

City Code	City	UTC Offset/ GMT Differential
ADL	Adelaide	+9.5
SYD	Sydney	+10
NOU	Noumea	+11
WLG	Wellington	+12

- Based on data as of December 2009.
- The rules governing global times (UTC offset and GMT differential) and summer time are determined by each individual country.