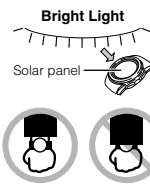


Operation Guide 5110

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.

Keep the watch exposed to bright light

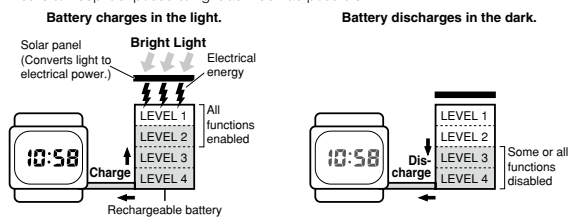


The electricity generated by the solar panel of the watch is stored by a built-in battery. Leaving or using the watch where it is not exposed to light causes the battery to run down. Make sure the watch is exposed to light as much as possible.

- 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 even only partially covered.

E-1

- 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.



E-2

- 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-49) for important information you need to know when exposing the watch to bright light.

If the display of the watch is blank...

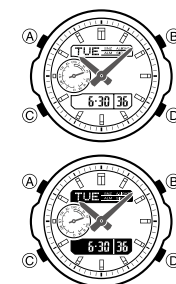
If the display of the watch is blank, it means that the watch's Power Saving function has turned off the display to conserve power.

- See "Power Saving Function" (page E-66) 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 your watch or its malfunction.

E-3

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.

E-4

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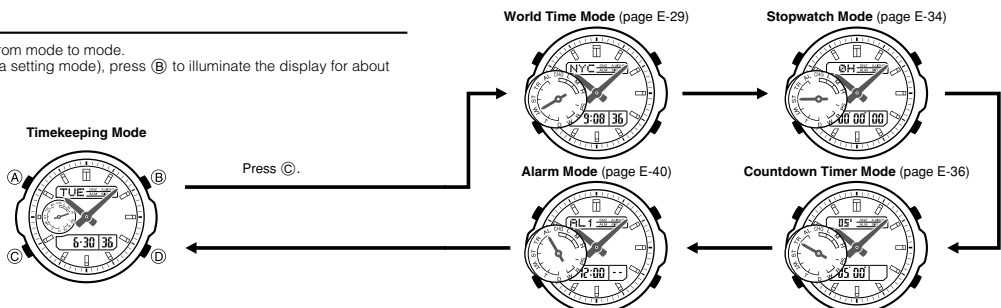
E-6

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General Guide

- Press **C** to change from mode to mode.
- In any mode (except a setting mode), press **B** to illuminate the display for about one second.



E-8

E-9

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 (Fukuoka, Fukuoka/Saga).
- See the information under "Signal Reception Troubleshooting" (page E-27) if you experience problems with time calibration signal reception.

Current Time Setting

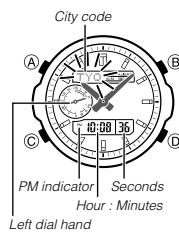
This watch adjusts its time setting automatically in accordance with a time calibration signal. You also can perform a manual procedure to set the time and date, when necessary.

- 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" on page E-12.**

E-10

E-11

To specify your Home City



- In the Timekeeping Mode, hold down (A) for about five seconds, until the watch beeps twice and the city code flashes on the upper display. This is the setting mode.
- Press (D) (east) and (B) (west) to select the city code you want to use as your Home City.
 - LIS, LON** : Lisbon, London
 - MAD, PAR, ROM, BER, STO** : Madrid, Paris, Rome, Berlin, Stockholm
 - ATH** : Athens
 - MOW** : Moscow
 - HKG, BJS, TPE** : Hong Kong, Beijing, Taipei
 - SEL, TYO** : Seoul, Tokyo
 - HNL** : Honolulu
 - ANC** : Anchorage
 - YVR, LAX** : Vancouver, Los Angeles
 - YEA, DEN** : Edmonton, Denver
 - MEX, CHI** : Mexico City, Chicago

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 "To set the time and date manually" (page E-58) for more information about manual time settings.
- 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.
- Using this watch in a country covered by a time calibration signal that is different from the countries it supports may result in incorrect time indication due to local application of summer time, etc.

MIA, YTO, NYC : Miami, Toronto, New York
YHZ : Halifax
YYT : St. Johns

- Press (A) to exit the setting mode.
 - 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-24) or you can set the time manually (page E-58).
 - 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-17 and "Transmitters" (page E-70).
 - See the maps under "Approximate Reception Ranges" (page E-18) for information about the reception ranges of the watch.

E-13

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 six times a day (five times for the Chinese calibration signal). When any auto receive is successful, remaining auto receive operations are not performed. For more information, see "About Auto Receive" (page E-21).

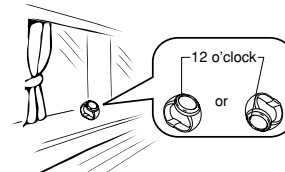
Manual Receive

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-24).

E-14

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.

E-15

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

- Signal reception normally is better at night than during the day.
- Time calibration signal reception 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 operations or move the watch during this time.

E-16

- 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, BER, ATH, LIS, MAD, ROM, STO, MOW*	Anthorn (England)	60.0 kHz
	Mainflingen (Germany)	77.5 kHz
HKG, BJS	Shangqiu City (China)	68.5 kHz
	Fukushima (Japan)	40.0 kHz
TPE, SEL, TYO	Fukuoka/Saga (Japan)	60.0 kHz
	Fort Collins, Colorado (the United States)	60.0 kHz

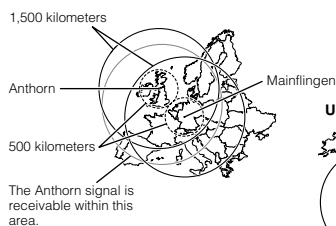
* The areas covered by the **HNL, ANC,** and **MOW** city codes are quite far from the time calibration signal transmitters, and so certain conditions may cause problems with signal reception.

- Calibration signal reception is disabled while a countdown timer operation is in progress.

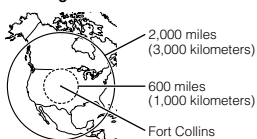
E-17

Approximate Reception Ranges

UK and German Signals

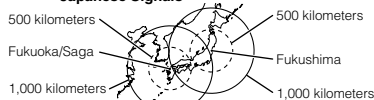


U.S. Signal



E-18

Japanese Signals



Signals are receivable in the Taiwan area when reception conditions are good.

Chinese Signal



E-19

- Signal reception may not be possible at the distances that are further than those noted below during certain times of the year or day. Radio interference also may cause problems with reception.
 - Mainflingen (Germany) or Anthon (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)
- 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.
- As of December 2013, China does not use Daylight Saving Time (DST). If China does go to the Daylight Saving Time system in the future, some functions of this watch may no longer operate correctly.

E-20

About Auto Receive

The watch receives the time calibration signal automatically up to six times a day (five times for the Chinese calibration signal). When any auto receive is successful, 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 LIS	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 BER MAD ROM STO	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	5:00 am	Midnight*	1:00 am*	2:00 am*
MOW	Standard Time	4:00 am	5:00 am	Midnight*	1:00 am*	2:00 am*	3:00 am*
	Daylight Saving Time	5:00 am	Midnight*	1:00 am*	2:00 am*	3:00 am*	4:00 am*

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Your Home City	Auto Receive Start Times					
	1	2	3	4	5	6
HKG BJS	Standard Time	1:00 am	2:00 am	3:00 am	4:00 am	5:00 am
TYO TPE SEL	Standard Time	Midnight	1:00 am	2:00 am	3:00 am	4:00 am
HNL ANC LAX DEN CHI NYC YVR YEA MEX MIA YTO YHZ YYT	Standard Time and Daylight Saving Time	Midnight	1:00 am	2:00 am	3:00 am	4:00 am

*Next day

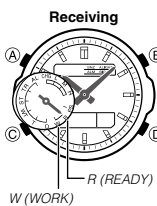
E-22

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.
- The watch receives the calibration signal for two to 14 minutes everyday when the time in the Timekeeping Mode reaches a calibration time. Do not perform any button operation within 14 minutes before or after the calibration times. Doing so can interfere with correct calibration.
- Remember that reception of the calibration signal depends on the current time in your Home City, as kept in the Timekeeping Mode.

E-23

To perform manual receive



- Place the watch on a stable surface so its 12 o'clock side is facing towards a window (page E-15).
- In the Timekeeping Mode, hold down (A) for about two seconds until the watch beeps.
- The digital display will go blank, and the left dial hand will move to **R (READY)**. This indicates that the watch is getting ready for time calibration signal reception.
 - See the information under "Signal Reception Troubleshooting" (page E-27) if you experience problems.
 - The left dial hand will move to **W (WORK)** and stay there while actual reception is in progress.
 - If signal reception is unstable during reception, the left dial hand may move between **W (WORK)** and **R (READY)**.
 - The hour and minute hands continue to keep time normally.

E-24

Receive successful



- Time calibration signal reception 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 operations or move the watch during this time.
- When a signal receive operation is successful, **GET** appears on the upper display and the lower display shows the time and date of the successful operation. The watch will adjust its time setting in accordance with the information provided by the signal.

Receive failed



- The watch will return to the Timekeeping Mode if you press (A) or if you do not perform any operation for about one or two minutes.
- ERR** will appear on the upper display if the receive operation is not successful. The watch will not adjust its time setting in this case. Press (A) to return to the Timekeeping Mode.

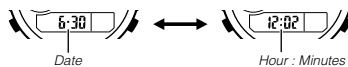
E-25

Note

- To interrupt a receive operation and return to the Timekeeping Mode, press any button.

To check the latest signal reception results

In the Timekeeping Mode, press (A) to view the last successful receive time and date. Press (A) again to return to the previous screen.



E-26

Signal Reception Troubleshooting

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

Problem	Probable Cause	What you should do
I can't receive a time calibration signal.	<ul style="list-style-type: none"> You performed some button operation during auto receive. The watch is not in the Timekeeping Mode or World Time Mode. The watch is in a location where the signal cannot be received for some reason. A countdown timer operation is in progress. Radio interference is often present during the day time, which can interfere with signal reception. 	<ul style="list-style-type: none"> Perform manual receive at night or wait until the next auto receive operation is performed. Enter the Timekeeping Mode or World Time Mode and try again. Enter the Countdown Timer Mode and stop the countdown. (page E-36) Check to make sure the watch is in a location where it can receive the signal (page E-15).

E-27

Problem	Probable Cause	What you should do
The time setting is incorrect following signal reception.	<ul style="list-style-type: none"> If the time is one hour off, the DST setting may be incorrect. The Home City code setting is not correct for the area where you are using the watch. The home positions of the hands are off. 	<ul style="list-style-type: none"> Change the DST setting to Auto DST (page E-63). Select the correct Home City code (page E-12). Enter the home position adjustment mode and adjust the home positions (page E-64).

- For further information, see "Important!" (page E-15) and "Radio-controlled Atomic Timekeeping Precautions" (page E-69).

E-28

World Time



World Time digitally displays the current time in one of 48 cities (29 time zones) around the world. A simple operation swaps your Home City with the currently selected World Time City.

- When you enter the World Time Mode, the current month and day of the World Time City appear first. After about one second, the current time appears.
- 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.

E-29

- Times in the World Time Mode are based on UTC offsets. See the "City Code Table" at the back of this manual for information about the UTC offsets that are supported.
- All of the operations in this section are performed in the World Time Mode, which you enter by pressing (C) (page E-9).

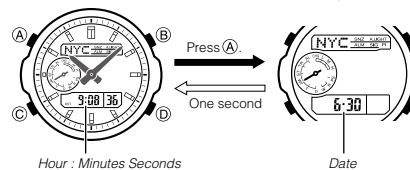


E-30

To view the current time in another time zone

In the World Time Mode, use (D) to scroll through available city codes (time zones). Holding down the button scrolls at high speed.

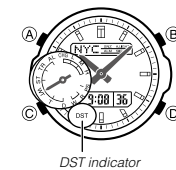
- When the city code (time zone) you want is selected, you can press (A) to display the date. After about one second, the watch will resume regular timekeeping.



E-31

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

1. In the World Time Mode, press (D) to display the city code (time zone) whose Standard Time/Daylight Saving Time setting you want to change.
2. Hold down (A) for about three seconds to toggle between Daylight Saving Time (DST indicator displayed) and Standard Time (DST indicator not displayed).
 - The DST indicator is shown in the bottom (World Time) display 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.



E-32

Swapping your Home City and World Time City

You can use the procedure below to swap your Home City and World Time City. This changes your Home City to your World Time City, and your World Time City to your Home City. This capability can come in handy when you frequently travel between two cities in different time zones.

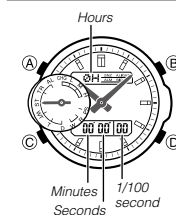
- If your current World Time City supports receipt of a time calibration signal, making it your Home City enables calibration signal reception.
- For information about which cities support time calibration signal reception, see "To specify your Home City" (page E-12).

To swap your Home City and World Time City

1. In the World Time Mode, use (D) to select the World Time City you want.
2. Hold down (A) and (B) until the watch beeps. This will make the World Time City you selected in step 1 your Home City, and cause the hour and minute hands to move to the current time in that city. At the same time, it will change the Home City you had selected prior to step 2 your World Time City, and cause the content of the upper and lower displays to change accordingly.
- After swapping the Home City and World Time City, the watch stays in the World Time Mode with the city that was selected as the Home City prior to step 2 now displayed as the World Time City.

E-33

Stopwatch

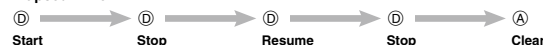


- The stopwatch lets you measure elapsed time, split times, and two finishes.
- The digital display range of the stopwatch is 23 hours, 59 minutes, 59.99 seconds.
 - The stopwatch continues to run, restarting from zero after it reaches its limit, until you stop it.
 - The stopwatch measurement operation continues even if you exit the Stopwatch Mode.
 - Exiting the Stopwatch Mode while a split time is frozen on the display clears the split time and returns to elapsed time measurement.
 - All of the operations in this section are performed in the Stopwatch Mode, which you enter by pressing (C) (page E-9).

E-34

To measure times with the stopwatch

Elapsed Time



Split Time



Two Finishes



E-35

Countdown Timer



- You can set the countdown timer start time within a range of one minute to 60 minutes. An alarm sounds when the countdown reaches zero.
- You also can select auto-repeat, which automatically restarts the countdown from the original value you set whenever zero is reached.
 - All of the operations in this section are performed in the Countdown Timer Mode, which you enter by pressing (C) (page E-9).

E-36

To use the countdown timer

- Press (D) while in the Countdown Timer Mode to start the countdown timer.
- When the end of the countdown is reached and auto-repeat is turned off, the alarm will sound for 10 seconds or until you stop it by pressing any button. The countdown time is reset to its starting value automatically after the alarm stops.
 - When auto-repeat is turned on, the countdown will restart automatically without pausing when it reaches zero. The alarm sounds to signal when the countdown reaches zero. The countdown is repeated up to eight times, and then stops.
 - The number of the current repeat (1 to 8) is shown in the lower display.
 - The countdown timer measurement operation continues even if you exit the Countdown Timer Mode.
 - To stop a countdown timer operation completely, first pause it (by pressing (D)), and then press (A). This returns the countdown time to its starting value.

E-37

To configure countdown start time and auto-repeat settings

1. While the countdown start time is on the display in the Countdown Timer Mode, hold down (A) for about three seconds until the minute setting of the countdown start time starts to flash. This is the setting mode.
 - If the countdown start time is not displayed, use the procedure under "To use the countdown timer" (page E-37) to display it.
2. Press (C) to move the flashing in the sequence shown below, and select the setting you want to change.

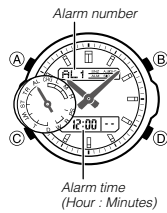
3. Perform the following operations, depending on which setting currently is selected on the display.
 - While the start time setting is flashing, use (D) (+) and (B) (-) to change it.
 - While the auto-repeat on/off setting (FF) is flashing on the display, press (D) to toggle auto-repeat on (FF) and off (FF).

E-38

4. Press (A) to exit the setting mode.
 - The auto-repeat on indicator (FF) will appear in the upper display while this function is turned on.
 - Frequent use of auto-repeat and the alarm can run down battery power.

E-39

Alarms



When an alarm is turned on, the alarm tone will sound when its alarm time is reached. One of the alarms is a snooze alarm, while the other four are one-time alarms. You also can turn on an Hourly Time Signal that causes the watch to beep twice every hour on the hour.

- There are five alarm screens numbered **AL1**, **AL2**, **AL3** and **AL4** for the one-time alarm, and a snooze alarm screen indicated by **SNZ**. The Hourly Time Signal screen is indicated by **SIG**.
- All of the operations in this section are performed in the Alarm Mode, which you enter by pressing (C).

E-40

To set an alarm time



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



- To set a one-time alarm, display alarm screen **AL1**, **AL2**, **AL3** or **AL4**. To set the snooze alarm, display the **SNZ** screen.
- **SIG** is the hourly time signal setting (page E-44).
- The snooze alarm repeats every five minutes.

2. After you select an alarm, hold down (A) for about three seconds until the hour setting of the alarm time starts to flash. This is the setting mode.

- This operation turns on the alarm automatically.

3. Press (C) to move the flashing between the hour and minute settings.

E-41

4. While a setting is flashing, use (D) (+) and (B) (-) to change it.
5. Press (A) to exit the setting mode.

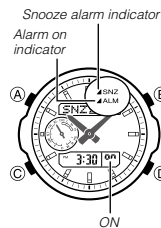
Alarm Operation

The alarm tone sounds at the preset time for 10 seconds, regardless of the mode the watch is in. In the case of the snooze alarm, the alarm operation is performed a total of seven times, every five minutes, or until you turn the alarm off (page E-43).

- Alarm and Hourly Time Signal operations are performed in accordance with the current time in your Home City, as kept in the Timekeeping Mode.
- To stop the alarm tone after it starts to sound, press any button.
- Performing any one of the following operations during a 5-minute interval between snooze alarms cancels the current snooze alarm operation.
 - Displaying the Timekeeping Mode setting screen (page E-58)
 - Displaying the **SNZ** setting screen (page E-41)

E-42

To turn an alarm on and off

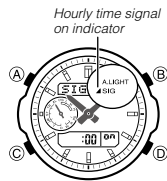


1. In the Alarm Mode, use (D) to select an alarm.

2. Press (A) to toggle it on and off.
- Turning on a alarm (**AL1**, **AL2**, **AL3**, **AL4** or **SNZ**) displays the alarm on indicator on its Alarm Mode screen.
 - In all modes, the alarm on indicator is shown for any alarm that currently is turned on.
 - The alarm on indicator flashes while the alarm is sounding.
 - The snooze alarm indicator flashes while the snooze alarm is sounding and during the 5-minute intervals between alarms.

E-43

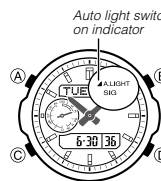
To turn the Hourly Time Signal on and off



1. In the Alarm Mode, use (D) to select the Hourly Time Signal (**SIG**) (page E-41).
2. Press (A) to toggle it on and off.
- The Hourly Time Signal on indicator is shown on the display in all modes while this function is turned on.

E-44

Illumination



An LED (light-emitting diode) illuminates the face of the watch for easy reading in the dark. The watch's auto light switch turns on illumination automatically when you angle the watch towards your face.

- The auto light switch must be turned on (indicated by the auto light switch on indicator) for it to operate.
- See "Illumination Precautions" (page E-73) for other important information about using illumination.

To illuminate the display manually

In any mode (except a setting mode), press (B) to turn on the illumination for about one second.

- The above operation turns on illumination regardless of the current auto light switch setting.

E-45

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.

Note that this watch features a "Full Auto LED 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
 - While a signal receive operation is in progress

E-46

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

- Wear the watch on the outside of your wrist.



E-47

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 a bicycle or operating a motorcycle or any other motor vehicle. Sudden and unintended operation of the auto light switch can create a distraction, which can result in a traffic accident and serious personal injury.

To turn the auto light switch on and off

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

- The auto light switch on indicator is on the display in all modes while the auto light switch is turned on.

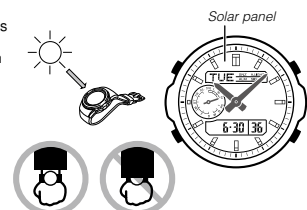
E-48

Power Supply

This watch is equipped with a solar panel and a special rechargeable battery (secondary battery) that is charged by the electrical power produced by the solar panel. 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 panel 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 even only partially covered.



E-49

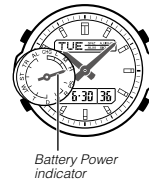
Important!

- 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 special rechargeable battery to store power produced by the solar panel, 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 special rechargeable battery to charge fully, contact your dealer or CASIO distributor about having it replaced.
- Never try to remove or replace the watch's special 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 (CHG) (page E-51) and when you have the battery replaced.
- Turn on the watch's Power Saving function (page E-68) 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-50

Battery Power Indicator and Power Recovery Mode indicator

The battery power indicator indicates you the current status of the rechargeable battery's power.



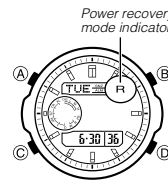
Battery Power indicator

Level	Battery Power Indicator	Function Status
1 (H)		All functions enabled
2 (M)		All functions enabled
3 (L)	 (Charge Soon Alert)	Auto and manual receive, illumination, and beeper disabled
4 (CHG)		Except for timekeeping, all functions and display indicators disabled
5 (CHG)		All functions disabled

E-51

- 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 (CHG), all functions are disabled and settings return to their initial factory defaults. Once the battery reaches Level 2 (M) after falling to Level 5 (CHG), reconfigure the current time, date, and other settings.
- Display indicators reappear as soon as the battery is charged from Level 5 (CHG) to Level 2 (M).
- The watch's Home City code setting will change automatically to **TYO** (Tokyo) whenever the battery drops to Level 5 (CHG). 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 (CHG).
- 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.

E-52



Power recovery mode indicator

- Overuse of display illumination or the beeper can cause the **R** (Recover) indicator to appear in the upper display, which indicates that the watch is in the battery power recovery mode. Face illumination, the alarm, the countdown timer alarm, time signals, and all hand operations are disabled in the power recovery mode. The watch continues to keep time internally, so regular timekeeping and function will resume as soon as battery power recovers to normal levels, which is indicated when the **R** indicator disappears.
- If **R** appears frequently, it probably means that remaining battery power is low. Leave the watch in bright light for some time to allow it to charge.

E-53

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-54

Charging Guide

After a full charge, timekeeping remains enabled for up to about six months.

- 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-77).
- Stable operation is promoted by frequent exposure to light.

E-55

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	22 hours	6 hours
Sunlight through a window (10,000 lux)		7 hours	82 hours	22 hours
Daylight through a window on a cloudy day (5,000 lux)		10 hours	133 hours	36 hours
Indoor fluorescent lighting (500 lux)		113 hours	-----	-----

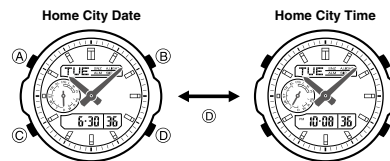
The above exposure time values are all for reference only. Actual required exposure times depend on lighting conditions.

E-56

Timekeeping

You can adjust the Home City time and date in the Timekeeping Mode manually.

- Pressing **(D)** in the Timekeeping Mode will toggle the lower display between the screens shown below.



E-57

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 City codes (page E-29) are displayed in accordance with the time and date settings you configure for the Timekeeping Mode.

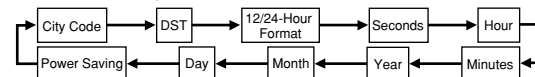
To set the time and date manually



- In the Timekeeping Mode, hold down **(A)** for about five seconds, until the watch beeps twice and the city code flashes on the upper display. This is the setting mode.
- Use **(D)** and **(B)** 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-58

- Press **(C)** to change the flashing screen content in the sequence shown below to select the other settings.



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

Screen:	To do this:	Do this:
TYO	Change the city code.	Use (D) (east) and (B) (west).
OFF	Cycle between Auto DST (AUTO), Daylight Saving Time (ON) and Standard Time (OFF).	Press (D) .
12H	Toggle between 12-hour (12H) and 24-hour (24H) timekeeping	Press (D) .

E-59

Screen:	To do this:	Do this:
36	Reset the seconds to 00	Press D .
PM 10:00	Change the hour and minutes	Use D (+) and B (-).
2015 6-30	Change the year, month, or day	
PS 00	Toggle between Power Saving on (f f) and off (f ff)	Press D .

- Press **A** to exit the setting mode.
- For details about the Daylight Saving Time setting, see "To change the Daylight Saving Time (summer time) setting" (page E-63). For information about Power Saving, see "To turn Power Saving on and off" (page E-68).
- Auto DST (AUTO) can be selected only while LIS, LON, MAD, PAR, ROM, BER, STO, ATH, MOW, TPE, SEL, TYO, HNL, ANC, YVR, LAX, YEA, DEN, MEX, CHI, MIA, YTO, NYC, YHZ, or YYT is selected as the Home City code. For more information, see "Daylight Saving Time (DST)" below.

E-60

E-61

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), Anthon (England), and 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 (Daylight Saving 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 2013).
- The default DST setting is Auto DST (AUTO) whenever you select LIS, LON, MAD, PAR, ROM, BER, STO, ATH, MOW, TYO, ANC, YVR, LAX, YEA, DEN, MEX, CHI, MIA, YTO, NYC, YHZ, or YYT 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.

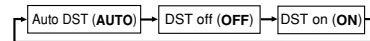
E-62

To change the Daylight Saving Time (summer time) setting



DST indicator

- In the Timekeeping Mode, hold down **A** for about five seconds, until the watch beeps twice and the city code flashes on the upper display. This is the setting mode.
- Press **C**. This will display the DST setting screen.
- Use **D** to cycle through the DST settings in the sequence shown below.



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

Hand Home Position Correction

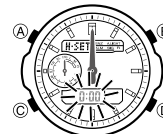
The hands of the watch can be thrown off by exposure to strong magnetism or impact. If that happens, check if the home positions of the hands are correct and adjust the home positions as required.

To adjust the home positions



Correct dial hand positions

- In the Timekeeping Mode, hold down **D** for about three seconds, until **H-SET** appears on the upper display and "Sub" flashes in the lower display.
 - The left dial hand is in its correct home position when it moves to **C** (CHG). If it doesn't, use **B** to adjust its position.
- After confirming that the left dial hand is in its correct home positions, press **C**.
 - This will change to hour hand and minute hand home position manual correction.



Correct hour and minute hand positions

- The hour and minute hands are in their correct home positions if they are at 12 o'clock. If they are not, use **D** (+) and **B** (-) to adjust their positions as required.
 - Pressing **C** here will return to the setting at the beginning of step 2.
- After everything is the way you want, press **A** to return to the Timekeeping Mode.
 - After you complete the home position adjustment procedure, place the watch in a location that allows for good time calibration signal reception, and then perform a manual receive operation. See "To perform manual receive" (page E-24) for more information.

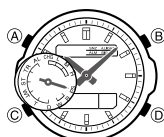
E-64

E-65

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.

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	Hands and Display	Operation
60 to 70 minutes	Left dial hand: PS; Other hands: Normal; Display: Blank	All functions enabled, except for displays
6 or 7 days	Left dial hand: PS; Other hands: Stopped at 12 o'clock; Display: Blank	Auto receive, beeper tone, illumination, and display disabled.

- 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.
- Angle the watch towards your face for reading (page E-47).

E-66

E-67

To turn Power Saving on and off



On/Off status

- In the Timekeeping Mode, hold down **A** for about five seconds, until the watch beeps twice and the city code flashes on the upper display. This is the setting mode.
- Press **C** nine times until **PS** appears in the upper display and a flashing **f** **f** or **f** **ff** appears in the lower display. This is the Power Saving on/off screen.
- Press **D** to toggle Power Saving on (**f** **f**) and off (**f** **ff**).
- Press **A** to exit the setting mode.

Radio-controlled Atomic Timekeeping Precautions

- Strong electrostatic charge can cause the time setting to be thrown off.
- 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.
- 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.

E-68

E-69

- 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 (Daylight Saving Time) settings (page E-58).
- The Home City setting reverts to the initial default of **TYO** (Tokyo) whenever the battery power drops to Level 5 (**CHG**) 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 (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 signals 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).

E-70

- When a China time zone is selected, the watch receives the time calibration signal transmitted from China (Shangqiu City).
- When your Home City is **LIS, LON, MAD, PAR, ROM, BER, STO, ATH, MOW** (which can receive both the Anthorn and Mainflingen signals), the watch first tries to pick up the signal it last received successfully. 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 **LIS, LON**, Mainflingen for **MAD, PAR, ROM, BER, STO, ATH**, and **MOW**).

Auto Return Features

- If you leave the watch with a flashing setting on the display for two or three minutes without performing any operation, the watch will exit the setting mode automatically.
- The watch will return to the Timekeeping Mode automatically if you do not perform any operation for two or three minutes in the Alarm Mode.

High-Speed Movement

- The **(D)** and **(@)** buttons are used to change the hand setting in various setting modes. In most cases, holding down these buttons will start high-speed movement of the applicable hand(s).

E-71

Initial Screens

When you enter the World Time Mode or Alarm Mode, the data you were viewing when you last exited the screen will appear 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 when battery power drops to Level 5 (**CHG**) (page E-51).
- 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.

E-72

Illumination Precautions

- 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

- The auto light switch is turned off automatically whenever battery power is at Level 4 (**CHG**) (page E-51).
- Avoid wearing the watch on the inside of your wrist. Doing so causes the auto light switch to operate when it is not needed, which shortens battery life. If you want to wear the watch on the inside of your wrist, turn off the auto light switch feature.

More than 15 degrees too high



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

E-73

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

E-74

Specifications

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

Digital Timekeeping: Hour, minutes, seconds, p.m. (PM), 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: Home City code (can be assigned one of 48 city codes); Standard Time / Daylight Saving Time (summer time)

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

Time Calibration Signal Reception: Auto receive 6 times a day (Remaining auto receives cancelled as soon as one is successful) (5 times a day for the Chinese calibration signal); 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-75

World Time: 48 cities (29 time zones) and Coordinated Universal Time

Other: Daylight Saving Time/Standard Time; Home City/World Time City Swapping

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

Input range: 1 minute to 60 minutes (1-minute increments)

Other: Auto-repeat timing

Alarms: Four one-time alarms; one snooze alarm; Hourly Time Signal

Illumination: LED (light-emitting diode); Auto Light Switch (Full Auto LED Light operates only in the dark)

Other: Power Saving

E-76

Power Supply: Solar panel and one rechargeable battery

Approximate battery operating time: 6 months (from full charge to Level 5 (**CHG**)) 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
- 4 minutes of signal reception per day

Frequent use of illumination runs down the battery. Particular care is required when using the auto light switch (page E-73).

E-77

City Code Table

L-1

City Code Table

City Code	City	UTC Offset/ GMT Differential
PPG	Pago Pago	-11
HNL	Honolulu	-10
ANC	Anchorage	-9
YVR	Vancouver	-8
LAX	Los Angeles	-8
YEA	Edmonton	-7
DEN	Denver	-7
MEX	Mexico City	-6
CHI	Chicago	-6
MIA	Miami	-5
YTO	Toronto	-5
NYC	New York	-5

City Code	City	UTC Offset/ GMT Differential
SCL	Santiago	-4
YHZ	Halifax	-4
YYT	St. Johns	-3.5
RIO	Rio De Janeiro	-3
RAI	Praia	-1
UTC		
LIS	Lisbon	0
LON	London	0
MAD	Madrid	0
PAR	Paris	0
ROM	Rome	+1
BER	Berlin	+1
STO	Stockholm	+1

City Code	City	UTC Offset/ GMT Differential
ATH	Athens	
CAI	Cairo	+2
JRS	Jerusalem	+2
MOW*	Moscow	+3
JED	Jeddah	+3
THR	Tehran	+3.5
DXB	Dubai	+4
KBL	Kabul	+4.5
KHI	Karachi	+5
DEL	Delhi	+5.5
DAC	Dhaka	+6
RGN	Yangon	+6.5

City Code	City	UTC Offset/ GMT Differential
BKK	Bangkok	+7
SIN	Singapore	+7
HKG	Hong Kong	+8
BJS	Beijing	+8
TPE	Taipei	+8
SEL	Seoul	+9
TYO	Tokyo	+9
ADL	Adelaide	+9.5
GUM	Guam	+10
SYD	Sydney	+10
NOU	Noumea	+11
WLG	Wellington	+12

L-2

L-3

* The above is current as of December 2013. This watch does not reflect the change in the Moscow (MOW) time offset to +4. Because of this, you should leave the summer time setting turned on (which advances the time by one hour) for Moscow (MOW).

- This table shows the city codes of this watch.
- The rules governing global times (UTC offset and GMT differential) and summer time are determined by each individual country.

L-4