MO1302-EB

# Operation Guide 3215 3222

CASIO®

Getting Acquainted

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

Warning!
• The measurement functions built into this watch are not intended for taking measurements that require professional or industrial precision. Values produced by this watch should be considered as reasonable representations only. • The Moon phase indicator and tide graph data that appear on the display of this watch are not intended for navigation purposes. Always use proper instruments and resources to obtain data for navigation purposes. • This watch is not an instrument for calculating low tide and high tide times. The tide graph of this watch is intended to provide a reasonable approximation of tidal movements only. • 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.

Keep the watch exposed to bright light
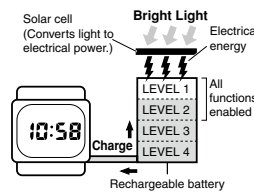

Bright Light
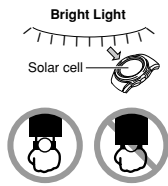
Solar cell

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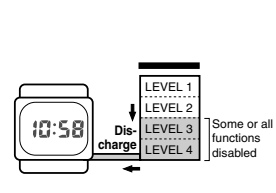
• The watch continues to operate, even when it is not exposed to light. Leaving the watch in the dark can cause the battery to run down, which will result in some watch functions to be disabled. If the battery goes dead, you will have to re-configure watch settings after recharging. To ensure normal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

Battery charges in the light.

Battery discharges in the dark.

Solar cell (Converts light to electrical power.)
Bright Light
Electrical energy
All functions enabled
Charge
LEVEL 1
LEVEL 2
LEVEL 3
LEVEL 4
Rechargeable battery

Dis-charge
LEVEL 1
LEVEL 2
LEVEL 3
LEVEL 4
Some or all functions disabled

• 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-59) for important information you need to know when exposing the watch to bright light.**
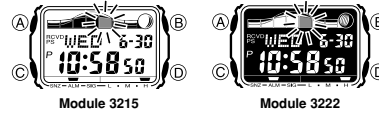
If the display of the watch is blank...
If the display of the watch is blank, it means that the watch's Power Saving function has turned off the display to conserve power.
• See "Power Saving Function" (page E-85) for more information.

About This Manual
• Depending on the model of your watch, display text appears either as dark figures on a light background (Module 3215), or light figures on a dark background (Module 3222). All of the illustrations in this manual show Module 3215.
• 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.

Module 3215   **Module 3222**

Contents

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

Operation Guide 3215 3222

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General Guide

- Press Ⓒ to change from mode to mode.
- In any mode (except when a setting screen is on the display), press Ⓑ to illuminate the display.
- When you return to the Timekeeping Mode, the day of the week will be displayed after the name of the site you selected. See "Tide Site Name List" (page L-2) for more information about the site.

Timekeeping Mode

Press Ⓒ.

Tide/Moon Data Mode

World Time Mode

Alarm Mode

Countdown Timer Mode

Stopwatch Mode
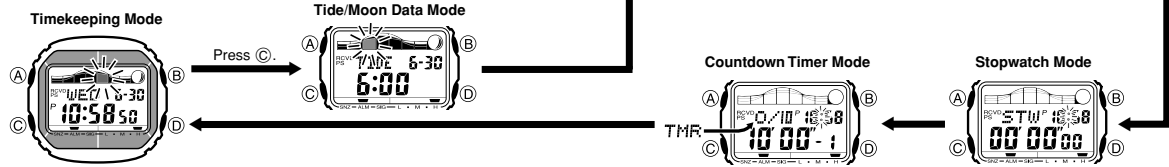
Radio-controlled Atomic Timekeeping

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-13).**
- 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-67) 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.

- As of December 2009, China does not use Daylight Saving Time (DST). If China does go to the Daylight Saving Time system in the future, some functions of this watch may no longer operate correctly.
- 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
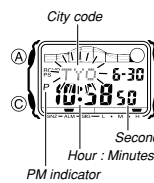
City code

Hour : Minutes

Seconds

PM indicator

1. In the Timekeeping Mode, hold down Ⓐ until the city code starts to flash, which indicates the setting screen.
2. Press Ⓓ (east) and Ⓑ (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
NYC	: New York
YHZ	: Halifax
YYT	: St.Johns

3. Press Ⓐ twice 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-27) or you can set the time manually (page E-68).
- 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-88).
- 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-29 for more information.
- Under factory default settings, auto receive is turned off for all of the following city codes: **MOW** (Moscow), **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-29.

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-27).

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.

12 o'clock

or
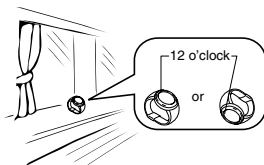
- Make sure the watch is facing the right way.

- 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.

- 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
LIS, LON, MAD, PAR, ROM, BER, STO, ATH, MOW*	Anthorn (England)	60.0 kHz
	Mainflingen (Germany)	77.5 kHz
HKG, BJS	Shangqiu City (China)	68.5 kHz
TPE, SEL, TYO	Fukushima (Japan)	40.0 kHz
	Fukuoka/Saga (Japan)	60.0 kHz
HNL*, ANC*, YVR, LAX, YEA, DEN, MEX, CHI, NYC, YHZ, YYT	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.

Approximate Reception Ranges
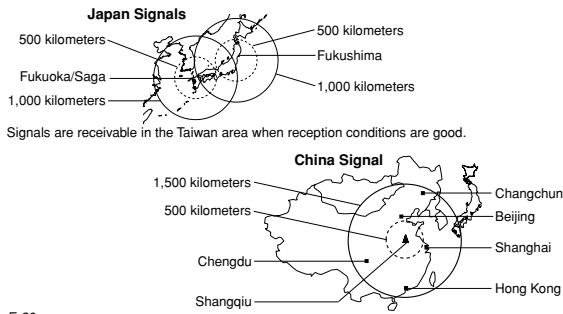
U.K. and German Signals

1,500 kilometers

Anthorn

500 kilometers

Mainflingen

The Anthorn signal is receivable within this area.

North American Signal

2,000 miles (3,000 kilometers)

600 miles (1,000 kilometers)

Fort Collins

Japan Signals

500 kilometers
500 kilometers
Fukushima
Fukuoka/Saga
1,000 kilometers
1,000 kilometers

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

China Signal

1,500 kilometers
500 kilometers
Chengdu
Shangqiu
Changchun
Beijing
Shanghai
Hong Kong

- 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: 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.
- See the information under "Signal Reception Troubleshooting" (page E-31) if you experience problems with time calibration signal reception.

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
LIS 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*
MAD PAR ROM BER 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	Midnight*	1:00 am*	2:00 am*	3:00 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*

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

*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.
- The watch receives the calibration signal for two to seven minutes everyday when the time in the Timekeeping Mode reaches a calibration time. Do not perform any button operation within seven 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 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.

About the Signal Strength Indicator

The signal strength indicator shows the strength of the calibration signal being received. For best reception, be sure to keep the watch in a location where signal strength is strongest. The signal strength indicator is displayed while an auto or manual receive operation is in progress.

RCVD indicator

Signal strength indicator

Weak   Strong

L1   L2   L3
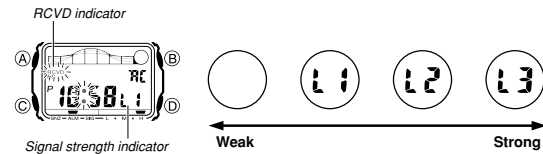
- Even in an area where signal strength is strong, it takes about 10 seconds for signal reception to stabilize enough for the indicator to indicate signal strength.

- Use the signal strength indicator as a guide for checking signal strength and for finding the best location for the watch during signal receive operations.
- Following reception of the time calibration signal and calibration of the watch's time setting, the RCVD indicator will remain on the display in all modes. The RCVD indicator will not be displayed if signal reception was unsuccessful or after you adjust the current time setting manually.
- The RCVD indicator is displayed only when the watch is able to receive both time and date data successfully. It does not appear when only time data is received.
- The RCVD indicator indicates that at least one calibration signal receive operation (auto or manual) was successful during the current day. Note that the RCVD indicator disappears from the display each day when the first receive operation of the day is performed.

To perform manual receive

Receiving

Receive successful

1. Enter the Timekeeping Mode (page E-10).
2. Hold down Ⓓ for about two seconds until the RCVD indicator starts to flash on the display. This indicates that manual receive is in progress.
   - Time calibration signal reception takes from two to seven minutes. Take care that you do not perform any button operations or move the watch during this time.
   - If the receive operation is successful, the reception date and time appear on the display, along with the GET indicator.
3. After manual receive is complete, press Ⓓ to return to normal timekeeping.
   - The watch also will return to normal timekeeping if you do not perform any button operation for about one or two minutes.

Receive failed

If there was a previously successful reception

- If the latest reception fails but a previous reception was successful during the current day, the RCVD indicator will be on the display.
- The watch will return to normal timekeeping without changing the time setting if you press Ⓓ or if you do not perform any button operation for about one or two minutes.

Note

- To interrupt a receive operation and return to normal timekeeping, press Ⓓ.

To turn auto receive on and off

On/Off status

1. In the Timekeeping Mode, press Ⓓ to display the latest successful receive time and date screen (page E-30).
2. Hold down Ⓐ 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 one that does not support time calibration reception.
3. Press Ⓓ to toggle auto receive on (ON) and off (OFF).
4. Press Ⓐ to exit the setting screen.
- For information about city codes that support signal receive, see "To specify your Home City" (page E-13).

To check the latest signal reception results

Press Ⓓ to view the latest successful receive time and date. Press Ⓓ again to return to the previous screen.
• The watch will return to the previous screen automatically if you do not perform any operation for two or three minutes.

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.	• The watch is not in the Timekeeping Mode. • Your current Home City is not one of the following: **LIS, LON, MAD, PAR, ROM, BER, STO, ATH, MOW, HKG, BJS, TPE, SEL, TYO, HNL, ANC, YVR, LAX, YEA, DEN, MEX, CHI, NYC, YHZ,** or **YYT** • A countdown timer operation is in progress.	• Enter the Timekeeping Mode and try again. • Select **LIS, LON, MAD, PAR, ROM, BER, STO, ATH, MOW, HKG, BJS, TPE, SEL, TYO, HNL, ANC, YVR, LAX, YEA, DEN, MEX, CHI, NYC, YHZ,** or **YYT** as your Home City (page E-13). • Enter the Countdown Timer Mode and stop the countdown. (page E-51)

Problem	Probable Cause	What you should do
Auto receive is turned on, but the RCVD indicator does not appear on the display.	• You changed the time setting manually. • The DST setting was changed manually in the World Time Mode. • You pressed a button while signal receive was in progress. • Even if receive is successful, the RCVD indicator will disappear from the display each day when the first auto receive operation of the day is performed. • Time data (hour, minutes, seconds) only was received during the last receive operation. The RCVD indicator appears only when time data and date data (year, month, day) are both received.	• Perform manual signal receive or wait until the next auto signal receive operation is performed. • Check to make sure the watch is in a location where it can receive the signal (page E-16).

Problem	Probable Cause	What you should do
Time setting is incorrect following signal reception.	• 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.	• Change the DST setting to Auto DST (page E-73). • Select the correct Home City code (page E-13).

• For further information, see "Important!" (page E-16) and "Radio-controlled Atomic Timekeeping Precautions" (page E-87).

Tide/Moon Data

In the Tide/Moon Data Mode, you can see the tide at a specified time for the tide site you selected and the current date's moon phase for your Home City. You can specify a date and view tide and moon data for that date.
• See "Moon Phase Indicator" (page E-78) for information about the moon phase indicator and "Tide Graph" (page E-82) for information about the tide graph.
• All of the operations in this section are performed in the Tide/Moon Data Mode (page E-10).

Note
• It takes about two seconds to calculate tide graph data. You will not be able to display a setting screen while data calculation is in progress.
• Moon age is calculated to an accuracy of ±1 day.
• You can view the current tide and moon age graph in the Timekeeping Mode (page E-10).

Tide Data
The Tide Graph that appears first when you enter the Tide/Moon Data Mode shows the data at 6:00 a.m. for your currently selected tide site on the current date, according to the Timekeeping Mode. From there you can specify another time on the same date.
• If the tide data is not correct, check your Timekeeping Mode settings and correct them if necessary. See "To configure tide site settings" (page E-75) for more information.
• If you feel that the information shown by the Tide Graph is different from actual tide conditions, you need to adjust the high tide time. See "Adjusting the High Tide Time" (page E-37) for more information.
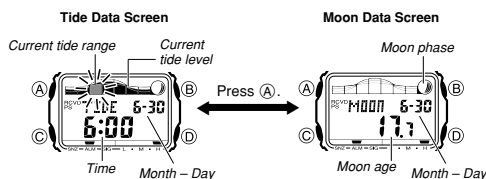
Moon Data
The moon phase and moon age information that appears first when you enter the Tide/Moon Data Mode shows the data at noon for your currently selected Home City on the current date, according to the Timekeeping Mode. After that you can specify another date to view data.
• If the moon data is not correct, check your Timekeeping Mode settings and correct them if necessary.
• If the moon phase indicator shows a phase that is a mirror image of the actual moon phase in your area, you can use the procedure under "Reversing the Displayed Moon Phase" (page E-39) to change it.

Tide/Moon Data Screens
In the Tide/Moon Data Mode, press Ⓐ to toggle between the tide data screen and the moon data screen.

Tide Data Screen   **Moon Data Screen**

Current tide range   Current tide level   Moon phase

Press Ⓐ.

Time   Month – Day   Moon age   Month – Day

• When you display the Tide Data Screen, it initially shows tide data for 6:00 a.m.. Use the Tide Data Screen to specify the Tide Data time. You can press Ⓓ to change the displayed time in one-hour increments. The Tide Data time is scrolled within the current date only. Scrolling past midnight does not change the date.
• Use the Moon Data Screen to specify the Tide/Moon Data date. You can press Ⓓ to change the displayed date in one-day increments. Pressing Ⓓ will display the year of the displayed date.

Adjusting the High Tide Time
Use the following procedure to adjust the high tide time within a particular date. You can find out high tide information for your area from a tide table, the Internet, or your local newspaper.

To adjust the high tide time

Hour

Minute

1. In the Tide/Moon Data Mode, press Ⓐ to display the Moon Data Screen (page E-36).
2. Press Ⓓ to scroll the date until one whose high tide time you want to change is displayed.
3. Hold down Ⓐ until the hour digits start to flash.
4. Press Ⓓ (+) and Ⓑ (–) to change the hour setting.
5. When the hour is the setting you want, press Ⓒ.
   • This will cause the minute digits to flash.
6. Press Ⓓ (+) and Ⓑ (–) to change the minute setting.
7. When the minute setting is the way you want, press Ⓐ to exit the adjustment screen and return to the Tide/Moon Data Mode screen.
• Pressing Ⓓ and Ⓑ at the same time while the time adjustment screen is displayed (steps 4 through 7 above) will return the high tide time to its initial factory default setting.
• The high tide time setting is affected by the DST (summer time) setting of the Timekeeping Mode.

• On some days, there are two high tides. With this watch, you can adjust the first high tide time only. The second high tide time for that day is adjusted automatically based on the first high tide time.

Reversing the Displayed Moon Phase
The left-right (east-west) appearance of the Moon depends on whether the Moon is north of you (northerly view) or south of you (southerly view) as you view it.
You can use the procedure below to reverse the displayed Moon phase so it matches the actual appearance of the Moon where you are located.
• To determine the viewing direction of the Moon, use a compass to take a direction reading of the Moon at its meridian passage.
• For information about the Moon phase indicator, see "Moon Phase Indicator" (page E-78).

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To reverse the displayed Moon phase
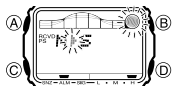
1. In the Tide/Moon Data Mode, hold down Ⓐ until the hour digits start to flash.
2. Press Ⓒ twice.
   • This will cause the Moon phase indicator to flash. This is the indicator switching screen.
3. Press Ⓓ to toggle the Moon phase indicator between the southerly view (indicated by N↓S) and northerly view (indicated by N↑S).
   • Northerly view: Moon is north of you.
   • Southerly view: Moon is south of you.
4. When the Moon phase indicator setting is the way you want, press Ⓐ to exit the switching screen and return to the Tide/Moon Data Mode screen.
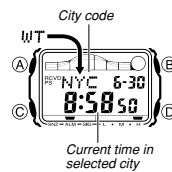
World Time

City code

World Time shows the current time in 48 cities (31 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.
• 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.
• All of the operations in this section are performed in the World Time Mode, which you enter by pressing Ⓒ (page E-11).

Current time in selected city

To view the time in another city

While in the World Time Mode, press Ⓓ (eastward) to scroll through the city codes (time zones).
• Pressing the Ⓓ and Ⓑ at the same time will jump to the UTC time zone.

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

1. In the World Time Mode, press Ⓓ to display the city code (time zone) whose Standard Time/Daylight Saving Time setting you want to change.
2. Hold down Ⓐ 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.
   • Note that you cannot switch between Standard Time and Daylight Saving Time while UTC is selected as the city code.

DST indicator

Alarms

Alarm number

The Alarm Mode gives you a choice of four one-time alarms and one snooze alarm.
Also use the Alarm Mode to turn the Hourly Time Signal (SIG) on and off.
• 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 Ⓒ (page E-11).

Alarm time (Hour : Minutes)

To set an alarm time

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

AL1 → AL2 → AL3 → AL4
SIG ← SNZ ←
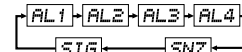
   • To set a one-time alarm, display alarm screen AL1, AL2, AL3 or AL4. To set the snooze alarm, display the SNZ screen.
   • The snooze alarm repeats every five minutes.
2. After you select an alarm, hold down Ⓐ until the hour setting of the alarm time starts to flash, which indicates the setting screen.
   • This operation turns on the alarm automatically.
3. Press Ⓒ to move the flashing between the hour and minute settings.
4. While a setting is flashing, press Ⓓ (+) and Ⓑ (–) to change it.
   • With the 12-hour format, set the time correctly as a.m. or p.m. (**P** indicator).
5. Press Ⓐ to exit the setting screen.

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, until you turn the alarm off (page E-47).
• 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.
• Performing any one of the operations below during a 5-minute interval between snooze alarms cancels the current snooze alarm operation.
   Displaying the Timekeeping Mode setting screen (page E-68)
   Displaying the SNZ setting screen (page E-45)

To test the alarm

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

To turn an alarm on and off
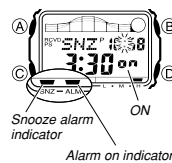
1. In the Alarm Mode, press Ⓓ to select an alarm.
2. Press Ⓐ to toggle it on and off.
   • Turning on a alarm (AL1, AL2, AL3, AL4 or SNZ) displays the alarm on indicator on its Alarm Mode screen.
   • In all modes, the alarm on indicator is shown for any alarm that currently is turned on.
   • The alarm 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.

Snooze alarm indicator   *ON*

Alarm on indicator

To turn the Hourly Time Signal on and off
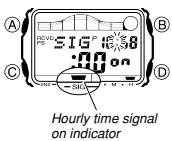
1. In the Alarm Mode, press Ⓓ to select the Hourly Time Signal (SIG).
2. Press Ⓐ to toggle it on and off.
   • The Hourly Time Signal on indicator is shown on the display in all modes while this function is turned on.

Hourly time signal on indicator
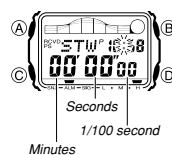
Stopwatch

The stopwatch lets you measure elapsed time, split times, and two finishes.
• 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.
• 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 Ⓒ (page E-11).

Seconds
1/100 second
Minutes

To measure times with the stopwatch

Elapsed Time

Ⓓ ──→ Ⓓ ──→ Ⓓ ──→ Ⓓ ──→ Ⓐ
Start   Stop   Re-start   Stop   Clear

Split Time

Ⓓ ──→ Ⓐ ──→ Ⓐ ──→ Ⓓ ──→ Ⓐ
Start   Split   Split release   Stop   Clear
      (**SPL** displayed)

Two Finishes

Ⓓ ──→ Ⓐ ──→ Ⓓ ──→ Ⓐ ──→ Ⓐ
Start   Split   Stop   Split release   Clear
      First runner finishes.   Second runner   Display time of
      Display time of first   finishes.   second runner.
      runner.

E-50

To configure the countdown timer

1. While the countdown start time is on the display in the Countdown Timer Mode, hold down Ⓐ 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-54) to display it.
2. Press Ⓒ to move the flashing in the sequence shown below to select other settings.

```
┌────────┐   ┌────────┐   ┌────────┐   ┌────────┐
│Timer 1 │→ │Timer 1 │→ │Timer 2 │→ │Timer 2 │
│Minutes │   │Seconds │   │Minutes │   │Seconds │
└────────┘   └────────┘   └────────┘   └────────┘
        ┌──────────────────────┐
        │  Number of Repeats   │
        └──────────────────────┘
```

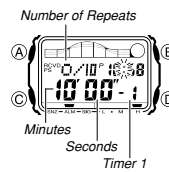3. When the setting you want to change is flashing, press Ⓓ and Ⓑ to change it as described below.

E-52

Countdown Timer

Number of Repeats
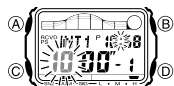
Minutes
Seconds
Timer 1

Dual timers can be set with two different starting times. The watch can be configured so the two timers alternate, so when one reaches the end of its countdown, the other timer starts. You can specify a "number of repeats" value, which controls how many times the two-timer countdown operation is performed (1 = once, 2 = twice, etc.) The starting time of each timer can be set in five-second steps up to 99 minutes, 55 seconds.
You can specify up to 10 repeats. The watch emits a short beep whenever either of the timers reaches the end of its countdown during an ongoing timer operation. The watch emits a 5-second beep when the end of the final timer operation (specified by the number of repeats) is reached.
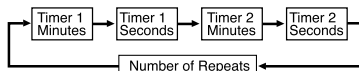
Countdown End Beeper

The countdown end beeper lets you know when the countdown reaches zero. The beeper stops after about 5 seconds or when you press any button.

E-51

Setting	Screen	Button Operation
Minutes, Seconds	00′00″	Press Ⓓ (+) and Ⓑ (−) to change the setting.
Number of Repeats	⁄1	Press Ⓓ (+) and Ⓑ (−) to change the setting.

- To disable either timer, set 00'00" as its countdown start time.

4. Press Ⓐ to exit the setting screen.

E-53

To use the countdown timer

Current repeat count
(Reset) Ⓐ
Current timer time
Ⓒ
Present number of repeats
Ⓑ
Current time
Ⓓ *(Start/Stop)*
Timer 1 or 2

Press Ⓓ while in the Countdown Timer Mode to start the countdown timer.
- The countdown is performed by alternating between Timer 1 and Timer 2. A short beep is emitted to signal a changeover from one timer to the other.
- Press Ⓓ to pause. Press Ⓓ again to resume.
- Pressing Ⓐ while a countdown timer is stopped resets the timers to the start times specified by you.
- The watch emits a 5-second beep when the end of the final timer operation (specified by the number of repeats) is reached.
- The countdown operation continues and the watch beeps when required even if you exit the Countdown Timer mode.
- To stop a countdown operation completely, first pause it (by pressing Ⓓ), and then press Ⓐ. This returns the countdown time to its starting value.

E-54

Illumination

Auto light switch on indicator
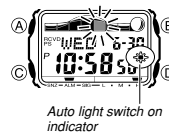
This watch has an EL (electro-luminescent) panel that causes the entire display to glow for easy reading in the dark. The watch's auto light switch turns on illumination automatically when you angle the watch towards your face.
- The auto light switch must be turned on (indicated by the auto light switch on indicator) for it to operate.
- See "Illumination Precautions" (page E-91) for other important information about using illumination.

To illuminate the display manually

In any mode (except when a setting screen is on the display), press Ⓑ to turn on illumination.
- The above operation turns on illumination regardless of the current auto light switch setting.

E-55

- You can use the procedure below to select either 1.5 seconds or 3 seconds as the illumination duration. When you press Ⓑ, the illumination will remain on for about 1.5 seconds or 3 seconds, depending on the current illumination duration setting.

To specify the illumination duration

1. In the Timekeeping Mode, hold down Ⓐ until the display contents start to flash. This is the setting screen.
2. Press Ⓒ 10 times until the current illumination duration setting (LT1 or LT3) appears.
3. Press Ⓓ to toggle the setting between LT1 (approximately 1.5 seconds) and LT3 (approximately 3 seconds).
4. Press Ⓐ twice to exit the setting screen.

E-56

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 EL Light", so the auto light switch operates only when available light is below a certain level. It does not turn on the backlight under bright light.

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.

Parallel to ground   *More than 40°*

E-57

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 Ⓑ 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-58

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.

Solar cell
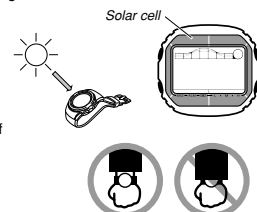
E-59

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.
- All data stored in memory is deleted, and the current time and all other settings return to their initial factory defaults whenever battery power drops to Level 5 (pages E-61 and E-62) and when you have the battery replaced.
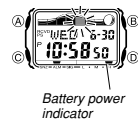- Turn on the watch's Power Saving function (page E-85) and keep it in an area normally exposed to bright light when storing it for long periods. This helps to keep the rechargeable battery from going dead.

E-60

Battery Power Indicator and Recover Indicator
The battery power indicator on the display shows you the current status of the rechargeable battery's power.
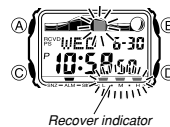
Battery power indicator

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

E-61

- The flashing LOW 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.

E-62

Recover indicator

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

E-63

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-64

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)	5 minutes
Sunlight Through a Window (10,000 lux)	24 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-95).
- Stable operation is promoted by frequent exposure to light.

E-65

Recovery Times
The table below shows the amount exposure that is required to take the battery from one level to the next.
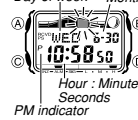
Exposure Level (Brightness)	Approximate Exposure Time				
	Level 5	Level 4	Level 3	Level 2	Level 1
Outdoor Sunlight (50,000 lux)		2 hours		20 hours	6 hours
Sunlight Through a Window (10,000 lux)		8 hours		99 hours	27 hours
Daylight Through a Window on a Cloudy Day (5,000 lux)		15 hours		- - - - - - - -	- - - - - - - -
Indoor Fluorescent Lighting (500 lux)		172 hours		- - - - - - - -	- - - - - - - -

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

E-66

Timekeeping

Current Time
Day of week   Month – Day
Hour : Minutes
Seconds
PM indicator

Tide site name

Press the Ⓐ button to view the current tide site name setting. Use the Timekeeping Mode to set and view the current time and date.

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-41) are displayed in accordance with the time and date settings you configure in the Timekeeping Mode.

E-67

To set the time and date manually
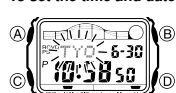
1. In the Timekeeping Mode, hold down Ⓐ until the city code starts to flash, which indicates the setting screen.
2. Press Ⓓ and Ⓑ to select the city code you want.
   - Make sure you select your Home City code before changing any other setting.
   - For full information on city codes, see the "City Code Table" at the back of this manual.
3. Press Ⓒ to move the flashing in the sequence shown below to select the other settings.

City Code → DST → 12/24-Hour Format → Seconds → Hour → Minutes
↑
Power Saving ← Illumination Duration ← Button Operation Tone ← Day ← Month ← Year

E-68

- The following steps explain how to configure timekeeping settings only.
4. When the timekeeping setting you want to change is flashing, press Ⓓ or Ⓑ to change it as described below.

Screen:	To do this:	Do this:
TYO	Change the city code	Press Ⓓ (east) and Ⓑ (west).
AUTO	Cycle between Auto DST (AUTO), Daylight Saving Time (ON) and Standard Time (OFF).	Press Ⓓ.
12H	Toggle between 12-hour (12H) and 24-hour (24H) timekeeping	Press Ⓓ.
50	Reset the seconds to 00	Press Ⓓ.
P 10:58	Change the hour and minutes	Press Ⓓ (+) and Ⓑ (–).

E-69

Screen:	To do this:	Do this:
20 10 6-30	Change the year, month, or day	Press Ⓓ (+) and Ⓑ (–).
MUTE / KEY♪	Toggle the button operation tone between KEY♪ (on) and MUTE (off)	Press Ⓓ.
LT 1	Toggle the illumination duration between LT1 (approximately 1.5 seconds) and LT3 (approximately 3 seconds).	Press Ⓓ.
PS ON	Toggle between Power Saving on (ON) and off (OFF)	Press Ⓓ.

5. Press Ⓐ twice to exit the setting screen.
• For details about the Button Operation Tone, see "To turn the button operation tone on and off" (page E-84). For details about the Illumination duration, see "To specify the illumination duration" (page E-56). For details about the Power Saving setting, see "To turn Power Saving on and off" (page E-86).

E-70

• 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**, **NYC**, **YHZ**, or **YYT** is selected as the Home City code. For more information, see "Daylight Saving Time (DST)" (page E-72).
• 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.

E-71

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 2008).
• 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**, **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-72

To change the Daylight Saving Time (summer time) setting
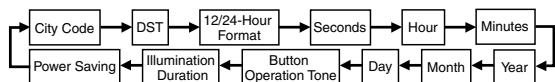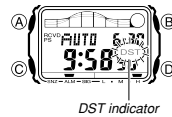

DST indicator

1. In the Timekeeping Mode, hold down Ⓐ until the city code starts to flash, which indicates the setting screen.
2. Press Ⓒ and the DST setting screen appears.
3. Press Ⓓ to cycle through the DST settings in the sequence shown below.

Auto DST (AUTO) → DST off (OFF) → DST on (ON)

• 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.

E-73

Transmitter	Covered City Codes
Japan	**TPE**, **SEL**, **TYO**
China	**HKG**, **BJS**
U.S.	**HNL**, **ANC**, **YVR**, **LAX**, **YEA**, **DEN**, **MEX**, **CHI**, **NYC**, **YHZ**, **YYT**
Europe (U.K., Germany)	**LIS**, **LON**, **MAD**, **PAR**, **ROM**, **BER**, **STO**, **ATH**, **MOW**
None	All other city codes

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

E-74

Tide Site Name

Selecting a Tide Site Name
The tide site names you can select depend on your current Home City setting.
• Select the tide site name in the Timekeeping Mode.
• After configuring the settings for your Home City, press Ⓐ once to display the tide site name selection screen.
• Note that the tide sites you can select are those located in the same time zone as your Home City. They are not necessarily located near your Home City.

To configure tide site settings

1. In the Timekeeping Mode, hold down Ⓐ for about two seconds until the city code starts to flash. This is the setting screen.
• The watch will exit the setting screen automatically if you do not perform any operation for about two or three minutes.

E-75

2. Press Ⓐ once to display the tide site name selection screen.
• The current tide site name will be on the display and **SET** will flash.
3. Press Ⓓ (forward) and Ⓑ (back) to scroll through the tide site names until the one you want is displayed.
• If the tide site name is longer than four characters, the name will scroll from right to left on the display.
• A tide site that does not have any data assigned to it displays the name "USER".
4. When all of the settings are the way you want, press Ⓐ to exit the setting screen.
• The tide graph in the Timekeeping Mode shows information for the site you select here.
• The tide site candidates are those with the same UTC differential as the current Home City. If you cannot find the site you want, you can select "USER".
• Only "USER" sites may be available for some city codes.

E-76

• Setting an accurate high tide time will allow the watch to produce accurate tide readings. Especially when "USER" is selected as the site, make sure that you input an accurate high tide time (page E-38).
• Only a "USER" site can be selected while UTC is selected as the Home City.

E-77

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

Moon Phase Indicator

Module 3215

Moon Phase indicator
Module 3222

The Moon phase indicator of this watch indicates the current phase of the Moon as shown below. It is based on the view of the left side of the moon at meridian transit from the northern hemisphere of the Earth. If the appearance of the Moon phase indicator is reversed from the actual Moon as viewed from your location, you can use the procedure under "To reverse the displayed Moon phase" (page E-40) to change the indicator.

E-78

(part you cannot see) ── Moon phase (part you can see)

Moon Phase Indicator	Module 3215								
	Module 3222								
Moon Age		28.7-29.8 0.0-0.9	1.0-2.7	2.8-4.6	4.7-6.4	6.5-8.3	8.4-10.1	10.2-12.0	12.1-13.8
Moon Phase		New Moon				First Quarter (Waxing)			

E-79

Moon phase (part you can see) — (part you cannot see)

Moon Phase Indicator	Module 3215								
	Module 3222								
Moon Age		13.9-15.7	15.8-17.5	17.6-19.4	19.5-21.2	21.3-23.1	23.2-24.9	25.0-26.8	26.9-28.6
Moon Phase	Full Moon				Last Quarter (Waning)				

Tidal Movements
Tides are the periodic rise and fall of the water of oceans, seas, bays, and other bodies of water caused mainly by the gravitational interactions between the Earth, Moon and Sun. Tides rise and fall about every six hours. The Tide Graph of this watch indicates tidal movement based on the Moon's transit over a meridian and the lunitidal interval. The Tide Graph calculates and graphically represents current tide conditions in your currently selected site or USER site based on longitudes, lunar day length, and lunitidal interval preset in watch memory, and on high tide times specified by you.

Tide Graph
The Tide Graph graphically represents the current tide condition using one of three patterns that represent spring tide, intermediate tide, and neap tide, as shown below.
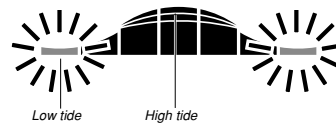
Tide Name	Graph	Description
Spring Tide		Large difference between high tide and low tide. Occurs a few days before and after a New Moon and Full Moon.
Intermediate Tide		Medium difference between high tide and low tide.
Neap Tide		Small difference between high tide and low tide. Occurs a few days before and after the first quarter and last quarter of a half moon.

• The Tide Graph flashes as shown below to indicate the tide range.

Low tide   High tide

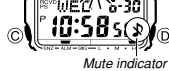• The segments on either end of the Tide Graph flash during low tide.

Lunitidal Interval
Theoretically, high tide is at the moon's transit over the meridian and low tide is about six hours later. Actual high tide occurs somewhat later, due to factors such as viscosity, friction, and underwater topography. Both the time differential between the moon's transit over the meridian until high tide and the time differential between the moon's transit over the meridian until low tide are known as the "lunitidal interval". Tide data is calculated using the lunitidal intervals preset for each site.

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.
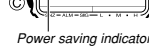
Mute indicator

To turn the button operation tone on and off
1. In the Timekeeping Mode, hold down Ⓐ until the city code starts to flash, which indicates the setting screen.
2. Press Ⓒ nine times until the current button operation tone setting (KEY♪ or MUTE) appears.
3. Press Ⓓ to toggle the setting between KEY♪ (tone on) and MUTE (tone off).
4. Press Ⓐ twice to exit the setting screen.
• The mute indicator is displayed in all modes when the button operation tone is turned off.

Power Saving Function

PS

Power saving indicator

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, with Power Saving indicator flashing	All functions enabled, except for the display
6 or 7 days	Blank, with Power Saving indicator not flashing	Auto receive, beeper tone, illumination, and display are 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-57).

To turn Power Saving on and off

On/Off status

1. In the Timekeeping Mode, hold down Ⓐ until the city code starts to flash, which indicates the setting screen.
2. Press Ⓒ 11 times until the Power Saving on/off screen appears.
3. Press Ⓓ to toggle Power Saving on (ON) and off (OFF).
4. Press Ⓐ twice to exit the setting screen.
• The Power Saving indicator is on the display in all modes while Power Saving is turned on.

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.
• 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-68), and auto receive settings (page E-29).
• 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-13).

Transmitters
The time calibration signal received by this watch depends on the currently selected Home City code (page E-13).
• 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).
• 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 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 **LIS**, **LON**, Mainflingen for **MAD**, **PAR**, **ROM**, **BER**, **STO**, **ATH**, and **MOW**).

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.
• The watch will return to the Timekeeping Mode automatically if you do not perform any operation for two or three minutes in the Tide/Moon Data Mode.

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

Operation Guide 3215 3222   CASIO®

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.

E-90

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

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

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

E-91

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 after a preset amount of time (1.5 or 3 seconds), even if you keep the watch pointed towards your face.

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

E-92

Specifications
Accuracy at normal temperature: ± 15 seconds a month
Timekeeping: Hour, minutes, seconds, p.m. (P), month, day, day of the week
 Time format: 12-hour and 24-hour
 Calendar system: Full Auto-calendar pre-programmed from the year 2000 to 2099
 Other: Home City code (can be assigned one of 48 city codes); Standard Time / Daylight Saving Time (summer time); Tide site data display
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-93

Tide/Moon Data:
 Moon phase indicator for specific date; Tide level for specific date and time
 Other: High tide time adjustment; Moon phase reversal
World Time: 48 cities (31 time zones)
 Other: Daylight Saving Time/Standard Time
Alarms: 5 daily alarms (four one-time alarms; one snooze alarm); Hourly Time Signal
Stopwatch:
 Measuring unit: 1/100 second
 Measuring capacity: 59' 59.99"
 Measuring modes: Elapsed time, split time, two finishes
Countdown Timer:
 Number of timers: 2 (one set)
 Setting unit: 5 seconds
 Range: 99 minutes 55 seconds each timer
 Countdown unit: 1 second
 Number of repeats: 1 to 10
Illumination: EL (electro-luminescent panel); Full Auto Light Switch; Selectable illumination duration
Other: Power Saving; Button operation tone on/off

E-94

Power Supply: Solar cell and one rechargeable battery
 Approximate battery operating time: 10 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

E-95

City Code Table

City Code	City	UTC Offset/ GMT Differential
PPG	Pago Pago	−11
HNL	Honolulu	−10
ANC	Anchorage	−9
YVR	Vancouver	−8
LAX	Los Angeles	
YEA	Edmonton	−7
DEN	Denver	
MEX	Mexico City	−6
CHI	Chicago	
NYC	New York	−5
SCL	Santiago	−4
YHZ	Halifax	
YYT	St. Johns	−3.5

City Code	City	UTC Offset/ GMT Differential
RIO	Rio De Janeiro	−3
FEN	Fernando de Noronha	−2
RAI	Praia	−1
UTC		
LIS	Lisbon	0
LON	London	
MAD	Madrid	
PAR	Paris	
ROM	Rome	+1
BER	Berlin	
STO	Stockholm	
ATH	Athens	
CAI	Cairo	+2
JRS	Jerusalem	

City Code	City	UTC Offset/ GMT Differential
MOW	Moscow	+3
JED	Jeddah	
THR	Tehran	+3.5
DXB	Dubai	+4
KBL	Kabul	+4.5
KHI	Karachi	+5
DEL	Delhi	+5.5
KTM	Kathmandu	+5.75
DAC	Dhaka	+6
RGN	Yangon	+6.5
BKK	Bangkok	+7

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

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

L   L-1

Tide Site Name List

City Code	Tide Site	
LIS	NEWQUAY,GBR	U.K.
LON	ABERDEEN,GBR	U.K.
	KILLALA BAY,IRL	IRELAND
	PENICHE,POR	PORTUGAL
	CASCAIS,POR	PORTUGAL
	FUNCHAL, MADEIRA	MADEILA
	LAS PALMAS	GRAN CANARIA
	CASABLANCA, MAR	MOROCCO
	SAFI,MAR	MOROCCO
	DAKAR,SEN	SENEGAL
	USER	

City Code	Tide Site	
MAD	BOUCAU,FRA	FRANCE
PAR	PORTUGALETE,	SPAIN
ROM	ESP	
BER	GIJON,ESP	SPAIN
STO	MARSEILLE,FRA	FRANCE
	PALERMO,ITA	ITALY
	USER	
ATH	CAPE TOWN,RSA	SOUTH AFRICA
CAI	DURBAN,RSA	SOUTH AFRICA
JRS	MOSSEL BAY, RSA	SOUTH AFRICA
	USER	
MOW	TOLANARO,MAD	MADAGASCAR
JED	USER	

City Code	Tide Site	
THR	USER	
DXB	LE PORT, REUNION	REUNION
	PORT LOUIS, MRI	MAURITIUS
	USER	
KBL	USER	
KHI	MALE, MALDIVES	MALDIVES
	USER	
DEL	GALLE, SRI	SRI LANKA
	USER	
KTM	USER	
DAC	USER	
RGN	USER	

City Code	Tide Site	
BKK	PHUKET	THAILAND
	TELUK DALAM, NIAS	INDONESIA
	PULAU TELO, INA	INDONESIA
	SIBERUT,INA	INDONESIA
	NORTH PAGAI, INA	INDONESIA
	TANJUNG PRIOK	INDONESIA
	USER	

L-2   L-3

CASIO

City Code	Tide Site	
SIN	BENOA,BALI	INDONESIA
HKG	AMPENAN, LOMBOK	INDONESIA
BJS		
TPE	COWARAMUP	AUSTRALIA
	FREMANTLE	AUSTRALIA
	CATANDUANES, PHI	PHILIPPINES
	SIARGAO,PHI	PHILIPPINES
	USER	
SEL	ENOSHIMA	JAPAN
TYO	SHIMODA	JAPAN
	SHIKINEJIMA	JAPAN
	OMAEZAKI	JAPAN

City Code	Tide Site	
	IRAGO	JAPAN
	WAKAYAMA	JAPAN
	KANNOURA	JAPAN
	HOSOSHIMA	JAPAN
	NISHINOOMOTE	JAPAN
	NAZE	JAPAN
	NAHA	JAPAN
	SENDAI	JAPAN
	SOMA	JAPAN
	KASHIMA	JAPAN
	KAZUSA-KATSUURA	JAPAN
	USER	

City Code	Tide Site	
ADL	VICTOR HARBOR	AUSTRALIA
	USER	
GUM	NOOSA HEADS	AUSTRALIA
SYD	BUNDALL	AUSTRALIA
	POINT DANGER	AUSTRALIA
	TWEED RIVER	AUSTRALIA
	BYRON BAY	AUSTRALIA
	BALLINA	AUSTRALIA
	SYDNEY	AUSTRALIA
	ULLADULLA	AUSTRALIA
	LORNE	AUSTRALIA
	HOBART	AUSTRALIA
	GUAM	GUAM
	USER	

City Code	Tide Site	
NOU	NOUMEA	NEW CALEDONIA
	USER	
WLG	SUVA,FIJ	FIJI ISLANDS
	RAGLAN,NZL	NEW ZEALAND
	USER	
PPG	PAGO PAGO	AMERICAN SAMOA
	USER	
HNL	HONOLULU	U.S.A.
	WAIALUA BAY, OAHU	U.S.A.
	KAHULUI,MAUI	U.S.A.
	HILO BAY, HAWAII	U.S.A.

City Code	Tide Site	
	NAWILIWILI, KAUAI	U.S.A.
	PAPEETE,TAHITI	TAHITI
	USER	
ANC	USER	
YVR	SAN FRANCISCO	U.S.A.
LAX	MONTEREY	U.S.A.
	PORT SAN LUIS	U.S.A.
	SANTA BARBARA	U.S.A.
	PORT HUENEME	U.S.A.
	SANTA MONICA	U.S.A.
	L.A.HARBOR	U.S.A.
	NEWPORT BAY	U.S.A.
	LA JOLLA	U.S.A.

City Code	Tide Site	
	ENSENADA,MEX	MEXICO
	USER	
YEA	USER	
DEN	USER	
MEX	MANZANILLO, MEX	MEXICO
CHI	PUNTARENAS, CRC	COSTA RICA
	USER	
NYC	ATLANTIC CITY	U.S.A.
	VIRGINIA BEACH	U.S.A.
	PORT CANAVERAL	U.S.A.
	MIAMI HARBOR	U.S.A.
	KINGSTON,JAM	JAMAICA

City Code	Tide Site	
	BALBOA,PAN	PANAMA
	PUERTO LOPEZ,ECU	EQUADOR
	PUERTO CHICAMA	PERU
	USER	
SCL	SANTO DOMINGO	DOMINICAN R.
YHZ	SAN JUAN,PUR	PUERTO RICO
	BRIDGETOWN	BARBADOS
	VALPARAISO,CHI	CHILE
	USER	

City Code	Tide Site	
YYT	USER	
RIO	RIO DE JANEIRO	BRAZIL
	SANTOS	BRAZIL
	USER	
FEN	F.D.NORONHA	BRAZIL
	USER	
RAI	PONTA DELGADA	AZORES
	USER	

• For information about city names, see the City Code Table (page L).