

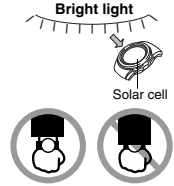
# Operation Guide 4351

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 and keep it on hand for later reference when necessary.

### Keep the watch exposed to bright light

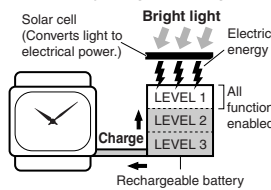


The electricity generated by the solar cell of the watch is stored by a built-in battery. Leaving or using the watch where it is not exposed to light causes the battery to run down. Make sure the watch is exposed to light as much as possible.

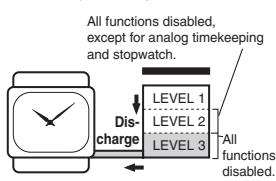
- When you are not wearing the watch on your wrist, position the face so it is pointed at a source of bright light.
- You should try to keep the watch outside of your sleeve as much as possible. Even if the face of the watch is only partially blocked from light, charging will be reduced significantly.

- 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 cause 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.

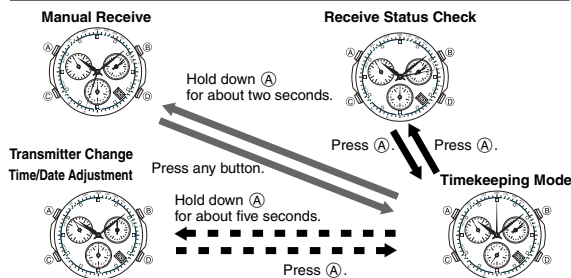


### Battery discharges in the dark.



- The actual level at which some functions are disabled depends on the watch model.
- Be sure to read "Power Supply" for important information you need to know when exposing the watch to bright light.

## General Guide



## Radio-controlled Timekeeping

This watch receives a time calibration signal and updates its time setting accordingly. The time calibration signal includes both Standard Time and Daylight Saving Time (summer time) data.

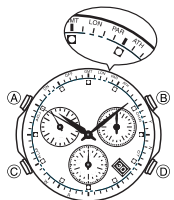
- This watch is designed to pick up the time calibration signal transmitted from Mainflingen, Germany and the signal from Rugby, England.

### Current Time Setting

This watch adjusts its time setting automatically in accordance with a time calibration signal. You can also 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, which is the city where you will normally use the watch. For more information, see "To specify your Home City" below.
- When using the watch outside the range of the time signal transmitter, you have to adjust the current time setting manually as required. See "Timekeeping" for more information about manual time settings.

### To specify your Home City



- In the Timekeeping Mode, hold down (A) for about five seconds until the stopwatch second hand moves to the currently selected GMT differential value and stops. This is the setting mode.
  - The GMT differential value indicates the time difference in hours between Greenwich Mean Time and the currently selected city code.
- Press (D) to select the city codes you want to use as your Home City.
  - The following are the city codes for major cities in the Western Europe time zones.

City Code	City	Other major cities in same time zone
LON	London	Dublin, Lisbon, Casablanca, Dakar, Abidjan
PAR	Paris	Milan, Rome, Madrid, Amsterdam, Algiers, Hamburg, Frankfurt, Vienna, Stockholm, Berlin
ATH	Athens	Cairo, Jerusalem, Helsinki, Istanbul, Beirut, Damascus, Cape Town

### If the analog hands aren't moving...

If the analog hands aren't moving, it means that the power saving mode has stopped them to save battery power.

- See "Power Saving" for more information.
- The hands also stop whenever the battery level reaches Level 3.

### Your watch switches automatically between Standard Time and Daylight Saving Time (summer time).

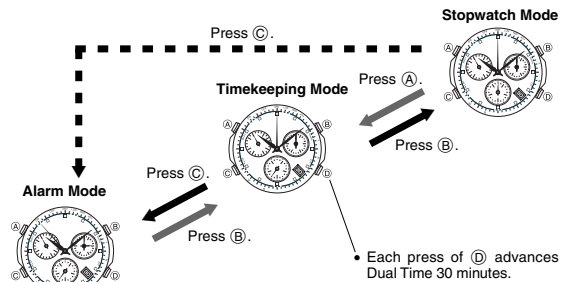
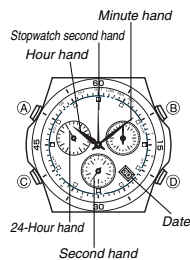
Note, however, that switching cannot be performed correctly if the watch is not able to receive the time calibration signal.

If you notice that the current time is not displayed properly, use the procedure under

- "To perform manual receive" or
- "To set the time and date manually" to correct it.

### About This Manual

- 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.



- Press (A) to return to the Timekeeping Mode.

- The watch will also return to the Timekeeping Mode if you do not perform any operation for about two or three minutes.
- Normally, your watch should show the correct time as soon as you specify 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 can also perform manual receive or you can set the time manually.
- Even if the time calibration signal is received correctly, there are some times when the analog hands may not indicate the correct time. If this happens, use the procedures under "Adjusting the Home Positions" to check the home positions of the hands, and make adjustments as required.

### 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

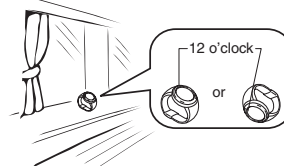
With auto receive, the watch receives the time calibration signal automatically up to six times a day. When any auto receive is successful, the remaining auto receive operations are not performed. For more information, see "About Auto Receive".

#### • 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".

#### 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 facing towards a window. Make sure there are no metal objects nearby.



- The watch should not be facing the wrong 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 is normally better at night than during the day.
- Time calibration signal reception takes from four 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 within range of the applicable transmitter, this watch can receive either the Germany (Mainflingen) or England (Rugby) time calibration signals. See "Transmitters" for more information.



- This watch is designed to receive the time calibration signal transmitted from Mainflingen, Germany and the signal from Rugby, England. Signal reception is possible within the area represented by a circle with a radius of about 1,500 kilometers.
- At distances further than about 500 kilometers from a transmitter, signal reception may not be possible during certain times of year or times of day. Radio interference may also cause problems with reception.
- 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" if you experience problems with time calibration signal reception.

#### About Auto Receive

The watch receives the time calibration signal automatically up to six times a day. 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.

#### Note

- Auto receive is turned on whenever LON, PAR, or ATH is selected as the Home City code.

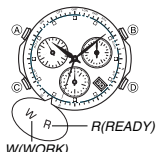
Your City Code		Auto Receive Start Times					
		1	2	3	4	5	6
LON (GMT +0)	Standard Time	1:00 am	2:00 am	3:00 am	4:00 am	5:00 am	Midnight
	Daylight Saving Time	2:00 am	3:00 am	4:00 am	5:00 am	Midnight	1:00 am next day
PAR (GMT +1)	Standard Time	2:00 am	3:00 am	4:00 am	5:00 am	Midnight	1:00 am next day
	Daylight Saving Time	3:00 am	4:00 am	5:00 am	Midnight	1:00 am next day	2:00 am next day
ATH (GMT +2)	Standard Time	3:00 am	4:00 am	5:00 am	Midnight	1:00 am next day	2:00 am next day
	Daylight Saving Time	4:00 am	5:00 am	Midnight	1:00 am next day	2:00 am next day	3:00 am next day

#### Note

- Auto receive is supported in all modes except while a stopwatch elapsed time operation is in progress.
- Auto receipt 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 each of the calibration times. Do not perform any button operation within ten minutes before or after any one of 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.

#### To perform manual receive

1. Place the watch on a stable surface so its 12 o'clock side is facing towards a window.
2. In the Timekeeping Mode, hold down (A) for about two seconds until the watch beeps.
3. The stopwatch second hand will move to **R (READY)** to indicate that the watch is setting up for time calibration reception.
  - The second hand will move to **W (WORK)** and stay there while actual reception is in progress.
  - The hour and minute hands continue to keep time normally.
- Time calibration signal reception takes from four to seven minutes, but in some cases it can take up to 14 minutes. Take care that you do not perform any button operations or move the watch during this time.
- If reception is successful, the second hand will move to **Y (YES)**. 10 seconds later, the hands will move to the correct time.



#### Note

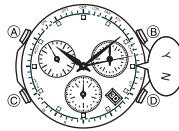
- To interrupt a receive operation and return to the Timekeeping Mode, press any button.
- If reception is not successful, the stopwatch second hand will move to **N (NO)**. 5 seconds later, the stopwatch second hand will resume normal operation, without any adjustment of the hand setting.
- If the stopwatch second hand is pointing to **Y (YES)** or **N (NO)**, you can return to the Timekeeping Mode by pressing any button.

#### Viewing the Latest Signal Reception Results

You can use the Receive Result Mode to check if signal reception was performed correctly.

#### To check the latest signal reception results

1. In the Timekeeping Mode, press (A).
  - If the watch was able to perform a successful signal receive operation since midnight, the stopwatch second hand will move to **Y (YES)**. If the watch has been unable to receive any signal successfully, the second hand will move to **N (NO)**.
  - The watch will return to the Timekeeping Mode after five seconds or when you press (A).
  - The current receive result is cleared when the first auto receive operation is performed on the following day. This means **Y (YES)** indicates successful signal reception since the start of the current day.
  - **Y (YES)** continues to be indicated even if an attempt at manual receive fails after auto receive is successful.
  - If you adjust the time or date setting manually, the second hand will move to **N (NO)**.



#### Signal Reception Troubleshooting

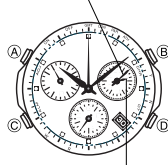
Check the following points whenever you experience problems with signal reception.

Problem	Probable Cause	What you should do
The stopwatch second hand is pointing at <b>N(NO)</b> .	<ul style="list-style-type: none"> <li>• You changed the time setting manually.</li> <li>• The watch was not in the Timekeeping Mode, or you performed some button operation during the auto receive operation.</li> <li>• Signal reception results are reset at midnight each day.</li> </ul>	<ul style="list-style-type: none"> <li>• Perform manual signal receive or wait until the next auto signal receive operation is performed.</li> <li>• Check to make sure the watch is in a location where it can receive the signal.</li> </ul>
Time setting is incorrect following signal reception.	<ul style="list-style-type: none"> <li>• The Home City setting is not correct for the area where you are using the watch.</li> </ul>	<ul style="list-style-type: none"> <li>• Select the correct Home City.</li> </ul>

- For further information, see "Important!" under "Time Calibration Signal Reception" and "Radio-controlled Timekeeping Precautions".

#### Dual Time

##### Dual Time minute hand



##### Dual Time hour hand

The Dual Time lets you keep track of time in a different time (24-hour format).

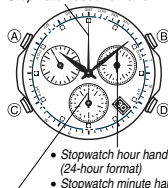
- All of the operations in this section are performed in the Timekeeping Mode.
- The Dual Time is synchronized with the current time.

#### To set the Dual Time

1. In the Timekeeping Mode, each press of (D) advances Dual Time 30 minutes. Press (D) to set the Dual Time that you want.

#### Stopwatch

##### Stopwatch second hand



Stopwatch 1/20 second hand \* This hand rotates and indicates the second count during the first 60 seconds.

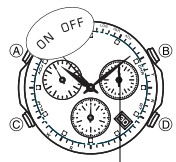
The stopwatch lets you measure elapsed time.

- The display range of the stopwatch is 23 hours, 59 minutes, 59.95 seconds.
- The stopwatch continues to run, restarting from zero after it reaches its limit, until you stop it.
- You cannot switch to another mode while a stopwatch elapsed time operation is in progress.
- All of the operations in this section are performed in the Stopwatch Mode.

#### To measure elapsed time

1. Press (B) to start the stopwatch.
2. Press (B) to stop the stopwatch.
  - You can resume the measurement operation by pressing (B) again.
  - The 1/20 second hand rotates during the first 60 seconds only, and then stops. When elapsed timing is stopped (by pressing (B)), this hand jumps to the 1/20 second indication (which is kept internally).
3. Check the elapsed time.
  - Press (A) to reset the stopwatch.

## Alarm



- Alarm time hour hand
- Alarm time minute hand

When the alarm is turned on, the alarm sounds when the alarm time is reached.

- All of the operations in this section are performed in the Alarm Mode.
- When you enter the Alarm Mode, the stopwatch second hand will move to either ON (alarm on) or OFF (alarm off), and the alarm time dial hands will move to the current alarm time setting.

### To set an alarm time

1. In the Alarm Mode, hold down (A) for five seconds to display the setting mode.
  - Press (D) to move the hands clockwise in one-minute steps.
  - Press (B) to move the hands counterclockwise in one-minute steps.
3. After setting the alarm time, press (A) to exit the setting mode.
  - Setting the alarm time causes the alarm to turn on automatically.
4. Press (B) to return to the Timekeeping Mode.

## Alarm Operation

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

- Alarm operations are performed in accordance with the Timekeeping Mode time.
- Pressing any button stops the alarm tone operation.

### To toggle an alarm on and off

- In the Alarm Mode, press (C) to toggle the alarm ON and OFF.
- The watch will beep when you turn on the alarm.

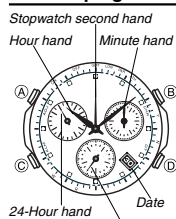
## Adjusting the Home Positions

If the time and date settings are wrong even after the time calibration signal is received normally, use the following procedure to adjust their home positions.

### To adjust the home positions

1. In the Timekeeping Mode, hold down (A) and (C) for five seconds. This enters the Home Position Adjustment Mode, which you can use to check and adjust the home position of the timekeeping second hand the stopwatch second hand.
  - The timekeeping second hand is in the proper home position if it moves to 12 o'clock. If it doesn't, press (D) to move it to 12 o'clock.
  - The stopwatch second hand is also in the proper home position if it moves to 12 o'clock. If it doesn't, press (B) to move it to 12 o'clock.
2. After confirming that the timekeeping second hand and stopwatch second hand are both at the proper home positions, press (C). This will switch to hour hand and minute hand home position adjustment.
  - The hour hand and minute hand are at their proper home positions if they both move to 12 o'clock, and if the 24-hour hand is pointing at hour 24. If the hands are not positioned correctly, use (D) (+) and (B) (-) to move all three hands to their proper home positions.
3. After confirming that the hour hand and minute hand are both at their proper home positions, press (C). This will switch to stopwatch minute hand and stopwatch hour hand home position adjustment.
  - The stopwatch minute and hour hands are both at their proper home positions if they move to 24 o'clock. If they don't, use (D) (+) and (B) (-) to move them to 24 o'clock.
4. After confirming that the stopwatch minute and hour hands are both at their proper home positions, press (C). This will change to date home position adjustment.
  - The date is at the proper home position if 1 is displayed. If it isn't, use (D) (+) and (B) (-) to adjust it to 1.
5. Press (A) to return to the Timekeeping Mode.
  - After you complete the home position adjustment procedure, place the watch in a location that allows good time calibration signal reception, and then perform a manual receive operation. See "To perform manual receive" for more information.

## Timekeeping



Timekeeping second hand

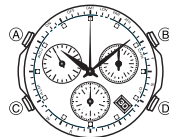
Use the Timekeeping Mode to set and view the current time and date. This section also explains how to set the current date and time manually.

- All of the operations in this section are performed in the Timekeeping Mode.

## To set the time and date manually

1. In the Timekeeping Mode, hold down (A) for about five seconds.
  - This will cause the stopwatch second hand to move to GMT, LON, PAR, ATH, depending on the currently selected GMT differential setting. This is the setting mode.
  - The GMT differential value indicates the time difference in hours between Greenwich Mean Time and the currently selected Home City.
2. Use (D) and (B) to change it as shown below.

To do this:	While the stopwatch second hand is here:	Do this:
Change the Home City	GMT(GMT +0), LON(GMT +0),	Use (D) (+).
Change the day	PAR(GMT +1), ATH(GMT +2)	Use (B) (-).



3. Press (C), and then use (D) and (B) to move the hour and minute hands.

To do this:	Do this:
Move the hour and minute hands clockwise	Use (D).
Move the hour and minute hands counterclockwise	Use (B).

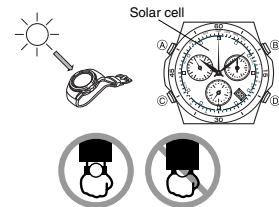
4. After setting the current time, press (A) to exit the setting mode.
  - This will cause the hands to move to the current time, and resume normal movement.

## Power Supply

This watch is equipped with a solar cell and a special rechargeable battery (secondary 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. Even if the face of the watch is blocked from light only partially, charging will be reduced significantly.



### 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. Make 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 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 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 3 and when you have the battery replaced.
- Keep the watch in an area normally exposed to bright light when storing it for long periods. This helps to keep the rechargeable battery from going dead.

### Battery Power Levels

The movement of the analog hands indicates the current battery power level.



Jumps 2 seconds

Level	Hand Movement	Function Status
1	Normal.	All functions enabled.
2	• Second hand jumps every 2 seconds. • Date changes to home position.	All functions disabled, except for analog timekeeping and stopwatch.
3	• Second hand stopped. • Hour and minute hands stopped at 12 o'clock.	All functions disabled.

- The second hand jumping every two seconds (Level 2) indicates that battery power is quite low. Expose the watch to light as soon as possible to charge the battery.
- When battery power is at Level 2, time calibration signal reception is disabled.
- At Level 3, all functions are disabled and settings return to their initial factory defaults. The analog hands will move to the current time and normal timekeeping will resume when the battery is recharged sufficiently.
- Alarm operation can cause hand movement to stop due to the sudden temporary drop in battery power. This does not indicate malfunction, and normal operation will resume when the watch is exposed to light. Though hand movement stops, timekeeping continues internally, and the hands will be adjusted to the correct setting when normal operation returns.

### 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.

### 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

## Charging Guide

- After a full charge, timekeeping remains enabled for up to about four 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)	6 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

- Since these are the specs, we can include all the technical details.
  - Watch is not exposed to light
  - Internal timekeeping
  - Analog hands operational 18 hours per day, sleep state 6 hours per day
  - 10 seconds of alarm operation per day
  - 1 time calibration reception per day
- Stable operation is promoted by frequent charging.

## 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 3	Level 2	Level 1
Outdoor sunlight (50,000 lux)	1 hour	21 hours	---
Sunlight through a window (10,000 lux)	2 hours	77 hours	---
Daylight through a window on a cloudy day (5,000 lux)	4 hours	---	---
Indoor fluorescent lighting (500 lux)	35 hours	---	---

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

## 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.

### Auto Return Features

- If you leave the watch in the Home Position Adjustment Mode for two or three minutes without performing any operation, it returns to the Timekeeping Mode automatically.
- If you do not perform any operation for about two or three minutes while a setting mode is selected, the watch will exit the setting mode automatically.

### Scrolling

- The  $\odot$  and  $\text{Ⓢ}$  button 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) and day.
- High-speed movement of hands and day will continue until you press any button, or until the moving hand(s) and day finishes one complete cycle.
  - One complete cycle for the hands is one revolution (360 degrees) or 24 hours.
  - One complete cycle for the day is 31 days.

### Radio-controlled 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, 2001 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 time within  $\pm 20$  seconds a month at normal temperature.

### Transmitters

This watch is designed to receive the time calibration signal transmitted from Mainflingen, Germany and the signal from Rugby, England. You can configure the watch to automatically select the transmitter that has the strongest signal.

In this case:	The watch does this:
The first signal auto search operation after factory default settings are in effect, or after the city code has been changed	1. Checks the Mainflingen signal first. 2. If the Mainflingen signal cannot be received, checks the Rugby signal.
Any case other than the above.	1. Checks the last successfully received signal first. 2. If the last successfully received signal cannot be received, checks the other signal.

## Timekeeping

- The year can be set in the range of 2001 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 or when battery power drops to Level 3.
- The date will change automatically when the current time reaches midnight. The date change at the end of the month may take more time than normal.
- The current time for all time zones in the Timekeeping Mode is calculated in accordance with the Greenwich Mean Time (GMT) differential of each zone, based on your Home City time setting.
- GMT differential is calculated by this watch based on Universal Time Coordinated (UTC\*) data.
  - \*UTC is the world-wide scientific standard of timekeeping. It is based upon carefully maintained atomic (cesium) clocks that keep time accurately to within microseconds. Leap seconds are added or subtracted as necessary to keep UTC in sync with the Earth's rotation. The reference point for UTC is Greenwich, England.

## Power Saving

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

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

Elapsed Time in Dark	Operation
60 to 70 minutes (second hand sleep)	Second hand only is stopped, all other functions are enabled.
6 or 7 days (function sleep)	<ul style="list-style-type: none"> <li>All functions, including analog timekeeping, disabled</li> <li>Internal timekeeping maintained</li> </ul>

- 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.