

# Operation Guide 2767

## Getting Acquainted

Congratulations upon your selection of this CASIO watch. To get the most out of your purchase, be sure to carefully read this manual and keep it on hand for later reference when necessary.

### Expose the watch to bright light to charge its battery before using it.

You can use this watch even as its battery is being charged by exposure to bright light.

- Be sure to read "Battery" of this manual for important information you need to know when exposing the watch to bright light.

## Applications

The built-in sensors of this watch measure direction, altitude, barometric pressure, and temperature. Measured values are then shown on the display. Such features make this watch useful when hiking, mountain climbing, or when engaging in other such outdoor activities.

### Warning!

- The measurement functions built into this watch are not intended for taking measurements that require professional or industrial precision. Values produced by this watch should be considered as reasonable representations only.
- When engaging in mountain climbing or other activities in which losing your way can create a dangerous or life-threatening situation, always be sure to use a second compass to confirm direction readings.
- CASIO COMPUTER CO., LTD. assumes no responsibility for any loss, or any claims by third parties that may arise through the use of this watch.

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



If the **SLEEP** indicator is on the display (either flashing or steady), it means that the display is blank because the watch's Power Saving function has turned off the display to conserve power. Power Saving automatically turns off the display and enters a sleep state whenever the watch is left for a certain period where it is dark.

- The initial factory default setting is Power Saving on.
- The watch recovers from the sleep state if you move it to a well-lit area\*, if you press any button, or if you angle the watch towards your face for reading.

\*It can take up to two seconds for the display to turn on.

- See "Power Saving Function" for more information.

## About This Manual



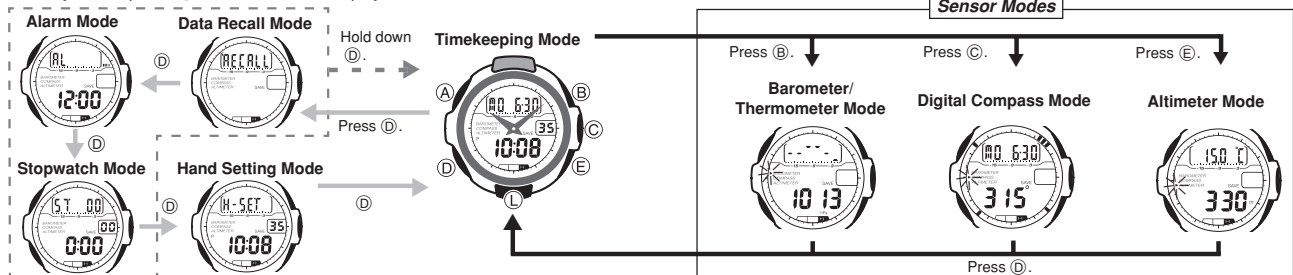
(Light)



- 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.
- Most of the display examples in this manual show only the digital display, without the analog hands, as shown in the lower illustration.

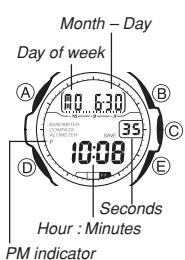
## General Guide

- The illustration below shows which buttons you need to press to navigate between modes.
- In any mode, press **L** to illuminate the display.



- From the Timekeeping Mode or another sensor mode, you can use buttons **B**, **C**, or **E** to directly enter the mode assigned to it. From any other mode, you must go to the Timekeeping Mode first.

## Timekeeping



This watch features separate digital and analog timekeeping. The procedures for setting the digital time and analog time are different.

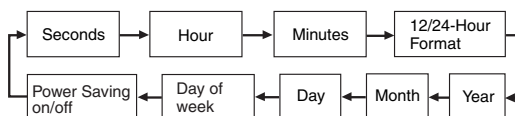
- Whenever you need to adjust both the digital and the analog time settings, make sure you adjust the digital setting first.

### Digital Time and Date

Use the Timekeeping Mode to set and view a digital display of the current time and date. When setting the digital time, you can also configure settings for the 12/24-hour format and the Power Saving function.

### To set the digital time and date

1. In the Timekeeping Mode, hold down **A** until the seconds start to flash, which indicates the setting screen.
2. Press **D** to move the flashing in the sequence shown below to select other settings.



3. When the setting you want to change is flashing, use **E** to change it as described below.

| Setting             | Screen  | Button Operations   |
|---------------------|---------|---|
| Seconds             | 35      | Press <b>E</b> to reset the seconds to 00.                                  |
| Hour, Minutes       | 10:08   | Use <b>E</b> (+) to change the setting.                                     |
| 12/24-Hour format   | 12H     | Use <b>E</b> to toggle between 12-hour (12H) and 24-hour (24H) timekeeping. |
| Year, Month, Day    | 03 6:30 | Use <b>E</b> (+) to change the setting.                                     |
| Day of week         | MO      | Use <b>E</b> (+) to change the setting.                                     |
| Power Saving on/off | 00      | Press <b>E</b> to toggle Power Saving on (00) and off (OFF).                |

4. Press **A** to exit the setting screen.
  - Resetting the seconds only (without changing the hour or minute setting) causes the analog minute hand setting to be adjusted automatically.
  - See "Power Saving Function" for details about configuring Power Saving settings.

### Note

- 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.
- With the 12-hour format, the P (PM) indicator appears on the display for times in the range of noon to 11:59 p.m. and no indicator appears 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 modes.
- The year can be set in the range of 2000 to 2039.
- The watch's built-in full automatic calendar automatically makes allowances for different month lengths and leap years. Once you set the date, there should be no reason to change it except when battery power drops to Level 4.

### Setting the Analog Time

Perform the procedure below when the time indicated by the analog hands does not match the time of the digital display.

#### To adjust the analog time



- In the Timekeeping Mode, press (D) four times to enter the Hand Setting Mode.
- Hold down (A) until the current digital time starts to flash, which indicates the analog time setting screen.
- Press (E) to advance the analog time setting by 20 seconds.

- Holding down (E) advances the analog time setting at high speed.
- If you need to advance the analog time setting a long way, hold down (E) until the time starts advancing at high speed, and then press (B). This locks the high-speed hand movement, so you can release the two buttons. High-speed hand movement continues until you press any button. It will also stop automatically after the time advances 12 hours or if an alarm starts to sound.

- Press (A) to exit the setting screen.
- To return to the Timekeeping Mode, press (D).

### Digital Compass

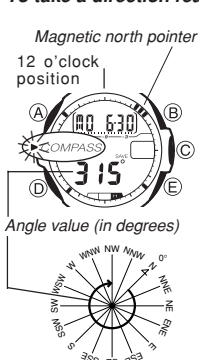
A built-in bearing sensor detects magnetic north. The watch uses this data to display an angle value and four pointers indicating north, south, east, and west. Direction readings are performed in the Digital Compass Mode.

- You can calibrate the bearing sensor if you suspect the direction reading is incorrect.

#### To enter and exit the Digital Compass Mode

- While in the Timekeeping, Barometer/Thermometer, or Altimeter Mode, press (C) to enter the Digital Compass Mode.
  - At this time, the watch immediately starts a Digital Compass operation. After the first reading is obtained, the watch continues to take direction readings automatically each second, for up to 20 seconds.
- Press (D) to return to the Timekeeping Mode.

#### To take a direction reading

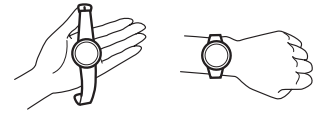


- Enter the Digital Compass Mode.
- Place the watch on a flat surface or (if you are wearing the watch), make sure that your wrist is horizontal (in relation to the horizon).
- Point the 12 o'clock position of the watch in the direction you want to measure.
- Press (C) to start a Digital Compass measurement operation.
  - After direction measurement is complete, an angle value appears on the display. The angle value indicates the clockwise angle formed between magnetic north (which is 0 degrees) and the direction that the 12 o'clock position of the watch is pointing.
  - Also, four pointers appear to indicate magnetic north, south, east, and west.
  - After the first reading is obtained, the watch continues to take direction readings automatically each second, for up to 20 seconds.

- During measurement the watch displays an angle value and four direction pointers of the first reading, which change dynamically when the watch is moved. After measurement is complete, the angle value and four direction pointers are frozen in accordance with the last measurement.
- The ► indicator flashes on the display while a measurement is in progress.

### Note

- Note that taking a measurement while the watch is not horizontal (in relation to the horizon) can result in large measurement error.



- Any ongoing direction measurement operation is temporarily paused while the watch is performing an alert operation (alarm or hourly time signal) or while the watch's backlight is turned on (by pressing (L)). The measurement operation resumes for its remaining duration after the operation that caused the pause is finished.
- See "Digital Compass Precautions" for other important information about taking direction readings.

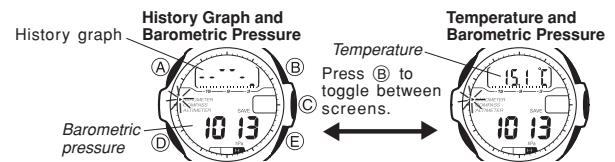
### Barometer/Thermometer

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

- You can calibrate the temperature sensor and the pressure sensor if you suspect that readings are incorrect.

#### To take barometric pressure and temperature readings

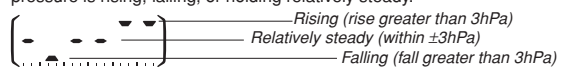
Pressing (B) in the the Timekeeping Mode or in any of the other sensor modes enters the Barometer/Thermometer Mode and automatically starts taking barometric pressure and temperature measurements.



- It can take up to four or five seconds for the barometric pressure reading to appear after you enter the Barometer/Thermometer Mode.
- Barometric pressure is displayed in units of 1hPa (or 0.05 inHg).
- The displayed barometric pressure value changes to ---- hPa (or inHg) if a measured barometric pressure falls outside the range of 260 hPa to 1100 hPa (7.65 inHg to 32.45 inHg). The barometric pressure value will be displayed again as soon as the measured barometric pressure is within the allowable range.
- Temperature is displayed in units of 0.1°C (or 0.2°F).
- The displayed temperature value changes to --. °C (or °F) if a measured temperature falls outside the range of -10.0°C to 60.0°C (14.0°F to 140.0°F). The temperature value will be displayed again as soon as the measured temperature is within the allowable range.
- Some countries refer to the barometric pressure unit hecto-pascal (hPa) as millibars (mb). It really makes no difference, because 1hPa = 1mb.
- See "Barometer and Thermometer Precautions" for important precautions.

#### Barometric Pressure History Graph

Barometric pressure indicates changes in the atmosphere. By monitoring these changes you can predict the weather with reasonable accuracy. The barometric pressure history graph contains points that show you the changes in barometric pressure readings taken by the watch for up to the last 18 hours. The time line along the bottom of the graph runs from left to right, which means that the rightmost point on the graph is the latest reading. The relative positions of the points on the graph indicate whether barometric pressure is rising, falling, or holding relatively steady.



- Though you can configure the watch to display barometric pressure in units of hPa or inHg, the history graph always uses hPa. This means that the points plotted on the history graph are based on ±3hPa changes in barometric pressure.
- No point is plotted on the graph whenever a measurement operation fails due to sensor malfunction, low battery power, or any other reason.

The following shows how to interpret the data that appears on the barometric pressure history graph.

A rising graph generally means improving weather.

A falling graph generally means deteriorating weather.

## About Barometric and Temperature Measurements

- Barometric pressure and temperature measurement operations are performed as soon as you enter the Barometer/Thermometer Mode. After that, barometric pressure and temperature measurements are taken every five seconds for the first three minutes.
- The ► indicator to the left of "BAROMETER" on the display flashes while a measurement is in progress.
- The barometer automatically takes measurements every three hours (starting from midnight), regardless of what mode you are in. The results of these measurements are used for plotting points on the barometric pressure history graph.
- You can also perform a barometric pressure and temperature measurement at any time by pressing (E) in the Barometer/Thermometer Mode.

## Barometer and Thermometer Precautions

- The pressure sensor built into this watch measures changes in air pressure, which you can then apply to your own weather predictions. It is not intended for use as a precision instrument in official weather prediction or reporting applications.
- Sudden temperature changes can affect pressure sensor readings.
- Temperature measurements are affected by your body temperature (while you are wearing the watch), direct sunlight, and moisture. To achieve a more accurate temperature measurement, remove the watch from your wrist, place it in a well ventilated location out of direct sunlight, and wipe off all moisture from the case. It takes approximately 20 to 30 minutes for the case of the watch to reach the actual surrounding temperature.
- You can select either hectopascals (hPa) or inchesHg (inHg) as the display unit for the measured barometric pressure. See "Changing the Barometric Pressure and Temperature Units" for details.
- You can select either Celsius (°C) or Fahrenheit (°F) as the display unit for the measured temperature value. See "Changing the Barometric Pressure and Temperature Units" for details.

## Altimeter

A built-in altimeter uses a pressure sensor to detect the current air pressure, which is then used to estimate the current altitude. The watch is pre-programmed with ISA (International Standard Atmosphere) preset values, which are used to convert air pressure readings to altitude values. If you preset a reference altitude, the watch will also calculate the current relative altitude based on your preset value. Memory is also provided for the storage of altimeter data.

### Important!

- This watch estimates altitude based on air pressure. This means that altitude readings for the same location may vary if air pressure changes.
- This watch employs a semiconductor pressure sensor, which is affected by temperature changes. Make sure that the watch is not being exposed to temperature changes while you are taking altitude measurements.
- To avoid the effect of sudden temperature changes on measurement, wear the watch so it is in direct contact with your wrist during measurement.
- Do not rely upon this watch for altitude measurements or perform button operations while engaging in sports where there are sudden altitude changes, while sky diving, hang gliding, or paragliding, or while riding a gyrocopter, glider, or any other aircraft.
- Do not use this watch for measuring altitude in applications that demand professional or industrial level precision.
- Remember that the air inside of a commercial aircraft is pressurized. Because of this, the readings produced by this watch will not match the altitude readings announced or indicated by the flight crew.

## How the Altimeter Works

### With the Preset Values (No Reference Altitude)

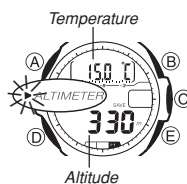
- The watch measures the air pressure at your current location and uses the built-in ISA values to convert it to the equivalent altitude.

### With a Reference Altitude

- If you set a reference altitude, the watch uses that value when calculating altitude based on air pressure.
- To determine the height of a tall building, set the reference altitude to 0 on the ground floor. Note, however, that you may not be able to get a good reading if the building is pressurized or air-conditioned.
- When mountain climbing, you can set the reference value in accordance with a marker along the way or altitude information from a map. After you do this, the altitude readings produced by the watch will be more accurate than they would without a reference altitude.



## To take an altitude reading



Pressing (E) in the Timekeeping Mode or in any of the other sensor modes enters the Altimeter Mode and automatically starts altitude measurement.

- It can take up to four or five seconds for the altitude reading to appear after you enter the Altimeter Mode.
- The Altimeter Mode screen also displays the current temperature. See "Barometer/Thermometer" for more information.
- During the first three minutes after entering the Altimeter Mode, the ► indicator flashes on the display and measurements are taken every five seconds. After that, the ► indicator stops flashing and remains on the display as measurements are taken every two minutes.
- Pressing (E) causes the measurement operation to restart from the beginning of the cycle described above.
- Altitude is displayed in units of 5 meters (20 feet).
- The measurement range for altitude is -700 to 10,000 meters (-2,300 to 32,800 feet).
- The measured altitude may be a negative value in cases where there is a reference altitude value set or because of certain atmospheric conditions.
- The displayed altitude value changes to - - - - meters (or feet) if a measured altitude falls outside the measurement range. The altitude value will be displayed again as soon as the measured altitude is within the allowable range.
- You can change the unit of measurement for the displayed altitude values between meters (m) and feet (ft). See "To change the altitude unit".

## Setting a Reference Altitude

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

### To set a reference altitude



1. In the Altimeter Mode, hold down (A) for about two seconds until the watch beeps and the display goes blank. About four or five seconds after that, OFF or the current reference altitude value (if set) will flash on the display.
  - If OFF or the current reference altitude value does not appear at this time, press (A) to return to the Altimeter Mode screen, and perform step 1 again.
2. Press (E) (+) or (B) (-) to change the current reference altitude value by 5 meters (or 20 feet).

- You can set the reference altitude within the range of -10,000 to 10,000 meters (-32,800 to 32,800 feet).
- Pressing (E) and (B) at the same time returns to OFF (no reference altitude), so the watch performs air pressure to altitude conversions based on preset data only.

3. Press (A) to exit the setting screen.

## Altitude Records

Storing altitude data in memory creates an altitude record. If a reading is greater than all of the other altitude readings currently stored in memory, it is stored in the maximum altitude record. The following describes the contents of each type of record.

Recording date (year, month, day), time, and altitude: Up to 41 records  
Maximum altitude (including recording date and time): 1 record

- The maximum altitude record shows information about the altitude record that has the greatest altitude value. The maximum altitude record is updated any time a reading produces an altitude that is greater than that of the current maximum altitude record.

### To store an altitude record in memory

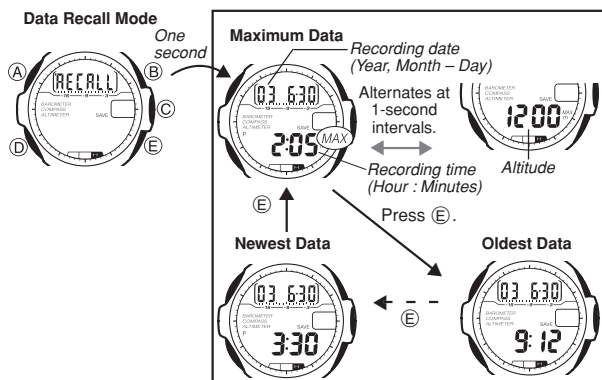


In the Altimeter Mode, hold down (E) for about one second until the watch beeps. This indicates that a record of the altitude reading (date, time, and altitude) has been stored in memory.

- You can recall data in memory using the Data Recall Mode.
- Note that there is enough memory to store a total of 41 records. If there are already 41 records in memory, storing another one automatically deletes the oldest record to make room for the new one.

### To view altitude record data

- Use **(D)** to enter the Data Recall Mode.
  - The message **RECALL** appears for about one second, followed by maximum altitude record.
- Press **(E)** to cycle through the altitude record screens in the sequence shown below.
  - The maximum altitude record appears first. After that, each press of **(E)** scrolls through records in sequence, starting from the oldest record.
  - For each record, the lower part of the display alternates at one-second intervals between the recording time and altitude value.
  - If an error occurs while altitude data is being stored in memory or if there is no altitude data in memory, --- is shown for the measured altitude value on the corresponding altitude record screen.



### Deleting the Maximum Altitude Record Data

Use the following procedure when you want to delete the data in the maximum altitude record. Note that you can delete maximum altitude record data only. You cannot delete the data of any of the other altitude records.

#### To delete the maximum altitude record data

- Use the procedure under "To view altitude record data" to display the maximum altitude record.
  - The maximum altitude record is the one with **MAX** next to both the time and altitude values.
- Hold down **(A)** for about two seconds. This will delete the data.

## Alarm

Alarm on indicator  
Hourly time signal on indicator



Alarm time (Hour : Minutes)

#### To set the alarm time



After you set (and turn on) the daily alarm, the alarm tone sounds when the alarm time is reached. You can also turn on an Hourly Time Signal that causes the watch to beep twice every hour on the hour.

- All of the operations in this section are performed in the Alarm Mode, which you enter by pressing **(D)**.

- In the Alarm Mode, hold down **(A)** until the hour setting of the alarm time starts to flash, which indicates the setting screen.
  - This automatically turns on the alarm.
- Press **(D)** to move the flashing between the hour and minute settings.
- While a setting is flashing, use **(E)** to increase it.
  - When setting the alarm time using the 12-hour format, take care to set the time correctly as a.m. (no indicator) or p.m. (**P** indicator).
- Press **(A)** to exit the setting screen.

### Alarm Operation

The alarm sounds at the preset time for about 10 seconds (in all modes), or until you stop it by pressing any button.

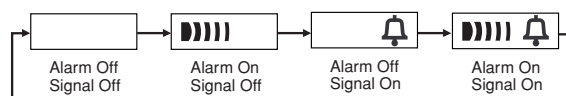
#### To test the alarm

In the Alarm Mode, hold down **(E)** to sound the alarm.

### To turn the daily alarm and the Hourly Time Signal on and off

In the Alarm Mode, press **(E)** to cycle through the settings shown below.

#### Alarm On Indicator / Hourly Time Signal On Indicator



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

## Stopwatch

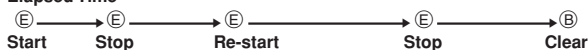


The stopwatch lets you measure elapsed time, split times, and two finishes.

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

### To measure times with the stopwatch

#### Elapsed Time



#### Split Time



#### Two Finishes



## Backlight

Auto light switch on indicator



The backlight uses an EL (electro-luminescent) panel that causes the entire display to glow for easy reading in the dark. The watch's auto light switch automatically turns on the backlight 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 "Backlight Precautions" for other important information about using the backlight.

### To turn on the backlight manually

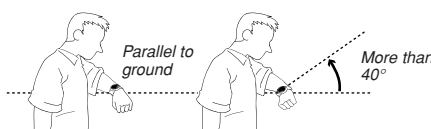
- Press **(L)** in any mode to illuminate the display for about two seconds.
- Backlight operation is disabled during the bearing sensor calibration procedure.
  - The above operation turns on the backlight regardless of the current auto light switch setting.

### About the Auto Light Switch

Turning on the auto light switch causes the backlight to turn on for about two seconds, 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 the backlight to turn on.

- Wear the watch on the outside of your left wrist.



**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 surprise or distract others around you.
- When you are wearing the watch, make sure that its auto light switch is turned off before riding on a bicycle or operating a motorcycle or any other motor vehicle. Sudden and unintended operation of the auto light switch can create a distraction, which can result in a traffic accident and serious personal injury.

**To turn the auto light switch on and off**

In the Timekeeping Mode, hold down (Ⓚ) for about two seconds to toggle the auto light switch on (☀️ displayed) or off (☁️ not displayed).

- If you are in the Timekeeping Mode when you press (Ⓚ), the watch will go directly into the Barometer/Thermometer Mode. Keep (Ⓚ) depressed until the auto light switch turns on or off. After that, you can return to the Timekeeping Mode by pressing (Ⓚ).
- The auto light switch on indicator (☀️) is on the display in all modes while the auto light switch is turned on.
- The auto light switch is always disabled, regardless of its on/off setting, when any one of the following conditions exists.

*While a direction measurement operation is being performed in the Digital Compass Mode*

*While a bearing sensor calibration operation is being performed in the Digital Compass Mode*

*While the Hand Setting Mode setting screen is on the display*

- The backlight may not light right away if you raise the watch to your face while a barometric pressure or altitude measurement operation is in progress.

## Questions & Answers

**Question: What causes incorrect direction readings?**

Answer:

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

**Question: What causes different direction readings to produce different results at the same location?**

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

**Question: Why am I having problems taking direction readings indoors?**

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

**Question: How does the altimeter work?**

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

| Altitude | Air Pressure | Temperature |
|----------|--------------|-------------|
| 4000 m   | 616 hPa      | -11°C       |
| 3500 m   | 701 hPa      | -4.5°C      |
| 3000 m   | 785 hPa      | 2°C         |
| 2500 m   | 899 hPa      | 8.5°C       |
| 2000 m   | 1013 hPa     | 15°C        |
| 1500 m   |              |             |
| 1000 m   |              |             |
| 500 m    |              |             |
| 0 m      |              |             |

About 8 hPa per 100 m  
 About 9 hPa per 100 m  
 About 10 hPa per 100 m  
 About 11 hPa per 100 m  
 About 12 hPa per 100 m  
 About 6.5°C per 1000 m

| Altitude | Air Pressure | Temperature |
|----------|--------------|-------------|
| 14000 ft | 19.03 inHg   | 16.2°F      |
| 12000 ft | 22.23 inHg   | 30.5°F      |
| 10000 ft | 25.84 inHg   | 44.7°F      |
| 8000 ft  | 29.92 inHg   | 59.0°F      |
| 6000 ft  |              |             |
| 4000 ft  |              |             |
| 2000 ft  |              |             |
| 0 ft     |              |             |

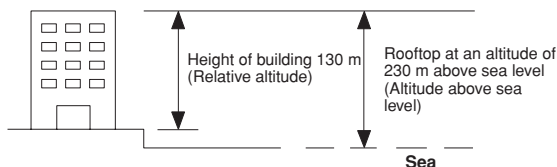
About 0.15 inHg per 200 ft  
 About 0.17 inHg per 200 ft  
 About 0.192 inHg per 200 ft  
 About 0.21 inHg per 200 ft  
 About 3.6°F per 1000 ft

Source: International Civil Aviation Organization

- Note that the following conditions will prevent you from obtaining accurate readings:

*When air pressure changes because of changes in the weather*  
*Extreme temperature changes*  
*When the watch itself is subjected to strong impact*

There are two standard methods of expressing altitude: Absolute altitude and relative altitude. Absolute altitude expresses an absolute height above sea level. Relative altitude expresses the difference between the height of two different places.



**Precautions Concerning Simultaneous Measurement of Altitude and Temperature**

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

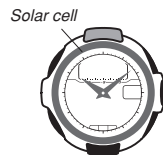
The following describes what you should do to give priority to either altitude or temperature.

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

**Question: How does the barometer work?**

Answer: Barometric pressure indicates changes in the atmosphere, and by monitoring these changes you can predict the weather with reasonable accuracy. Rising atmospheric pressure indicates good weather, while falling pressure indicates deteriorating weather conditions. The barometric pressures that you see in the newspaper and on the TV weather report are measurements corrected to values measured at 0 m sea level.

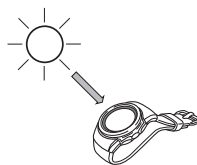
## Battery



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

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

- Note that charging efficiency drops when any part of the solar cell is blocked by clothing, etc.
- The illustration shows how to position a watch with a resin band.



**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 normally exposed to bright light whenever possible.
- This watch employs a solar cell that converts light into electricity, which charges a built-in rechargeable battery. Normally, the rechargeable battery should not need replacement, but after very long use over a number of years, the rechargeable battery may lose its ability to achieve a full charge. If you experience problems getting the rechargeable battery to a full charge, contact your dealer or CASIO distributor about having the rechargeable battery replaced.
- The rechargeable battery should be replaced with a CASIO-specified CTL1616 battery only. Other rechargeable batteries can cause damage to 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 4 and when you have the battery replaced.
- Turn on the watch's Power Saving function and keep it in an area normally exposed to bright light when storing it for long periods. This helps to keep the rechargeable battery from going dead.

## Battery Power 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     |                         | All functions enabled.   |
| 2     |                         | All functions enabled.   |
| 3     | <br>(Charge Soon Alert) | Except for timekeeping and battery power indicator, all functions and display indicators are disabled. |
| 4     |                         | All functions disabled.  |

- The flashing **CHARGE** 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 4, all functions are disabled and settings return to their initial factory defaults. Functions are enabled once again after the rechargeable battery is charged, but you need to set the time and date, after the battery reaches Level 2 (indicated by the **M** indicator) from Level 4. You will not be able to set any of the other settings until the battery reaches Level 1 (indicated by the **H** indicator) after dropping to Level 4.
- Display indicators reappear as soon as the battery is charged from Level 4 to Level 3.
- Leaving the watch in direct sunlight or some other very strong light source can cause the battery power indicator to temporarily show a reading that is higher than the actual battery level. The correct battery power indicator should appear after a few minutes.
- Even if battery power is at Level 1 or Level 2, the Digital Compass Mode, Barometer/Thermometer Mode, or Altimeter Mode sensor may be disabled if there is not enough voltage available to power it sufficiently. This condition is indicated on the display as shown in the table below. Sensor operation should resume when battery voltage returns to normal levels.

| Mode                  | Display Indication for Low Voltage Upon Entering the Mode | Display Indication for Low Voltage During Measurement |
|-----------------------|---|---|
| Digital Compass       | ---   | Last measured angle value                             |
| Barometer/Thermometer | ----  | Last measured pressure value                          |
| Altimeter             | Blank   | Last measured altitude                                |

- If you use the backlight or the alarm a number of times during a short period, **RECOV** appears on the display and the backlight, alarm, hourly time signal, and sensor operations become disabled until battery power recovers. After some time, battery power will recover and **RECOV** will disappear, indicating that the above functions are enabled again.



- The last measured data may still remain on the display if you enter one of the sensor modes while **RECOV** is on the display.
- If **RECOV** appears frequently, it probably means that remaining battery power is low. Leave the watch in bright light to allow it to charge.

## 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

## Charging Guide

After a full charge, timekeeping remains enabled for up to about six months, while the watch is used under the conditions described below.

### Operating Conditions

- Watch is not exposed to light
- Display on 18 hours per day, sleep state 6 hours per day
- 1 backlight operation (2 seconds) per day
- 10 seconds of alarm operation per day
- 10 digital compass operations per week
- 10 hours of altimeter measurements, once per month

## Charge Times

Exposing the watch to light for the periods shown below each day restores the power used by the above operating conditions.

| 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                   |

- 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 4                   | Level 3   | Level 2  | Level 1 |
| Outdoor Sunlight (50,000 lux)                        | 1 hour                    | 15 hours  | 4 hours  |         |
| Sunlight Through a Window (10,000 lux)               | 4 hours                   | 76 hours  | 21 hours |         |
| Daylight Through a Window on a Cloudy Day (5000 lux) | 6 hours                   | 124 hours | 34 hours |         |
| Indoor Fluorescent Lighting (500 lux)                | 56 hours                  | -----     | -----    |         |

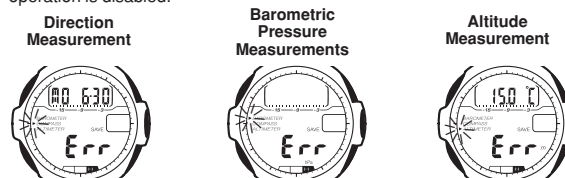
- The above exposure time values are all for reference only. Actual required exposure times depend on lighting conditions.

## 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.

## Sensor Malfunction Indicator

Should the pressure sensor or direction sensor malfunction, the message **Err** appears on the display for about two seconds, and then sensor operation is disabled.



- If **Err** appears while a measurement operation is being performed in a sensor mode, restart the measurement. If **Err** appears on the display again, it can mean there is something wrong with the sensor. Take the watch to your original dealer or nearest authorized CASIO distributor for inspection and maintenance.
- Even if battery power is at Level 1 or Level 2, the Digital Compass Mode, Barometer/Thermometer Mode, or Altimeter Mode sensor may be disabled if there is not enough voltage available to power it sufficiently. In this case, the **Err** message appears on the display when you switch to the Timekeeping Mode. This does not indicate malfunction, and sensor operation should resume once battery voltage returns to its normal level.
- Even if battery power is at Level 1 or Level 2, the **Err** message will appear on the Timekeeping Mode screen if there is not enough voltage available to power the pressure sensor sufficiently during a barometric pressure measurement. This does not indicate malfunction, and sensor operation should resume once battery voltage returns to its normal level.
- The message **Err** (error) may appear on the display momentarily if you enter the Timekeeping Mode from one of the sensor modes while measurement is in progress. Normally, the **Err** message appears for just an instant as the watch cancels the ongoing sensor operation, and it does not indicate malfunction of the watch or the sensor. However, if the **Err** message remains on the display, it can mean that your watch is malfunctioning.

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

## Auto Return Features

- The watch automatically returns to the Timekeeping Mode if you do not perform any button operation for two or three minutes in any mode except for the Stopwatch Mode and Altimeter Mode.
- If you do not perform any button operation while in the Altimeter Mode, the watch automatically returns to the Timekeeping Mode after nine or 10 hours.
- If you leave a screen with flashing digits on the display for two or three minutes without performing any operation, the watch automatically saves anything you have input up to that point and exits the setting screen.

## Direct Timekeeping Mode Access

Holding down **D** while in the Data Recall Mode, Alarm Mode, or Stopwatch Mode goes directly to the Timekeeping Mode.

- Note that the above does not work while a setting screen (one with flashing digits, etc.) is on the display.

## Scrolling

The **E** and **B** buttons 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 through the data at high speed.

## Power Saving Function

When turned on, the Power Saving function automatically puts the watch into a sleep state whenever it is left for a certain period in an area 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 <b>SLEEP</b> flashing     | Display is off, but all functions are enabled and analog hand operation is maintained. |
| 6 or 7 days          | Blank, with <b>SLEEP</b> not flashing | All functions are disabled, but timekeeping (digital and analog) is maintained.        |

- Wearing the watch inside the sleeve of clothing can cause it to enter the sleep state.
- The watch will not enter the sleep state while the digital time is between 6:00 AM and 9:59 PM. If the watch is already in the sleep state when the digital time reaches 6:00 AM, however, it will remain in the sleep state.
- The watch will not enter the sleep state while it is in the Digital Compass Mode, Barometer/Thermometer Mode, Altimeter Mode, or Stopwatch Mode. When the watch is left in any mode besides the Stopwatch Mode, the watch will return to the Timekeeping Mode automatically after a specific amount of time. Then if left in the dark for the elapsed time indicated in the table above, the watch will enter the sleep state.

### To recover from the sleep state

Perform any one of the following operations.

- Move the watch to a well-lit area. It can take up to two seconds for the display to turn on.
- Press any button.
- Angle the watch towards your face for reading.

### To turn Power Saving on and off



1. In the Timekeeping Mode, hold down **A** until the seconds start to flash, which indicates the setting screen.
2. Press **D** eight times until the Power Saving on/off screen appears.
3. Press **E** to toggle Power Saving on (**ON**) and off (**OFF**).
4. Press **A** to exit the setting screen.
  - The Power Saving on indicator (**SAVE**) is on the display in all modes while the Power Saving is turned on.

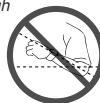
## Backlight Precautions

- The electro-luminescent panel that provides illumination loses power after very long use.
- The illumination provided by the backlight may be hard to see when viewed under direct sunlight.
- The backlight automatically turns off whenever an alarm sounds.
- 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.
- Frequent use of the backlight runs down the battery.

## Auto light switch precautions

- Wearing the watch on the inside of your wrist, movement of your arm, or vibration of your arm can cause frequent activation of the auto light switch and illumination of the display. To avoid running down the battery, turn off the auto light switch whenever engaging in activities that might cause frequent illumination of the display.
- Note that wearing the watch under your sleeve while the auto light switch is turned on can cause frequent illumination of the display and can run down the battery.

More than 15 degrees too high



- The backlight may not light 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.
- The backlight turns off in about two 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 the backlight does not light, 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, the backlight may not light until about one second after you turn the face of the watch towards you. This does not necessarily indicate malfunction of the backlight.
- 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.

## Digital Compass Precautions

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

### Location

- Taking a direction reading when you are near a source of strong magnetism can cause large errors in readings. Because of this, you should avoid taking direction readings while in the vicinity of the following types of objects: permanent magnets (magnetic necklaces, etc.), concentrations of metal (metal doors, lockers, etc.), high tension wires, aerial wires, household appliances (TVs, personal computers, washing machines, freezers, etc.)
- Accurate direction readings are impossible while in a train, boat, air plane, etc.
- Accurate readings are also impossible indoors, especially inside ferro-concrete structures. This is because the metal framework of such structures picks up magnetism from appliances, etc.
- Movement of the analog hands during digital compass operation in an area where terrestrial magnetism is weak can cause the pointer position and angle value to be slightly off.

### Storage

- The precision of the bearing sensor may deteriorate if the watch becomes magnetized. Because of this, you should be sure to store the watch away from magnets or any other sources of strong magnetism, including: permanent magnets (magnetic necklaces, etc.) and household appliances (TVs, personal computers, washing machines, freezers, etc.)
- Whenever you suspect that the watch may have become magnetized, perform one of the calibration procedures under "Calibrating the Bearing Sensor".

## Calibrating the Bearing Sensor

Whenever you suspect that direction readings produced by the watch are wrong, you should calibrate it. You can use either one of two calibration procedures: *bidirectional calibration* or *northerly calibration*.

Use bidirectional calibration when you want to take readings within an area exposed to magnetic force. This type of calibration should be used if the watch becomes magnetized for any reason.

With northerly calibration, you "teach" the watch which way is north (which you have to determine with another compass or some other means). You could use this calibration procedure, for example, to set the watch to indicate true north instead of magnetic north.

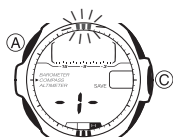
### Important!

- If you want to perform both bidirectional and northerly calibration, be sure to perform bidirectional calibration first, and then perform northerly calibration. This is necessary because bidirectional calibration cancels any previously set northerly calibration setting.
- The more correctly you perform bidirectional calibration, the better the accuracy of the bearing sensor readings. You should perform bidirectional calibration whenever you change environments where you use the bearing sensor, and whenever you feel that the bearing sensor is producing incorrect readings.

### Precautions about bidirectional calibration

- You can use any two opposing directions for bidirectional calibration. You must, however, make sure that they are 180 degrees opposite each other. Remember that if you perform the procedure incorrectly, you will get wrong bearing sensor readings.
- Make sure that you do not move the watch while calibration of either direction is in progress.
- You should perform bidirectional calibration in an environment that is the same as that where you plan to be taking direction readings. If you plan to take direction readings in an open field, for example, calibrate in an open field.

## To perform bidirectional calibration



- Press **(C)** to enter the Digital Compass Mode.
- Hold down **(A)** for about one second until **-|-** appears on the display, which indicates the setting screen.
  - At this time, the magnetic north pointer flashes at the 12 o'clock position to indicate that the watch is ready to calibrate the first direction.
- Place the watch on a level surface facing any direction you want, and press **(C)** to calibrate the first direction.
  - |-** is shown on the display while calibration is being performed. This changes to **-2-** and the magnetic north pointer flashes at the 6 o'clock position when calibration of the first direction is complete. This means that the watch is ready for calibration of the second direction.
- Rotate the watch 180 degrees.
- Press **(C)** again to calibrate the second direction.
  - |-** is shown on the display while calibration is being performed. The Digital Compass Mode screen (showing the angle value) appears when calibration is complete.
  - Note that the calibration operation will not start if you press **(C)** if the seconds count of the Timekeeping Mode time is in the vicinity of 00, 20, or 40. If **-|-** does not appear when you press **(C)**, wait a few seconds and then try again.
  - If **-|-** appears and then changes to **Err** (error) on the calibration screen, it means that there is something wrong with the sensor. Press **(A)** to return to the Digital Compass Mode screen and then try starting the calibration operation again. If **Err** keeps appearing, contact your original dealer or nearest authorized CASIO distributor to have the watch checked.

## To perform northerly calibration



- While in the Digital Compass Mode, hold down **(A)** for about one second until **-|-** appears on the display, which indicates the setting screen.
- Press **(D)** to start the northerly calibration procedure.
  - At this time, **-N-** (north) appears on the display.
- Place the watch on a level surface, and position it so that its 12 o'clock position points north (as measured with another compass).
- Press **(C)** to start the calibration operation.
  - |-** is shown on the display while calibration is being performed. The Digital Compass Mode screen appears (with 0° indicated as the angle value) when calibration is complete.
  - Note that the calibration operation will not start if you press **(C)** if the seconds count of the Timekeeping Mode time is in the vicinity of 00, 20, or 40. If **-|-** does not appear when you press **(C)**, wait a few seconds and then try again.
  - If **-|-** appears and then changes to **Err** (error) on the calibration screen, it means that there is something wrong with the sensor. Press **(A)** to return to the Digital Compass Mode screen and then try starting the calibration operation again. If **Err** keeps appearing, contact your original dealer or nearest authorized CASIO distributor to have the watch checked.

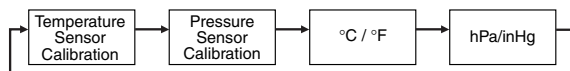
## Changing the Barometric Pressure and Temperature Units

Changing the barometric pressure units automatically restarts the barometric pressure history graph.

### To change the barometric pressure and temperature units



- Press **(B)** to enter the Barometer/Thermometer Mode.
- Hold down **(A)** until **OFF** or **---** starts to flash in the upper part of the display. This is the setting screen.
  - If the temperature sensor was previously calibrated, **---** will be replaced by a temperature value in a few seconds.
  - After about four or five seconds, the lower part of the display will show **OFF** or a barometric pressure value (if set).
- Press **(D)** to move the flashing in the sequence shown below.



- Press **(D)** to move the flashing to the unit setting you want to change (**°C/°F** or **hPa/inHg**).
- Use **(E)** to select the unit you want.
- Press **(A)** to return to the Barometer/Thermometer Mode screen.

## Calibrating the Temperature Sensor

The temperature sensor of this watch is calibrated at the factory before shipment, and further adjustment is normally not required. If you notice serious errors in the temperature readings produced by the watch, you can calibrate the sensor to correct the errors.

### Important!

Incorrectly calibrating the temperature sensor can result in incorrect readings. Carefully read the following before doing anything.

- Compare the readings produced by the watch with those of another reliable and accurate thermometer.
- If adjustment is required, remove the watch from your wrist and wait for 20 or 30 minutes to give the temperature of the watch time to stabilize.

### To calibrate the temperature sensor



- Press **(B)** to enter the Barometer/Thermometer Mode.
- Hold down **(A)** until **OFF** or **---** starts to flash in the upper part of the display. This is the setting screen.
  - If the temperature sensor was previously calibrated, **---** will be replaced by a temperature value in a few seconds.
  - After about four or five seconds, the lower part of the display will show **OFF** or a barometric pressure value (if set).
- Press **(E)** (+) or **(B)** (-) to change the displayed temperature by 0.1°C (or 0.2°F).
- Pressing **(B)** and **(E)** at the same time returns to the factory calibration (**OFF**).
- Press **(A)** to return to the Barometer/Thermometer Mode screen.

## Calibrating the Barometric Pressure Sensor

The pressure sensor of this watch is calibrated at the factory before shipment and further adjustment is normally not required. If you notice serious errors in the barometric pressure readings produced by the watch, you can calibrate the sensor to correct the errors.

### Important!

Incorrectly calibrating the barometric pressure sensor can result in incorrect readings. Before performing the calibration procedure, compare the readings produced by the watch with those of another reliable and accurate barometer.

### To calibrate the pressure sensor



- Press **(B)** to enter the Barometer/Thermometer Mode.
- Hold down **(A)** until **OFF** or **---** starts to flash in the upper part of the display. This is the setting screen.
  - If the temperature sensor was previously calibrated, **---** will be replaced by a temperature value in a few seconds.
  - After about four or five seconds, the lower part of the display will show **OFF** or a barometric pressure value (if set).
- Press **(D)** to move the flashing to the pressure sensor calibration setting.
  - At this time, **OFF** or the barometric pressure value should be flashing on the display.
  - If **OFF** or the pressure value does not appear at this time, press **(A)** to return to the Barometer/Thermometer Mode screen, and perform step 2 again.
- Press **(E)** (+) or **(B)** (-) to change the displayed barometric pressure by 1 hPa (0.05 inHg).
  - Pressing **(B)** and **(E)** at the same time returns to the factory calibration (**OFF**).
- Press **(A)** to return to the Barometer/Thermometer Mode screen.

### To change the altitude unit



- Press **(E)** to enter the Altimeter Mode.
- Hold down **(A)** for about two seconds until the watch beeps and the display goes blank. About four or five seconds after that, **OFF** or the current reference altitude value (if set) will flash on the display.
  - If **OFF** or the current reference altitude value does not appear at this time, press **(A)** to return to the Altimeter Mode screen, and perform step 2 again.
- Press **(D)** to move the flashing to the altitude unit setting.
  - Use **(E)** to select the unit you want (**m** or **ft**).
- Press **(A)** to return to the Altimeter Mode screen.
  - Performing the above procedure causes altitude values stored in memory also to be converted to the unit you select.