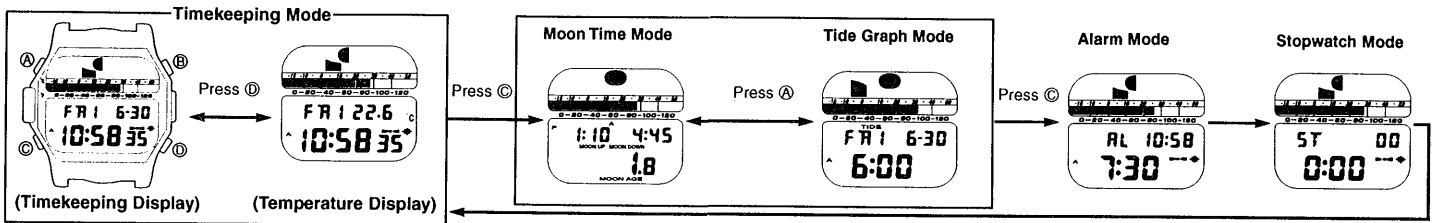


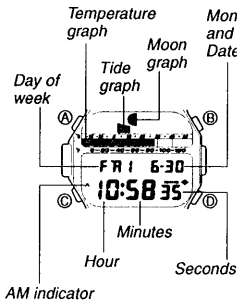
OPERATION CHART: MODULE QW-1461

GENERAL GUIDE

- Press **Ⓞ** to change from mode to mode.
- After you perform an operation in any mode, pressing **Ⓞ** returns to the Timekeeping Mode.



TIMEKEEPING FUNCTIONS

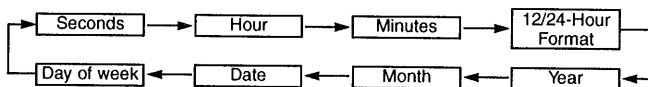


There are two different displays in the Timekeeping Mode: a Timekeeping Display and a Temperature Display. Use **Ⓞ** to switch between them.

- Both the Timekeeping Display and the Temperature Display show the temperature bar graph.
- Holding down **Ⓜ** while the Timekeeping Display is shown enters the time and date setting mode. Holding down **Ⓜ** while the Temperature Display is shown enters the temperature calibration mode.
- When in the Timekeeping Mode, press **Ⓞ** to illuminate the display.

To set the time and date

1. Press **Ⓞ** to display the timekeeping display (with the month and date).
2. Hold down **Ⓜ** and the seconds digits flash on the display because they are selected.
3. Press **Ⓞ** to change the selection in the following sequence.



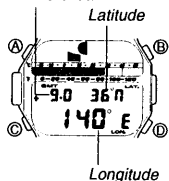
4. While the seconds digits are selected (flashing), press **Ⓞ** to reset the seconds to "00". If you press **Ⓞ** while the seconds count is in the range of 30 to 59, it is reset to "00" and 1 is added to the minutes. If the seconds count is in the range of 00 to 29, the minutes count is unchanged.
 5. While any other digits (besides seconds), are selected (flashing), press **Ⓞ** to increase the number. While the day of the week is selected, pressing **Ⓞ** advances to the next day. Holding down **Ⓞ** changes the current selection at high speed. While the 12/24-hour setting is selected, press **Ⓞ** to switch between the two formats.
 6. After you set the time and date, press **Ⓜ** twice to return to the timekeeping display.
- The date can be set within the range of January 1, 1995 to December 31, 2039.
 - If you do not operate any button for a few minutes while a selection is flashing, the flashing stops and the watch goes back to the timekeeping display automatically.

Important

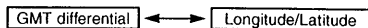
- After you change a setting in the above procedure, the watch needs a bit of time to calculate certain information. During this calculation, the patterns in the graphic display move at high speed. Wait until the patterns stop moving before you try to input any further data.
- If you set the current time forward one hour for daylight saving time (summer time), be sure to also increase the setting for your difference from Greenwich Mean Time (see "To set location data" below). Of course, you should remember to adjust the other way (by decreasing the difference) when you go back to standard time.

To set the location data

GMT differential



1. Use **Ⓞ** to enter the Timekeeping Mode.
2. Press **Ⓞ** to display the Timekeeping Display.
3. Holding down **Ⓜ** and the seconds digits flash on the display.
4. Press **Ⓜ** again to display the location data. The GMT differential data is flashing because it is selected.
5. Press **Ⓞ** to change the selection in the following sequence.

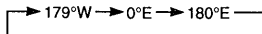


6. While the GMT differential is selected (flashing), press **Ⓞ** to increase the value. Holding down **Ⓞ** changes the current selection at high speed.

7. While Longitude/Latitude is selected (flashing), press **Ⓞ** to change the value of longitude or **Ⓜ** to change the value of latitude. Holding down either button changes the corresponding setting at high speed.

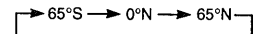
< Longitude >

Press **Ⓞ**



< Latitude >

Press **Ⓜ**



8. After you set the location data, press **Ⓜ** to return to the Timekeeping Display.

Important

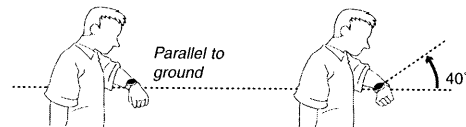
After you change a setting in the above procedure, the watch needs a bit of time to calculate certain information. During this calculation, the patterns in the graphic display move at high speed. Wait until these display stop moving before you try to input any further data.

ABOUT THE BACKLIGHT

About the Auto Backlight Function

When the auto backlight function is turned on, the backlight automatically turns on for two seconds under the conditions described below. Avoid wearing the watch on the inside of your wrist. Doing so causes the auto backlight to operate when not needed, which shortens battery life.

Moving the watch to a position that is parallel to the ground and then tilting it towards you approximately 40 degrees causes the backlight to illuminate.

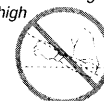


- The backlight may not illuminate if the face of the watch is more than 15 degrees off parallel to the left or right. Make sure that the back of your hand is parallel to the ground.

Parallel to ground



More than 15 degrees too high



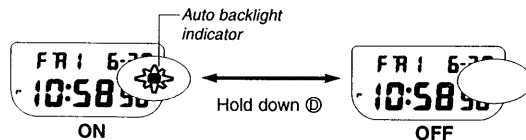
More than 15 degrees too low



- Static electricity or magnetic force can interfere with proper operation of the auto backlight function. If the auto backlight does not illuminate, 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 or less after turn the face of the watch towards you. This does not necessarily indicate malfunction of the backlight.

To switch the auto backlight function on and off

In the Timekeeping Mode, hold down **Ⓞ** for one or two seconds to turn the auto backlight function on and off.



- The auto backlight indicator is shown on the display in all modes while the auto backlight function is on.
- In order to protect against running down the battery, the auto backlight function is automatically turned off approximately three hours after you turn it on. Repeat the above procedure to turn the auto backlight function back on if you want.
- Pressing **Ⓞ** at any time illuminates the display for about two seconds, regardless of the auto backlight's on/off setting.

Caution

- The backlight of this watch employs an electro-luminescent (EL) light, which loses its illuminating power after very long term use.
- Frequent use of the backlight shortens the battery life.
- The watch emits an audible sound whenever the display is illuminated. This is because the EL light vibrates slightly when lit. It does not indicate malfunction of the watch.

Warning!

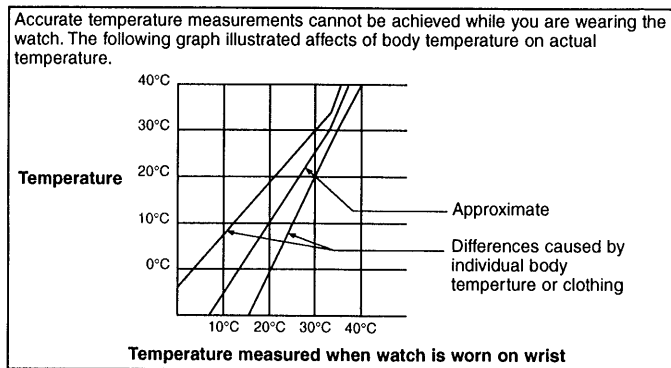
- Never try to read your watch when mountain climbing or hiking in areas that are dark or in areas with poor footing. Doing so is dangerous and can result in serious personal injury.
- Never try to read your watch when running on a roadside or in any other location where there might be vehicular or pedestrian traffic. Doing so is dangerous and can result in serious personal injury.
- Never try to read your watch when riding on a bicycle or when operating a motorcycle or any other motor vehicle. Doing so is dangerous and can result in a traffic accident and serious personal injury.
- When you are wearing the watch, make sure that its auto backlight function is turned off before riding on a bicycle or operating a motorcycle or any other motor vehicle. Sudden and unintended operation of the auto backlight can create a distraction, which can result in a traffic accident and serious personal injury.

THERMOMETER FUNCTIONS

A built-in temperature sensor measures temperature and shows the measured value on the display. The readout from the temperature sensor can also be switched between Celsius (°C) and Fahrenheit (°F). The thermometer can be calibrated to correct for errors.

Important

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.



About Temperature Measurement

Temperature measurements are taken automatically every two minutes, regardless of what mode the watch is in. You can see the measured values in the Timekeeping Mode's Temperature Display.

Understanding the temperature display

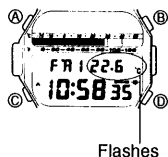
Current temperature *



- Use **C** to enter the Timekeeping Mode.
 - Press **D** to display the Temperature Display.
- Whenever you switch to the Temperature Display, the current temperature is measured and displayed.

* The display shows " - . - °C (or °F)" if a measured value falls outside the range of -20°C to 60°C (-4°F to 140°F). The normal display will return as soon as the temperature returns within the allowable range.

Switching between Celsius and Fahrenheit



- While in the Timekeeping Mode, press **D** to display the Temperature Display.
- Holding down **A** and the current temperature digits flash.
- Press **C** to select either Celsius "°C" or Fahrenheit "°F".
- After you select the Celsius or Fahrenheit, press **A** to return to the Temperature Display.

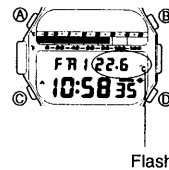
Calibrating the Temperature Measurement

The temperature sensor of this watch is calibrated at the factory before shipment and further adjustment is normally not required. If noticeable error is found in the temperature readings produced by the watch, you can adjust it to correct the error.

Important

- Incorrectly calibrating the temperature measurement of this watch can result in incorrect readings. Carefully read the following before doing anything.
- Compare the readings produced by the watch with those of another reliable, accurate thermometer.
 - If calibration 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.
 - Perform the temperature calibration before procedure as quickly as possible to avoid the temperature of the watch being affected by your body temperature.
 - You can also preform temperature calibration underwater, if the water temperature is stable.

To calibrate the temperature

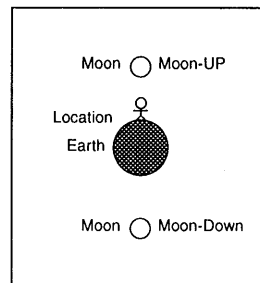
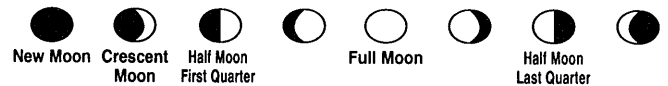


- Use **C** to enter the Timekeeping Mode and press **D** to display the Temperature Display.
- Holding down **A** and the current temperature digits flash.
- Each press of **D** increase the displayed temperature by 0.1°C, and pressing the **C** decrease it by 0.1°C.
- If you have selected Fahrenheit as your unit of measurement, the above operations change the reading by 0.2°F.
- You can calibrate the temperature within a range of -9.9°C to +9.9°C (-18.0°F to +18.0°F).
- Press **C** and **D** at the same time to rest the temperature calibration to the factory setting.
- After calibrating the temperature, press **A** to return to the Temperature Display.

MOON TIME MODE

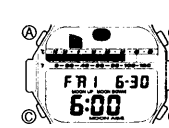
Be sure to set the current time and your current location before trying to use the Moon Time Mode.

The Moon Time Mode display shows the current moon age, as well as moon up and moon down times. Moon age is indicated both by a value and one of the following graphics.



- The moon up time indicates when the moon will reach its highest point relative to your current location (upper transit), while the moon down time indicates when it will reach its lowest point (lower transit). Note that moon up and moon down times are accurate up to ±5 minutes.

You can use the key operation below to look up the moon age and the moon up and moon down times for any date from January 1, 1995 to December 31, 2039.



Back
Moon time date search
Forward

To display the moon up and moon down time for a specific date



Moon Time Mode Data

- Use **C** to enter the Moon Time Mode.
- When you enter the Moon Time Mode from another mode, the display shows the moon up and moon down times for the current date (as kept in the Timekeeping Mode).
- Press **D** to advance the date or **C** to move back. Holding down either button changes the date at high speed.
- When the date you want is displayed, you will have to wait for about 2 seconds as the watch performs its internal calculation before displaying the moon up and moon down time for that date.

TIDE GRAPH MODE

Before using the Tide Graph Mode, be sure to first carefully set the current time, your current location, and the lunital interval.

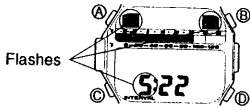
About the lunital interval

The lunital interval is the period from the moon's upper transit (moon up) to high tide. If you know the lunital interval, tide changes can be determined using the moon age. This watch calculates tide changes according to the current time and the location setting, and displays them graphically.

To calculate the lunital interval

- Look up the high tide time for the flood tide of the location whose tide changes you want to know.
- Use this watch to look up the moon up time that occurs immediately before this time.
- Subtracting the moon up time from the full moon time produces the lunital interval.

To set the lunital interval

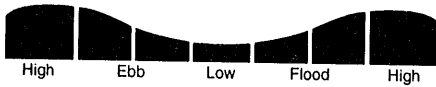


- In the Moon Time Mode, hold down (A) until both sides of the Tide Graph and hour digits start to flash, as shown below.
- You can also start this procedure by holding down (A) while in the Tide Graph Mode.
- Use (C) to select the digit whose setting you want to change. Each press of (C) moves the flashing to the next digit.
- Use (D) to increase the flashing digit or (B) to decrease it. Holding down either button changes the setting at high speed.
- After you are finished making the lunital setting you want, press (A) to enter the Tide Graph Mode.

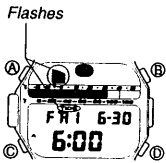
About the Tide Graph Mode

The Tide Graph Mode shows the changing of the tides in graphic form. The graph uses time (advancing from left to right) as the horizontal axis, and tide change as the vertical axis.

- You can enter the Tide Graph Mode by pressing (A) while in the Moon Time Mode. Though you can change the time setting while in the Tide Graph Mode, you cannot change the month or day setting. To display the tide graph for another date, return to the Moon Graph Mode, change the date setting, and then enter the Tide Graph Mode again. Also note that you cannot directly change the month setting in the Moon Time Mode. The month setting changes automatically as you increase or decrease the day setting.
- The Tidal Graph is also on the display in the Timekeeping Mode, where it indicates the tide for the current time.



To display the tide graph for a specific time



- Use (C) to enter the Moon Time Mode.
- When you enter the Moon Time Mode from another mode, the display shows the moon up and moon down times for the current date (as kept in the Timekeeping Mode).
- Press (A) to enter the Tide Graph Mode.
- Whenever you enter the Tide Graph Mode, the graph shows the tide movements for 6:00 am of the current date.
- Press (D) to increase the hour or (B) to decrease it. Holding down either button changes the hour at high speed.

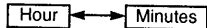
ALARM FUNCTIONS

When the Daily Alarm is switched on, the alarm sounds for 20 seconds at the preset time each day. Press any button to stop the alarm after it starts to sound.

When the Hourly Time Signal is switched on, the watch beeps every hour on the hour.

To set the alarm time

- Use (C) to enter the Alarm Mode.
- Holding down (A) and the hour digits flash on the display because they are selected. At this time the Daily Alarm is switched on automatically.
- Press (C) to change the selection in the following sequence.

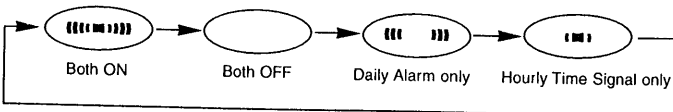


- Press (D) to increase the selected digits. Holding down (D) changes the selection at high speed.
- The format (12-hour and 24-hour) of the alarm time matches the format you select for normal timekeeping.
- When setting the alarm time you using the 12-hour format, take care of set the time correctly as morning (A) or afternoon (P).
- After you set the alarm time, press (A) to return to the Alarm Mode.

To switch the daily alarm and hourly time signal on and off

Press (B) while in the Alarm Mode to change the status of the daily alarm and hourly time signal in the following sequence.

Alarm on indicator / hourly time signal on indicator

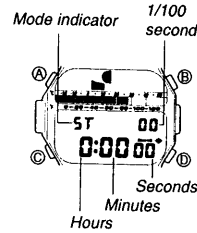


To test the alarm

Hold down (D) while in the Alarm Mode to sound the alarm.

STOPWATCH FUNCTIONS

The Stopwatch Functions let you record elapsed time, split times, and two finishes. The range of the stopwatch is 23 hours, 59 minutes, 59.99 seconds. Stopwatch functions are available in the Stopwatch Mode, which you can enter using (C).



- Elapsed time measurement**
Start → Stop → Re-start → Stop → Clear
- Split time measurement**
Start → Split → Split release → Stop → Clear
- Split time and 1st-2nd place times**
Start → Split → Stop → Split release → Clear
First runner finishes. Second runner Record time of second runner. Record time of first runner.

TIME ZONE CHART

North America

| NO. | CITY | THE DIFFERENCE FROM GMT FOR STANDARD TIME | LONGITUDE | LATITUDE |
|-----|---------------|---|-----------|----------|
| 1. | PAGO PAGO | -11 | 171°W | 14°N |
| 2. | HONOLULU | -10 | 158°W | 21°N |
| 3. | ANCHORAGE | -9 | 150°W | 61°N |
| 4. | NOME | -9 | 165°W | 65°N |
| 5. | LOS ANGELES | -8 | 118°W | 34°N |
| 6. | SAN FRANCISCO | -8 | 122°W | 38°N |
| 7. | LAS VEGAS | -8 | 115°W | 36°N |
| 8. | VANCOUVER | -8 | 123°W | 49°N |
| 9. | SEATTLE | -8 | 122°W | 48°N |
| 10. | DENVER | -7 | 105°W | 40°N |
| 11. | EL PASO | -7 | 106°W | 32°N |
| 12. | EDMONTON | -7 | 114°W | 54°N |
| 13. | CHICAGO | -6 | 88°W | 42°N |
| 14. | HOUSTON | -6 | 95°W | 30°N |
| 15. | DALLAS | -6 | 97°W | 33°N |
| 16. | NEW ORLEANS | -6 | 90°W | 30°N |
| 17. | WINNIPEG | -6 | 97°W | 50°N |
| 18. | MEXICO CITY | -6 | 99°W | 19°N |
| 19. | NEW YORK | -5 | 74°W | 41°N |
| 20. | MONTREAL | -5 | 74°W | 45°N |
| 21. | DETROIT | -5 | 83°W | 42°N |
| 22. | MIAMI | -5 | 80°W | 26°N |
| 23. | BOSTON | -5 | 71°W | 42°N |

Add 1 hour to the difference time if DST (Daylight Saving Time) is used. (EX. if difference of standard time is +2, that of DST is +3.)

Central and South America

| NO. | CITY | THE DIFFERENCE FROM GMT FOR STANDARD TIME | LONGITUDE | LATITUDE |
|-----|----------------|---|-----------|----------|
| 1. | PANAMA CITY | -5 | 80°W | 9°N |
| 2. | LIMA | -5 | 77°W | 12°S |
| 3. | BOGOTA | -5 | 74°W | 5°N |
| 4. | CARACAS | -4 | 67°W | 10°N |
| 5. | LA PAZ | -4 | 68°W | 17°S |
| 6. | SANTIAGO | -4 | 71°W | 33°S |
| 7. | PORT OF SPAIN | -4 | 61°W | 11°N |
| 8. | RIO DE JANEIRO | -3 | 43°W | 23°S |
| 9. | SAO PAULO | -3 | 47°W | 24°S |
| 10. | BRASILIA | -3 | 48°W | 16°S |
| 11. | BUENOS AIRES | -3 | 58°W | 35°S |
| 12. | MONTEVIDEO | -3 | 56°W | 35°S |

Add 1 hour to the difference time if DST (Daylight Saving Time) is used. (EX. if difference of standard time is +2, that of DST is +3.)

Europe

| NO. | CITY | THE DIFFERENCE FROM GMT FOR STANDARD TIME | LONGITUDE | LATITUDE |
|-----|------------|---|-----------|----------|
| 1. | AZORES | -1 | 25°W | 38°N |
| 2. | LONDON | +0 | 0°E | 51°N |
| 3. | DUBLIN | +0 | 6°W | 53°N |
| 4. | CASABLANCA | +0 | 8°W | 34°N |
| 5. | LISBON | +1 | 9°W | 39°N |
| 6. | PARIS | +1 | 2°E | 49°N |
| 7. | MILAN | +1 | 9°E | 45°N |
| 8. | ROME | +1 | 12°E | 42°N |
| 9. | MADRID | +1 | 4°W | 40°N |
| 10. | AMSTERDAM | +1 | 5°E | 52°N |
| 11. | HAMBURG | +1 | 10°E | 54°N |
| 12. | FRANKFURT | +1 | 9°E | 50°N |
| 13. | VIENNA | +1 | 16°E | 48°N |
| 14. | STOCKHOLM | +1 | 18°E | 59°N |
| 15. | ATHENS | +2 | 24°E | 38°N |
| 16. | HELSINKI | +2 | 25°E | 60°N |
| 17. | ISTANBUL | +2 | 29°E | 41°N |

Add 1 hour to the difference time if DST (Daylight Saving Time) is used. (EX. if difference of standard time is +2, that of DST is +3.)

Africa and Middle East

| NO. | CITY | THE DIFFERENCE FROM GMT FOR STANDARD TIME | LONGITUDE | LATITUDE |
|-----|-------------|---|-----------|----------|
| 1. | BEIRUT | +2 | 35°E | 34°N |
| 2. | DAMASCUS | +2 | 36°E | 33°N |
| 3. | CAPE TOWN | +2 | 18°E | 34°S |
| 4. | KUWAIT | +3 | 48°E | 29°N |
| 5. | RIYADH | +3 | 47°E | 25°N |
| 6. | JEDDAH | +3 | 39°E | 21°N |
| 7. | ADEN | +3 | 45°E | 13°N |
| 8. | ADDIS ABABA | +3 | 39°E | 9°N |
| 9. | NAIROBI | +3 | 37°E | 1°S |
| 10. | DUBAI | +4 | 55°E | 25°N |
| 11. | ABU DHABI | +4 | 54°E | 24°N |
| 12. | MUSCAT | +4 | 58°E | 23°N |
| 13. | KARACHI | +5 | 67°E | 25°N |
| 14. | PRAIA | -1 | 23°W | 15°N |

| NO. | CITY | THE DIFFERENCE FROM GMT FOR STANDARD TIME | LONGITUDE | LATITUDE |
|-----|---------|---|-----------|----------|
| 15. | DAKAR | +0 | 17°W | 15°N |
| 16. | ABIDJAN | +0 | 4°W | 5°N |

| | | | | |
|---|--|--|--|--|
| Add 1 hour to the difference time if DST (Daylight Saving Time) is used. (EX. if difference of standard time is +2, that of DST is +3.) | | | | |
|---|--|--|--|--|

Asia and South Pacific

| NO. | CITY | THE DIFFERENCE FROM GMT FOR STANDARD TIME | LONGITUDE | LATITUDE |
|-----|--------------|---|-----------|----------|
| 1. | DHAKA | +6 | 90°E | 24°N |
| 2. | BANGKOK | +7 | 100°E | 14°N |
| 3. | JAKARTA | +7 | 107°E | 6°S |
| 4. | PHNOM-PENH | +7 | 105°E | 12°N |
| 5. | HANOI | +7 | 106°E | 21°N |
| 6. | VIENTIANE | +7 | 103°E | 18°N |
| 7. | HONG KONG | +8 | 114°E | 22°N |
| 8. | SINGAPORE | +8 | 104°E | 1°N |
| 9. | KUALA LUMPUR | +8 | 102°E | 3°N |
| 10. | BEIJING | +8 | 116°E | 40°N |
| 11. | TAIPEI | +8 | 122°E | 25°N |
| 12. | MANILA | +8 | 121°E | 15°N |
| 13. | PERTH | +8 | 116°E | 32°N |
| 14. | ULAN BATOR | +8 | 107°E | 48°N |
| 15. | TOKYO | +9 | 140°E | 36°N |

| NO. | CITY | THE DIFFERENCE FROM GMT FOR STANDARD TIME | LONGITUDE | LATITUDE |
|-----|--------------|---|-----------|----------|
| 16. | SEOUL | +9 | 127°E | 38°N |
| 17. | PYONGYANG | +9 | 126°E | 39°N |
| 18. | SYDNEY | +10 | 151°E | 34°S |
| 19. | MELBOURNE | +10 | 145°E | 38°S |
| 20. | GUAM | +10 | 145°E | 13°N |
| 21. | NOUMEA | +11 | 166°E | 22°S |
| 22. | PORT VILA | +11 | 168°E | 18°S |
| 23. | WELLINGTON | +12 | 175°E | 41°S |
| 24. | CHRISTCHURCH | +12 | 173°E | 43°S |
| 25. | SUVA | +12 | 178°E | 18°S |
| 26. | NAURU ISLAND | +12 | 166°E | 1°S |
| 27. | PAPEETE | -10 | 150°W | 18°S |

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|---|--|--|--|--|
| Add 1 hour to the difference time if DST (Daylight Saving Time) is used. (EX. if difference of standard time is +2, that of DST is +3.) | | | | |
|---|--|--|--|--|