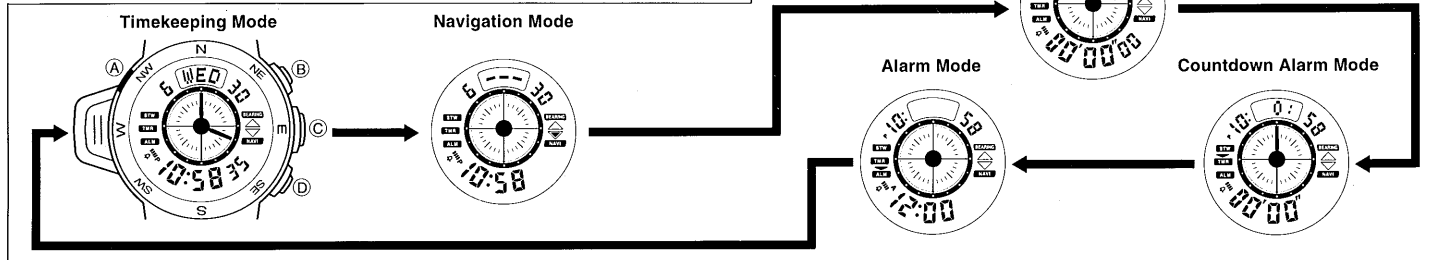
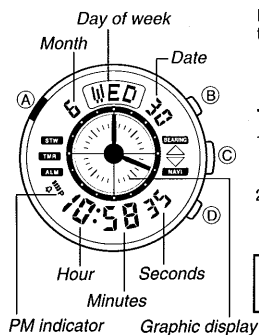


OPERATION CHART: MODULE QW-1031 GENERAL GUIDE

- Press **(C)** to change from mode to mode. Each mode is explained in detail on the following pages.
- After you perform an operation in any mode, pressing **(C)** returns to the Timekeeping Mode.



TIMEKEEPING MODE

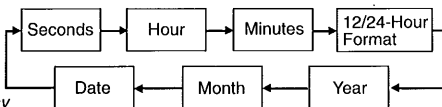


Besides normal timekeeping function, you can also use the Digital Compass in the Timekeeping Mode.

- In the Timekeeping Mode, hold down **(B)** to illuminate the display.

To set the time and date

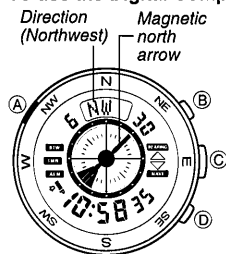
- Press **(A)** while in the Timekeeping Mode. The seconds digits flash on the display because they are selected.
- Press **(C)** to change the selection in the following sequence.



- While the seconds digits are selected (flashing), press **(D)** to reset the seconds to "00". If you press **(D)** while the seconds count is in the range of 30 to 59, the seconds are 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.
- While any other digits (besides seconds) are selected (flashing), press **(D)** to increase the number or **(B)** to decrease it. Holding down either button changes the current selection at high speed. While the 12/24-hour setting is selected, press **(D)** to switch between the two formats.
- After you set the time, format, and date, press **(A)** to return to the Timekeeping Mode.

- The day of the week is automatically set in accordance with the date.
- The date can be set within the range of January 1, 1990 to December 31, 2029.
- 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 Mode automatically.

To use the Digital Compass



- Point the 12 o'clock position of the watch in the direction you want to measure.

Important!

Be sure to place the watch on a flat surface when using the Digital Compass.

- After making sure that the watch is in the Timekeeping Mode, press **(D)** to start the Digital Compass operation.
 - After about one second, the direction that the 12 o'clock is pointing appears in place of the day of the week.
 - Also, the magnetic north arrow points north.
 - You can repeat steps 1 and 2 as many times as you like.

- The normal Timekeeping Mode display returns if you do not perform any button operation for about one or two minutes.

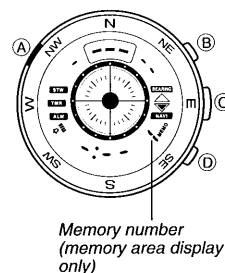
Be sure to also read the section title Navigation Mode for other important information concerning the Digital Compass.

NAVIGATION MODE

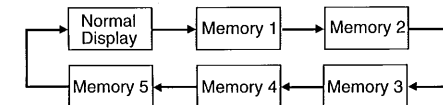
The Navigation Mode lets you store up to five sets of measurement data in memory. Each set of data includes the direction, along with the date and time of the measurement. You can later recall the memory data to trace your progress on a map.

- Operation of the Digital Compass in the Navigation Mode is identical to the operation in the Timekeeping Mode. The only difference is that Navigation Mode measurements are stored in memory.

1. Using the Digital Compass



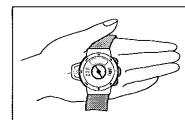
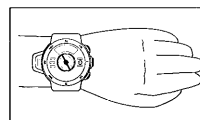
- In the Navigation Mode, use **(B)** to select a area or the Normal Display in the following sequence.



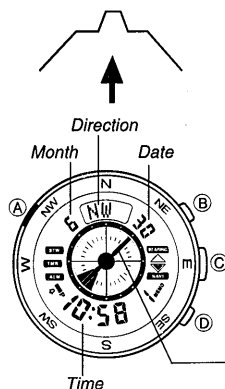
- Each memory area is identified by a number from 1 through 5. The Normal Display shows the current time and date without a memory number.
- If you want to store data for the Digital Compass operation you are about to take, select a memory area. If you do not want to store the data, select the Normal Display.

- If the memory area you select already contains data, that data appears on the display whenever the memory area is selected. Performing a Digital Compass operation replaces the existing data with the newly measured data.

- Place the watch on a flat surface or (if you are wearing the watch), make sure that your wrist horizontal (in relation to the horizon).



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



- Point the 12 o'clock position of the watch in the direction you want to measure.

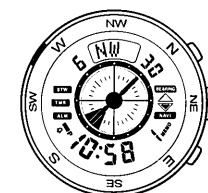
- Press **(D)** to start the Digital Compass operation.

- After about one second, the direction that the 12 o'clock is pointing appears.
- Also, the magnetic north arrow points north.
- You can press **(D)** as many times as you like to take new measurements.
- If you selected any of the five memory areas (instead of the Normal Display) before the Digital Compass operation, the measurement data is stored in that memory area.

Directions

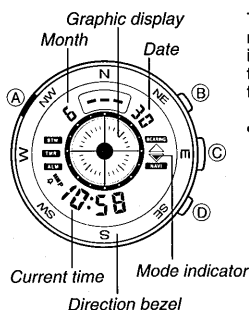
The following table shows the meanings of each of the direction indicators.

N: North; NNE: North-northeast; NE: Northeast; ENE: East-northeast; E: East; ESE: East-southeast; SE: Southeast; SSE: South-southeast; S: South; SSW: South-southwest; SW: Southwest; WSW: West-southwest; W: West; WNW: West-northwest; NW: Northwest; NNW: North-northwest



- Next, you can adjust the rotary direction bezel so that the "N" mark is aligned with the magnetic north arrow. This correctly aligns all of the markings on the bezel.

- The Digital Compass operation is automatically interrupted whenever an alarm (Daily Alarm, Hourly Time Signal etc.) sounds. If this happens, start again from the beginning.



2. Digital Compass Precautions

This watch features a built-in magnetic bearing sensor that detects terrestrial magnetism. This means that the northern direction 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



- Using the Digital Compass when you are near a source of strong magnetism can cause large errors in readings. Because of this, you should avoid using the Digital Compass within 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 measurements are impossible while in a train, boat, air plane, etc. See "Using the Digital Compass in an automobile" for information on how to calibrate the Digital Compass to allow approximate direction measurements while in an automobile.
- Accurate measurements are also impossible indoors, especially inside ferroconcrete structures. This is because the metal framework of such structures picks up magnetism from appliances, etc.

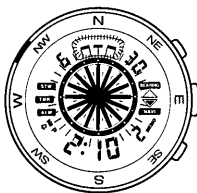
Storage

- The precision of the compass 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 "4. Calibrating the Digital Compass".

3. Warning Indicators

Warning indicators and messages appear and the graphic display flashes whenever any of the conditions described below occurs.

Abnormal Magnetic Field Indicator



This indicator appears on the display whenever the Digital Compass has a problem obtaining a correct reading. This condition could indicate that the watch is within a very high magnetic field, and so you should try moving to another location. Also, see "Digital Compass Precautions" for further information on conditions that cause errors.

Low Battery Indicator



This message indicates battery power is too low to perform a Digital Compass operation. It appears whenever battery power drops below a certain level, or when you try to use the Digital Compass under very cold conditions (below $-10^{\circ}\text{C}/14^{\circ}\text{F}$). If the BAT message appears because of use under cold conditions, it should clear (and normal operation should return) after the watch is brought back to normal temperature. If battery power is low (indicated when BAT appears under normal temperatures), you should have the battery replaced as soon as possible. Note that replacement of the battery causes all memory contents to be cleared.

Digital Compass Malfunction Indicator



This message indicates malfunction of the Digital Compass circuitry. In this case, you should take the watch to an authorized CASIO distributor or Service Center for servicing.

4. Calibrating the Digital Compass

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

You should use bidirectional calibration when you want to calibrate the Digital Compass to operate within an area exposed to magnetic force. This type of calibration should be employed before using the Digital Compass inside an automobile, or 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.

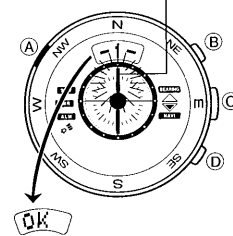
Important!

- 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.
- If you do not perform any button operation for two or three minutes while either calibration procedure is in progress (while the calibration direction indicator is flashing at the 12 or 6 o'clock position), the watch automatically returns to the Navigation Mode.

- The more correctly you perform bidirectional calibration, the better the accuracy of your Digital Compass readouts. You should perform bidirectional calibration whenever you change environments where you use the Digital Compass, and whenever you feel that the Digital Compass is producing incorrect readings.

To perform bidirectional calibration

Calibration direction indicator



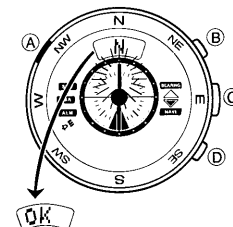
- While in the Navigation Mode, press (A) to start the bidirectional calibration procedure.
- At this time, the upper display changes to show "- 1 -" and the calibration direction indicator flashes at the 12 o'clock position to indicate that the watch is ready to calibrate the first direction.
- Place the watch on a level surface, and press (D) to calibrate the first direction.
- When the calibration procedure is complete, the message "OK" appears in the upper display. This shortly changes to "- 2 -" and the calibration direction indicator flashes at the 6 o'clock position to indicate that the watch is ready for the second direction.
- Rotate the watch 180 degrees.
- Press (D) again to calibrate the second direction.

- When the calibration procedure is complete, the message "OK" appears in the upper display. After a short while, the watch automatically returns to the Navigation Mode.

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 readings from the Digital Compass.
- Do not move the watch during one to two seconds (from the point you press (D), up to the point that "OK" appears on the upper display) that the calibration of each direction is in progress. If you do, the Abnormal Magnetic Field Indicator "- - -" appears on the upper display. When this happens, restart the bidirectional calibration procedure from the beginning.
- The appearance of the Abnormal Magnetic Field Indicator during bidirectional calibration can also be caused by local interference. Move to another location and try the bidirectional calibration procedure again.
- You should perform bidirectional calibration in an environment that is the same as that where you plan to be using the Digital Compass. If you plan to use it in an open field, for example, calibrate in an open field. If you plan to use the Digital Compass in an automobile, you should calibrate it in that automobile.
- See "Using the Digital Compass in an automobile" for important information on performing bidirectional calibration in an automobile.

To perform northerly calibration



- While in the Navigation Mode, press (A) to start the bidirectional calibration procedure.
- Press (C) to start the northerly calibration procedure.
- At this time, the indicator "N" appears in the upper 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 (D) start the calibration operation.
- When the calibration procedure is complete, the message "OK" appears in the upper display. After a short while, the watch automatically returns to the Navigation Mode.

5. Digital Compass Applications

Determining your current location

You can use the Digital Compass to determine the direction to two distant identifiable points, and then plot your current location on a map. The Navigation Mode's memory storage capabilities come in handy when plotting your current location.



- First use the Digital Compass to take the two readings, storing the measured results in memory.
- Recall the readings while consulting a map. If you run two lines from the two distant points on the map along the measured direction, your current location will be where the two line cross.

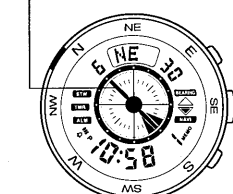
Determining the correct course to reach an objective that is not visible

1. Consult a map to find the direction you should take to reach your objective.

2. Rotate the direction bezel so that the direction you should take is at the watch's 12 o'clock position.

- If the map indicates your course should be northeast, rotate the bezel so that "NE" is at the 12 o'clock position.
- Follow the course (pointed to by the watch's 12 o'clock position) that keeps the "N" mark on the direction bezel aligned with the magnetic north arrow.
 - Take periodic readings with the Digital Compass to make sure you keep on course.

Magnetic north arrow



[Direction to objective]
is northeast

Determining the correct course to reach an objective that is visible

1. While the 12 o'clock position of the watch is pointing at the objective, take a Digital Compass reading.
2. Rotate the direction bezel so that the "N" mark on the direction bezel points to the magnetic north indicator.
3. Follow the course (pointed to by the watch's 12 o'clock position) that keeps the "N" mark on the direction bezel aligned with the magnetic north arrow.

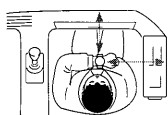
Using the Digital Compass in an automobile

The body of an automobile can easily become magnetized, which interferes with correct operation of the Digital Compass. Because of this, you should always perform the bidirectional calibration procedure described below before using the Digital Compass inside an automobile.

- For full details about the bidirectional calibration procedure, see "To perform bidirectional calibration".

CAUTION!

When performing the bidirectional calibration procedure inside an automobile, be sure to do so in an area that allows you to come to a full stop without endangering yourself or other motorists. Never try to perform the following procedure while driving or in areas where there is the danger of accident.



1. Bring your vehicle to a full stop in an area that will allow you to safely make a full 180-degree turn.
2. From a position inside the vehicle that is not too near the vehicle's body or instruments, perform the bidirectional calibration procedure for the first direction.
3. Turn the vehicle around 180 degrees (so that it is facing in the opposite direction from which you started).
4. After the vehicle is fully stopped, perform the bidirectional calibration procedure for the second direction.

Important!



- Be sure that you perform the first direction calibration and the second direction calibration with the vehicle in the same location, but facing in opposite directions. Simply performing a U-turn (which faces the vehicle in the opposite direction but at a different location) is not acceptable.

- An automobile's body and instruments generate magnetic force, so you should position the watch as far from these items as possible when performing the calibration procedure.
- The Digital compass will not operate correctly, even if you calibrate it, if there is a high amount of magnetic force present in the vehicle.
- The magnetic properties of each vehicle are different, so you should recalibrate the Digital Compass whenever you change to another vehicle.
- Note that you should also recalibrate the Digital Compass if you change positions inside the vehicle (from the back seat to the front seat, for example).

STOPWATCH MODE

The Stopwatch Mode lets you measure elapsed time, split times, and two finishes. The range of the stopwatch is 23 hours, 59 minutes, 59.99 seconds.

(a) Elapsed time measurement

Start → Stop → Re-start → Stop → Clear

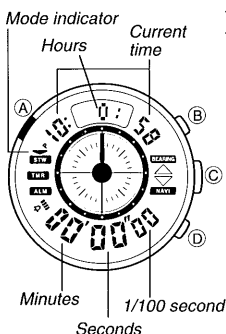
(b) Split time measurement

Start → Split → Split release → Stop → Clear

(c) Split time and 1st-2nd place times

Start → Split → Stop → Split release → Clear

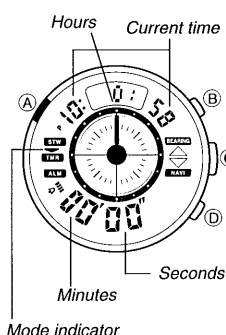
First runner finishes. Second runner finishes. Record time of first runner. Record time of second runner.



COUNTDOWN ALARM MODE

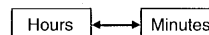
The countdown timer can be set within a range of 1 minute to 24 hours. When the countdown reaches zero, an alarm sounds for 10 seconds or until you press any button.

Note that you can also select auto repeat timing that automatically restarts the countdown from the original value you set whenever zero is reached. This continues until you manually stop the countdown.



To set the countdown time

1. Press (A) while in the Countdown Alarm Mode. The hours digit flashes on the display because it is selected.
2. Press (C) to change the selection in the following sequence.

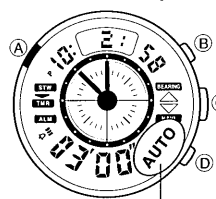


3. Press (D) to increase the selected number. Holding down (D) changes the selection at high speed.
- To set the starting value of the countdown time to 24 hours, set to 0:00'00".
4. After you set the countdown time, press (A) to return to the Countdown Alarm Mode.

To use the countdown timer

1. Press (D) while in the Countdown Alarm Mode to start the countdown timer.
2. Press (D) again to stop the countdown timer.
- You can continue countdown timer operation by pressing (D).
3. Stop the timer and then press (B) to reset the countdown time to its starting value.
- When the end of the countdown is reached and auto repeat timing is off, the alarm sounds for 10 seconds or until you stop the alarm by pressing any button. Countdown timing stops, and the countdown time is automatically reset to its starting value after the alarm stops.

To switch auto repeat timing on and off



Auto repeat on indicator

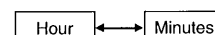
1. Press (A) while in the Countdown Alarm Mode. The hours digit flashes on the display because it is selected.
2. Press (B) to switch auto repeat on and off.
3. Press (A) to return to the Countdown Alarm Mode.
- When the end of the countdown is reached while auto repeat is on, the alarm sounds, but the starting countdown time is reset and countdown timing starts again automatically whenever the countdown reaches zero. You can stop timing by pressing (D), and manually reset to the starting countdown time by pressing (B).

ALARM MODE

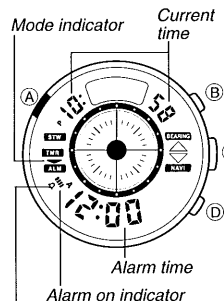
When the Daily Alarm is switched on, the alarm sounds for 20 seconds at the preset time each day. Press any button to stop the alarm after it starts to sound. When the Hourly Time Signal is switched on, the watch beeps every hour on the hour.

To set the alarm time

1. Press (A) while in the Alarm Mode. The hour digits flash on the display because they are selected. At this time the Daily Alarm is switched on automatically.
2. Press (C) to change the selection in the following sequence.



3. Press (D) to increase the selected digits and (B) to decrease them. Holding down either button changes the selection at high speed.



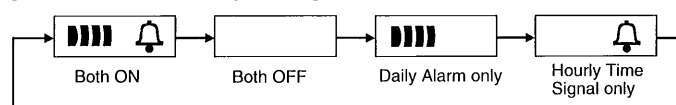
Hourly time signal on indicator

- The format (12-hour and 24-hour) of the alarm time matches the format you select for normal timekeeping.
- When setting the alarm time using the 12-hour format, take care to set the time correctly as morning (A) or afternoon (P).
- 4. 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.