

# CITIZEN QUARTZ

## ECO-DRIVE

### Model No. EP4XXX/EP3XXX

### Cal. No. B02/B03

## • INSTRUCTION MANUAL

### A. BEFORE USING

This watch is not powered by an ordinary battery, but by converting photo energy into electric energy.

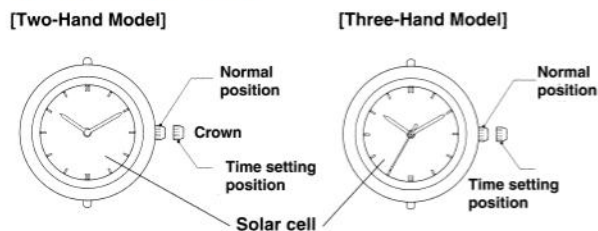
**Before using, expose to light and make sure the watch is fully charged.**  
**Since it takes time to recharge the watch until it starts running again once it has stopped, try to make sure the watch is charged every day.**  
**When the watch is stopped, the watch hands will begin to move when the watch is charged for about 5 hours in the case of the two-hand model or about 1 hour in the case of the three-hand model at 3000Lux (under a fluorescent light at a distance of about 20 cm (8 inch)).**

A secondary battery is used in this watch to store electrical energy. **This secondary battery is a clean energy battery which does not use any toxic substances such as mercury.** Once fully charged, the two-hand model will continue to run for about 5 months, while the three-hand model will continue to run for about 2 months, without further charging.

To use this watch comfortably, **make sure that the watch is always recharged before it stops.**

There is no risk of overcharging this watch. (Overcharge prevention function is included.)

### B. SETTING THE TIME



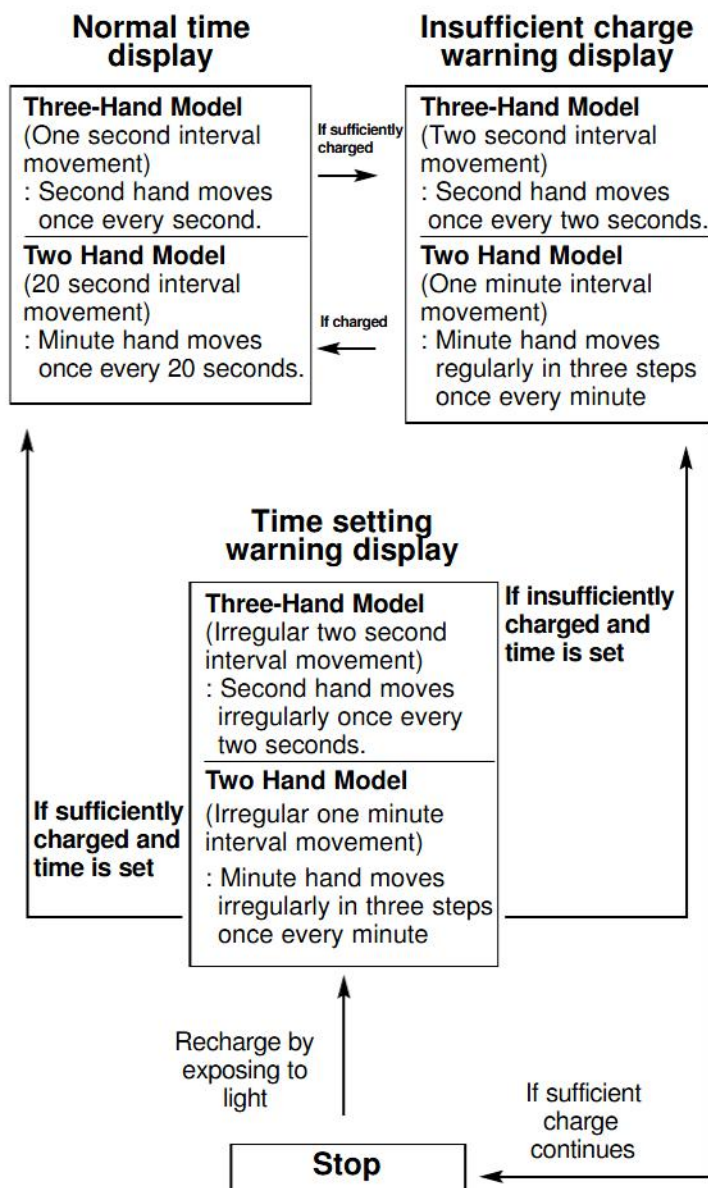
#### ■ Setting the time

1. Pull the crown out to the time setting position (the second hand will stop when the crown is pulled out in the case of the three-hand model).
2. Turn the crown to set the time.
3. After setting the time, firmly push the crown back in to the normal position.

### C. FUNCTIONS OF SOLAR POWERED WATCH

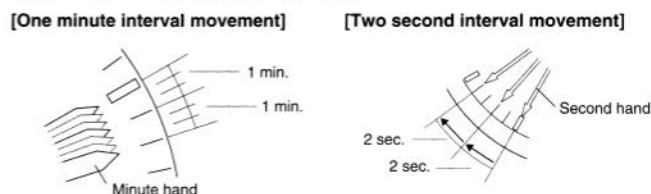
If the charge becomes insufficient, a warning function will be activated that causes the display to change as shown below.

Refer to the explanations of each function on the following page for further details.



#### ■ Insufficient Charge Warning Function

In the case of the two-hand model, the minute hand moves by one minute interval movement, and in the case of the three-hand model, the second hand moves by two second interval movement to indicate the insufficient charging. Although the watch keeps the correct time when this happens, the watch will stop after about 5 days in the case of the two-hand model or about one day in the case of the three-hand model, after the start of the one minute interval movement or two second interval movement. Recharge the watch by exposing to light. The watch will then begin to run normally again.



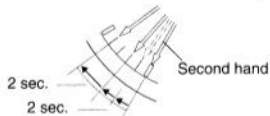
### ■ Time Setting Warning Function

Although the watch hands will begin to move when the watch is charged after stopping, since the time is incorrect, the minute hand will move by irregular one minute interval movement in the case of the two-hand model, or the second hand will move by irregular two second time interval movement in the case of the three-hand model to indicate that the time is incorrect. When this happens, fully charge the watch and reset the time. The watch will continue to run by the irregular interval movement until the time is reset even if fully charged.

#### [Irregular one minute interval movement]



#### [Irregular two second interval movement]



### ■ Overcharge Prevention Feature

#### You can recharge without worry

Once the secondary battery is fully recharged, the overcharging prevention feature comes into operation and prevents over-recharging.

## D. CARE AND HANDLING DURING CHARGING

### ■ Notes on use

#### Take care to charge your watch during use.

Please note that if you wear long sleeves, the watch can easily become insufficiently charged because it is hidden and not exposed to light.

- When you take the watch off, place it in as bright a place as possible, and it will always continue to run properly.

### ■ Notes on recharging

- Avoid recharging at high temperatures (over about 60°C/140°F), otherwise the watch will be damaged during recharging.  
(eg) Charging the watch near a light source that easily becomes hot, such as an incandescent lamp or a halogen lamp.  
Charging in a place that easily becomes hot such as a dashboard.

When you charge the watch by an incandescent lamp, take a distance about 50cm (20in) from the light source to prevent extremely high temperature.

## E. REPLACING THE SECONDARY BATTERY

Unlike ordinary batteries, the secondary battery used in this watch doesn't have to be periodically replaced due to repeated charging and discharging.

### CAUTION

Never use another battery different from the secondary battery used in this watch.

The watch structure is so designed that a different kind of battery other than that specified cannot be used to operate it. In case a different battery such as a silver battery is used by some chance, there is a danger that it will be overcharged to burst, causing damage to the watch and even the human body.

## F. TIME REQUIRED FOR CHARGING

Time required for recharging may vary according to the design (colour of the dial, etc.) and operating environment. The following table will serve you as a rough reference.

| Illuminance (lux) | Environment                                        | Time required                                  |                   |               |
|-------------------|----------------------------------------------------|------------------------------------------------|-------------------|---------------|
|                   |                                                    | Two-hand model                                 |                   |               |
|                   |                                                    | From the stop state to the 20 seconds movement | One day usage     | Empty to full |
| 500               | inside an ordinary office                          | 52 hours                                       | 1 hour 10 minutes | 360 hours     |
| 1000              | 60-70cm (24-28in.) under a fluorescent light (30W) | 26 hours                                       | 40 minutes        | 180 hours     |
| 3000              | 20cm (8in.) under a fluorescent light (30W)        | 8 hours 30 minutes                             | 12 minutes        | 57 hours      |
| 10000             | Exterior, cloudy                                   | 2 hours 30 minutes                             | 4 minutes         | 20 hours      |
| 100000            | Exterior, summer, sunny                            | 35 minutes                                     | 2 minutes         | 7 hours       |

| Time required                                  |               |                    |
|------------------------------------------------|---------------|--------------------|
| Three-hand model                               |               |                    |
| From the stop state to the one second movement | One day usage | Empty to full      |
| 12 hours                                       | 2 hours       | 160 hours          |
| 5 hours 30 minutes                             | 1 hour        | 75 hours           |
| 2 hours                                        | 20 minutes    | 24 hours           |
| 30 minutes                                     | 7 minutes     | 9 hours            |
| 8 minutes                                      | 3 minutes     | 3 hours 30 minutes |

**Full recharging time (Empty to full):** The time for fully recharge from stopped.

**One day usage:** The time required for the watch to run for one day with one second interval movement for 20 seconds interval movement.

\*The recharging time is the time when the watch is continuously exposed to radiation.

## G. PRECAUTIONS

### CAUTION: Water resistance performance

There are several types of water-resistant watches, as shown in the following table.

| Indication                                 |                             | Specifications                       | Examples of use                                                                                                                     |                                                                                                                                                     |                                                                                                               |                                                                                                                 |                                                                                                                                  |
|--------------------------------------------|-----------------------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Dial                                       | Case (case back)            |                                      |  Minor exposure to water (washing face, rain etc.) |  Moderate exposure to water (washing, kitchen work, swimming etc.) |  Marine Sports (skin diving) |  Skin diving (with air tank) |  Operation of the crown with moisture visible |
| No Indication                              | WATER RESIST(ANT)           | Water resistant to 3 atmospheres     | OK                                                                                                                                  | NO                                                                                                                                                  | NO                                                                                                            | NO                                                                                                              | NO                                                                                                                               |
| Water Resistant 5 Bar or No Indication     | WATER RESIST(ANT) 5 Bar     | Water resistant to 5 atmospheres     | OK                                                                                                                                  | OK                                                                                                                                                  | NO                                                                                                            | NO                                                                                                              | NO                                                                                                                               |
| Water Resistant 10-20 Bar or No Indication | WATER RESIST(ANT) 10-20 Bar | Water resistant to 10-20 atmospheres | OK                                                                                                                                  | OK                                                                                                                                                  | OK                                                                                                            | NO                                                                                                              | NO                                                                                                                               |

The unit "bar" is equal roughly to 1 atmosphere

For correct use within the design limits of the watch, confirm the level of water resistance of your watch, as indicated on the dial and case, and consult the table.

- **Water-Resistance for daily use (to 3 atmospheres):** This type of watch is water-resistant to minor exposure to water. For example, you have to wear the watch while washing your face; however it is not designed for use underwater.
- **Upgraded water-resistance for daily use (to 5 atmospheres):** This type of watch is water-resistant to moderate exposure to water. You may wear the watch while swimming; however, it is not designed for skin diving.
- **Upgraded water-resistance for daily use (to 10/20 atmospheres):** This type of watch may be used for skin diving; however, it is not designed for scuba or saturated diving using helium gas.

### CAUTION

- Be sure to use the watch with the crown pressed in (normal position). If your watch has a screw-type crown, be sure to tighten the crown completely.
- **DO NOT** operate the crown with wet fingers or when the watch is wet. Water may enter the watch and compromise water-resistance.
- If the watch is used in sea water, rinse with fresh water afterward and wipe dry with a dry cloth.
- If moisture has entered the watch, or if the inside of the crystal is fogged up and does not become clear within a day, immediately take the watch to your dealer or Citizen Service Centre for repair. Leaving the watch in such a state will allow corrosion to form inside.
- If seawater enters the watch, place the watch in a box or plastic bag and immediately take it for repair. Otherwise pressure inside the watch will increase, and parts (crystal, buttons, etc.) may come off.

### CAUTION: Keep your watch clean

- Leaving dust and dirt deposited between the case and the crown may result in difficulty in pulling out the crown. Rotate the crown while in its normal position, from time to time, to loosen dust and dirt and brush it off.
- Dust and dirt tend to be deposited in the gaps in the back of the case or band. Deposited dirt or dust may cause corrosion or soil your clothing. Clean the watch occasionally.

### Cleaning the Watch

- Use a soft cloth to wipe off dirt, perspiration and water from the case and crystal.
- Use a soft, dry cloth to wipe off perspiration and dirt from the leather band.
- To clean a metal, plastic or rubber watchband, wash away the dirt with mild soap and water. Use a soft brush to remove dust or dirt jammed in the gaps in the metal band. If your watch is not water-resistant, take it to your dealer.

**NOTE:** Avoid using solvents (thinner, benzene, etc.), as they may mar the finish.

### CAUTION: Operating environment

- Use the watch within the operating-temperature range specified in the instruction manual. Using the watch where temperatures are outside the specified range, may result in deterioration of functions or even stoppage of the watch.
- **DO NOT** use the watch in places where it is exposed to high temperature, such as in a sauna. Doing so may result in a skin burn. **DO NOT** leave the watch where it is exposed to high temperature, such as in the glove compartment or dashboard of a car. Doing so may result in the deterioration of the watch, such as deformation of the plastic parts.

- Do NOT place the watch close to a magnet. Timekeeping will become inaccurate if you place the watch close to magnetic health equipment such as a magnetic necklace or magnetic latch of a refrigerator door or handbag clasp or the earphone of a mobile phone. If this has occurred, move the watch away from the magnet and reset the time.
- Do NOT place the watch close to magnetic appliances that generate static electricity. Timekeeping may become inaccurate if the watch is exposed to strong static electricity, such as emitted from a TV screen.
- Do NOT subject the watch to a strong shock such as dropping it onto a hard floor.
- Avoid using the watch in an environment where it may be exposed to chemicals or corrosive gasses. If solvents such as thinner or benzine, or substances containing such solvents, come into contact with the watch, discolouration, melting, cracking, etc. may result. If the watch comes into contact with mercury used in thermometers, the case, band or other parts may become discoloured.

## H. SPECIFICATIONS

|                                 |                                                                                                                                                              |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Type                         | Analog Quartz watch                                                                                                                                          |
| 2. Caliber No.:                 | B02* (Two hand model)<br>B03* (Three-hand model)                                                                                                             |
| 3. Accuracy:                    | Within $\pm 15\text{sec/month}$<br>(with a normal temperature range of $+5^{\circ}\text{C}/41^{\circ}\text{F}$ to $+35^{\circ}\text{C}/95^{\circ}\text{F}$ ) |
| 4. Quartz oscillator frequency: | 32.768Hz                                                                                                                                                     |
| 5. IC:                          | C/MOS-LSI (1pc.)                                                                                                                                             |
| 6. Operating temperature:       | $-10^{\circ}\text{C}/14^{\circ}\text{F}$ to $+60^{\circ}\text{C}/140^{\circ}\text{F}$                                                                        |
| 7. Display features:            | Time: hour, minute, (Two-handed model)/hour, minute, second (Three-handed model)                                                                             |
| 8. Additional features:         | Insufficient charge warning function<br>Time setting warning function                                                                                        |
| 9. Continuous operating time:   | From fully charged to stop:<br>Approx. 5 months (Two-hand model)<br>Approx. 2 months (Three-hand model)                                                      |
| 10. Battery                     | Second battery                                                                                                                                               |

\*Specifications are subject to change without prior notice