CE

POCKIT Nucleic Acid Analyzer

USER MANUAL

Manufacturer:
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2017/03

CONTENT

Symbols

Conformité Européenne

EU authorized representative

Supplementary fuse

Grounded conductor

Date of manufacturing

Manufacturer

Catalogue number

Serial number

Alternative current

Caution, consult instruction for use

WEEE symbol

This product is manufactured in compliance with the European Union's Waste Electrical & Electronic Equipment (WEEE) Directive 2012/19/EU. Please follow your institutional requirements for disposal of the accessories.

Section 1. Introduction

The **POCKIT™** Nucleic Acid Analyzer (**POCKIT**) is designed for performing insulated isothermal polymerase chain reaction (iiPCR) (Chang *et al*., 2012; Tsai *et al*., 2012). It provides iiPCR-based analysis and is equipped with two optical channels (520 nm, 550 nm) for multiplex detection. The qualitative test results are readily displayed on the LCD monitor, and automatically saved in a SD card. It generates results for up to 8 nucleic acid samples within 1 hour.

1.1 Intended Use

POCKIT is intended to provide qualitative detection of nucleic acid targets using fluorescence-based iiPCR reagents. Intended users are properly-trained laboratory technicians familiar with molecular biology techniques, and those who want to perform iiPCR or its relative reagent kits produced by GeneReach.

This instrument is intended for research purpose.

Section 2. General Information

2.1 Product Components

- **POCKIT™** Nucleic Acid Analyzer × 1 unit
- User Manual × 1 copy
- Warranty Card × 1 copy
- Holder × 1 piece

2.2 Specifications

Dimensions: 280 mm (W) × 250 mm (D) × 85 mm (H)
Net Weight: 2.1 kg
Power Supply: 100-120/200-240 V AC, 50/60 Hz, 2A
Fuses: 2A, 250V AC, ϕ 5 × 20 mm fast-acting, low breaking capacity glass tube fuses.
Operating Temperature: 15 ~ 35°C

2.3 Testing Capacity

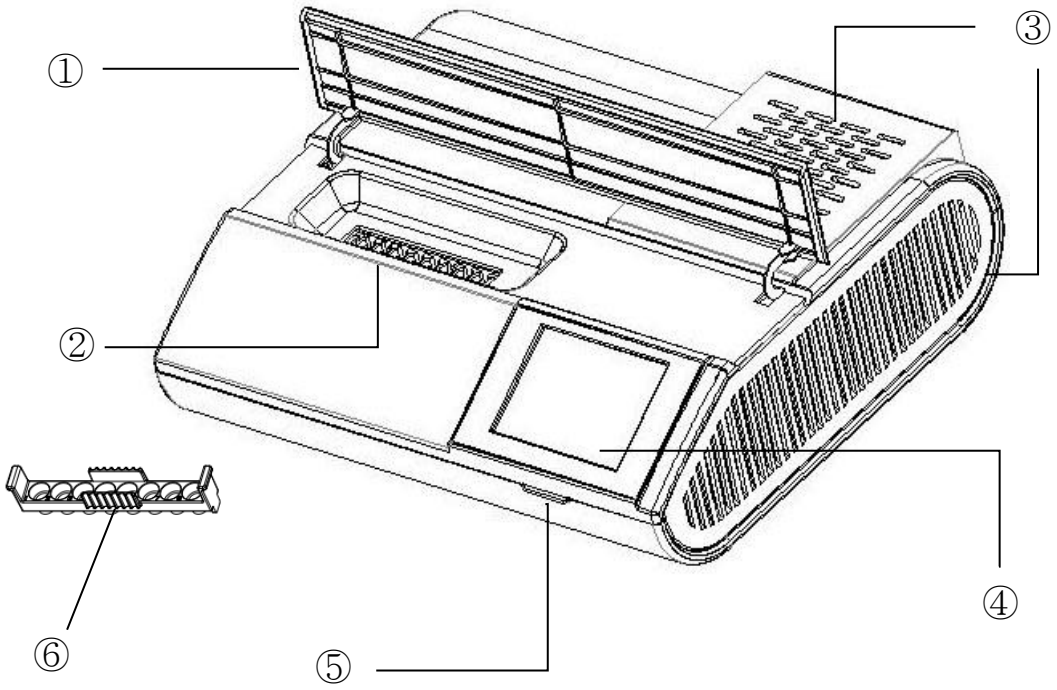
Number of Samples: 1 ~ 8 reactions per run
Reaction Volume: 45 ~ 55 μl per reaction

2.4 Equipments and Materials Required But Not Provided

- Nucleic acid extraction kit
- Nucleic acid amplification reagents and kits
- 200 μl and 1000 μl micropipette, tips, and 1.5 ml tubes
- R-tubes and Caps
- **cubee™** mini-centrifuge
- Disposable gloves

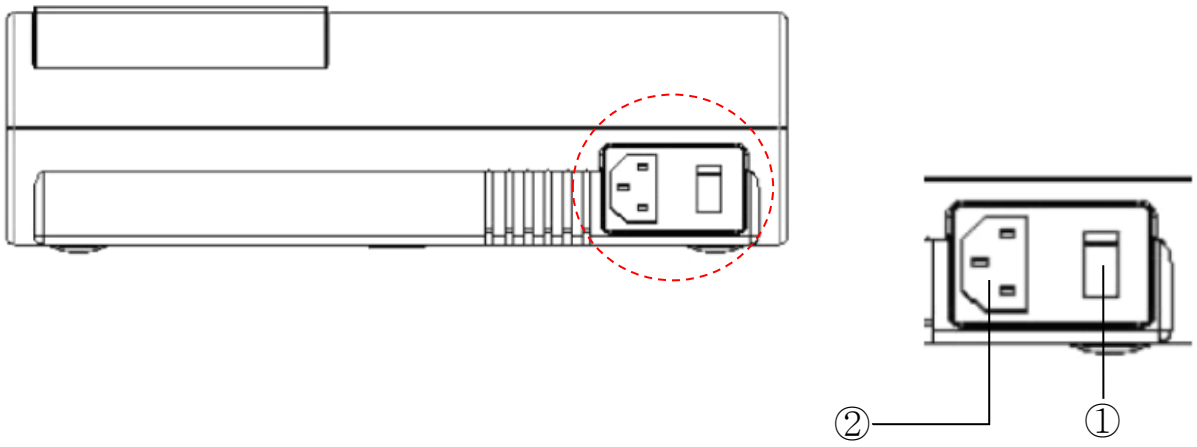
*__Note__: To avoid power failure, connecting **POCKIT** to an uninterrupted power system (UPS) and/or voltage regulator is highly recommended.

2.5 Front View



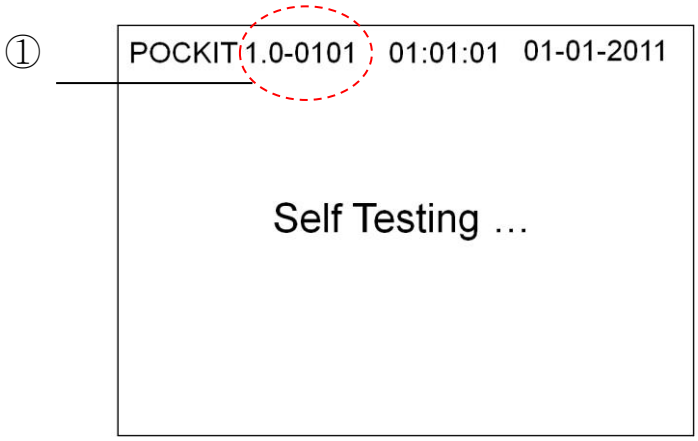
No	Item	Description
1	Lid	Isolates the heat source, and prevents light interference on the reaction chamber.
2	Reaction well	Accommodate the R-tube holder to perform the amplification.
3	Cooling vents	Releases the heat generated during reaction.
4	Control panel	A touchscreen where users key in the operation commands and view the results.
5	SD card slot	A slot where users insert the SD card to run **POCKIT** and save reaction raw data.
6	Holder	Load R-tubes into the reaction wells.

2.6 Rear View



No.	Item	Description
1	Main switch	To turn on/off the main power
2	Socket	To connect to the power cord

2.7 Software Version



No.	Item	Description
1	Software Version	Current software version on **POCKIT** system.

Section 3. Important Notes

Check the device upon receiving. If any items are missing or harmed, please contact your local distributor or GeneReach immediately for replacement. Do not use any damage items as they may lead to poor performance of the test or harm the user.

3.1 Safety Information

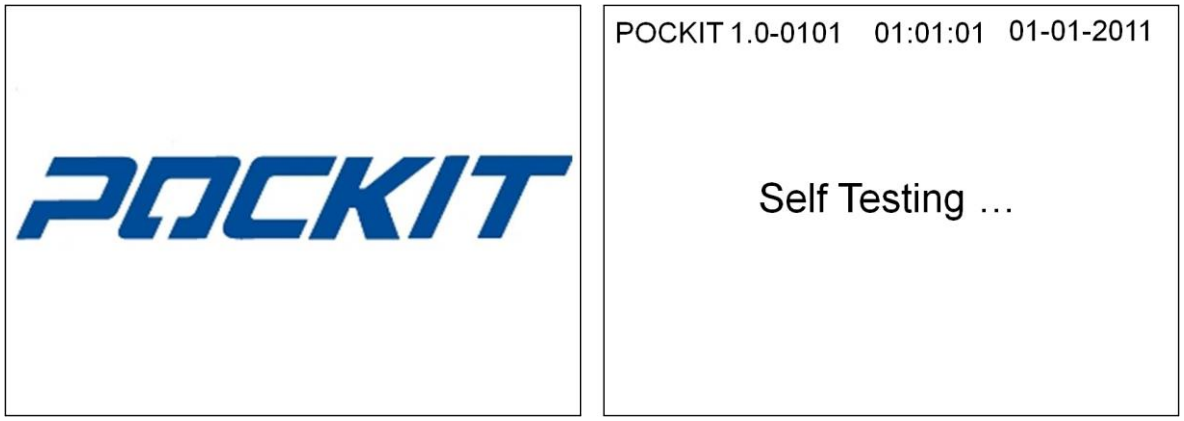
	DO NOT OPEN LID DURING REACTION

- Please carefully read these warnings, precautions and safety/operating instructions completely before operating this product.
- Electromagnetic Compatibility: This product complies with the emissions and immunity requirements of IEC 61326. It is advisable to evaluate the electromagnetic environment prior to operating the device. Do not use this device in close proximity to sources of strong electromagnetic radiation (for example, unshielded intentional radio frequency (RF) sources). Strong electromagnetic radiation may interfere with the proper operation of the device.
- Transport condition at -29 ~ 50°C, 55 ± 20% R.H.
- Storage condition at 10 ~ 40°C, 55 ± 20% R.H.
- Operation altitude: under 5000 m.
- Do not touch any plug and electric switch with wet hands.
- This product should be placed in a dry, clean and ventilated indoor place. Strictly keep away from moisture.
- Switch off and unplug the device before moving it.
- Hold the plug while pulling the power cord out from the electrical outlet. Do not pull it by the cord directly.
- Do not place the power cord on any hot surfaces.
- Pack the device carefully before moving and delivering. Vibration or crash may cause damage.
- Users should revalidate the device after it has been moved.
- Do not look directly into the LED light in the reaction wells.
- Only use consumables and accessories provided from GeneReach.
- Make sure the ambient temperature during reaction is kept at 15 ~ 35°C.
- SD card should not be removed until the device is switched off.
- Do not disassemble the device if any problem occurs. Contact your local distributor or GeneReach directly for troubleshooting.
- In case of emergency or abnormal conditions, turn off the power switch or unplug. Do not block access to power switch or plug.
- When working around the device, always wear a lab coat, disposable gloves and protective goggles.
- Waste materials, such as gloves and R-tube, may lead to contamination of other experiments. Please discard them carefully according to your local regulation.

Section 4. Operation

4.1 Switch On

Plug in the **POCKIT** and switch on the main power located in the back. The instrument will perform a self-test.

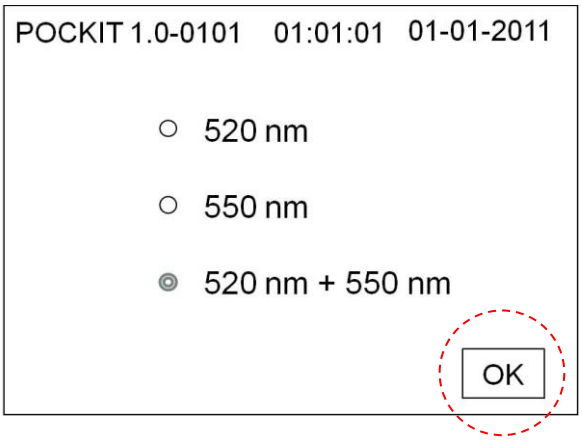


*__Note__: If self-testing runs longer than 15 minutes, please see Troubleshooting.

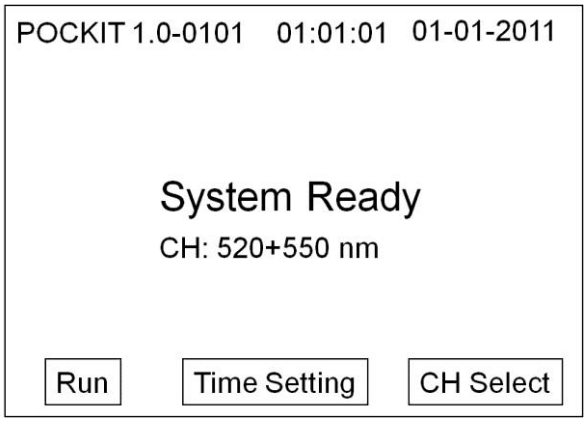
⚠ **Caution**: Make sure the power plug is connected to a grounded receptacle to prevent electrical shock or fire.

4.2 Choose Detection Wavelength

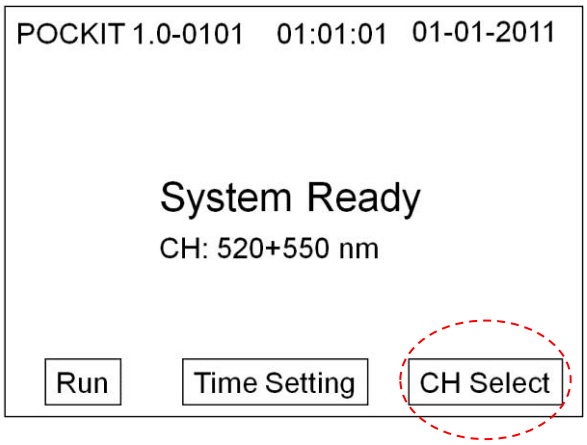
1) After self-testing, choose the detection wavelength according to the kits or methods used and press "**OK**".



2) “**System Ready**” will be shown after choosing the detection wavelength.

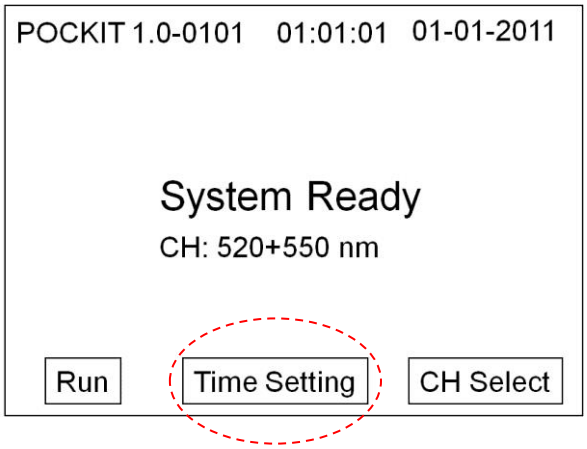


3) Before the reaction starts, to change the detection wavelength, press “**CH Select**” and choose again.



4.3 Set up Date and Time

1) Press "**Time Setting**".



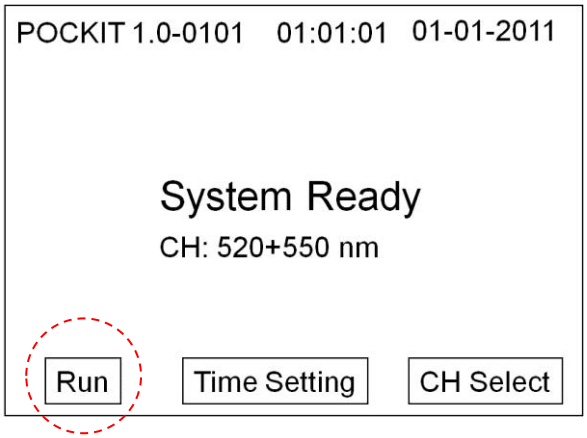
2) Touch the numbers that needs to be changed on the screen. Press "**Up**" and "**Down**" buttons to select the desired number. Press "**OK**" to confirm and return to the "**System Ready**" screen. Press "**Cancel**" to quit and leave the "**Time Setting**" screen.

*__Note__: The data derived from each test is stored in the SD card and in a folder named after the device's default date and time.

4.4 Run iiPCR Reaction

1) Place R-tubes into a holder.

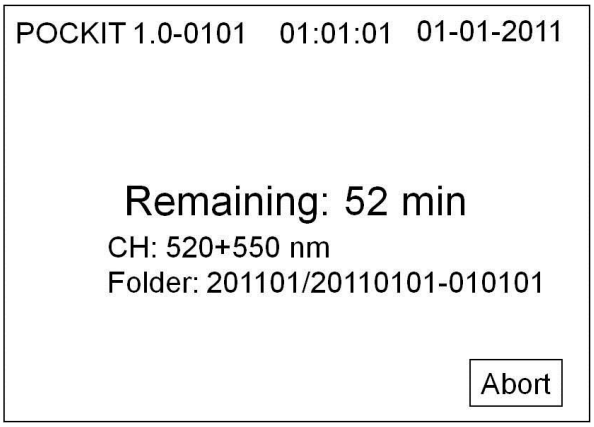
2) Place the holder with R-tubes into the reaction well. Close the lid and press "**Run**" to start the reaction.



*__Note__: Ensure the holder with R-tubes completely fits into the reaction wells.

⚠ **Caution**: Do not look directly into LED lights in the reaction wells.

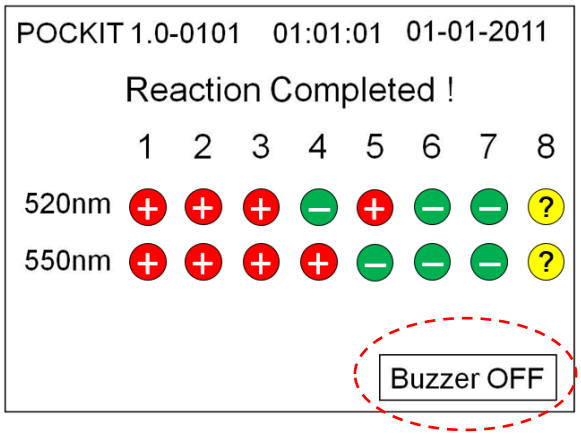
3) The screen will display the remaining reaction time and the folder name of the reaction.



⚠ **Caution**: Should any of the circumstances below occur, the results are unreliable:

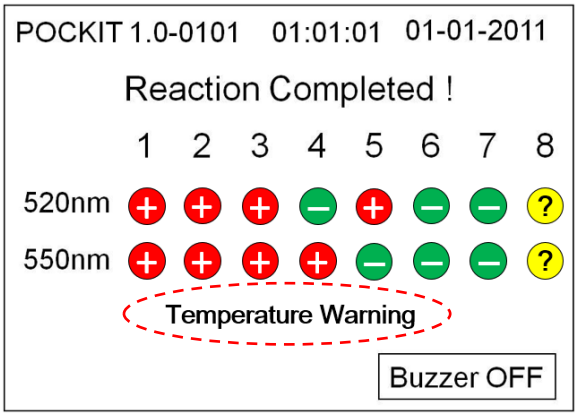
- The lid is opened or the SD card is removed during the **POCKIT** reaction.
- The ambient temperature is not in the range of 15-35°C during the reaction.
- The variation of ambient temperature is greater than 5°C during the reaction.

4) When the reaction complete, a beeping tone is made from **POCKIT**. Press "**Buzzer OFF**" to turn off the sound.



*__Note__: If there is no beep sound after the completion of the reaction, please see Troubleshooting.

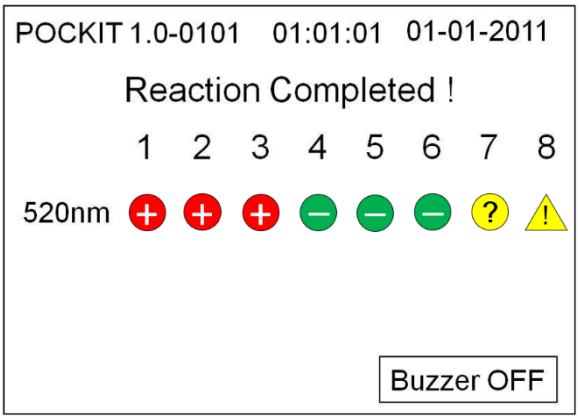
5) If the reaction temperature is abnormal during the reaction, "**Temperature Warning**" will be shown on the screen.

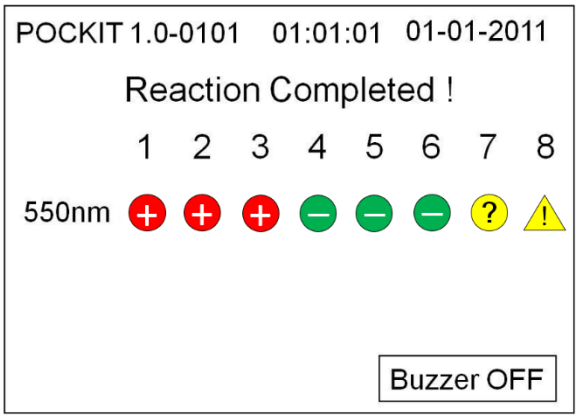


⚠ **Caution:** Fluctuation of ambient temperature should not be more than 5°C during the reaction.

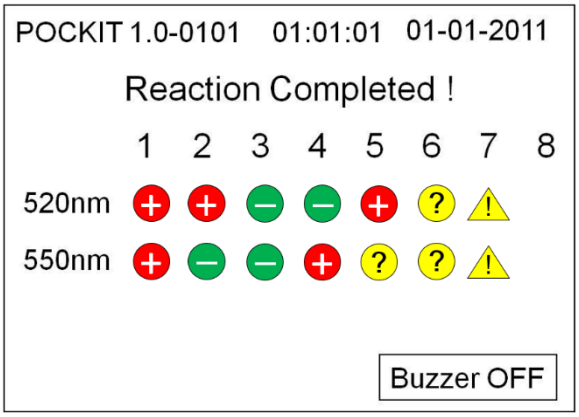
4.5 Display the Result

1) An example of results displayed at the end of a single-wavelength (either **520 nm** or **550 nm**) detection program.





2) An example of results displayed at the end of a double-wavelength (**520 nm + 550 nm**) detection program.



3) Description of the results:

Results	Description
⊕	Positive
⊖	Negative
?	Undetermined
⚠	Warning

*__Note__: Please interpret the results according to the user manual of the kits used.

*__Note__: When you see a "⚠" symbol, please contact your local distributors or **GeneReach** for assistance.

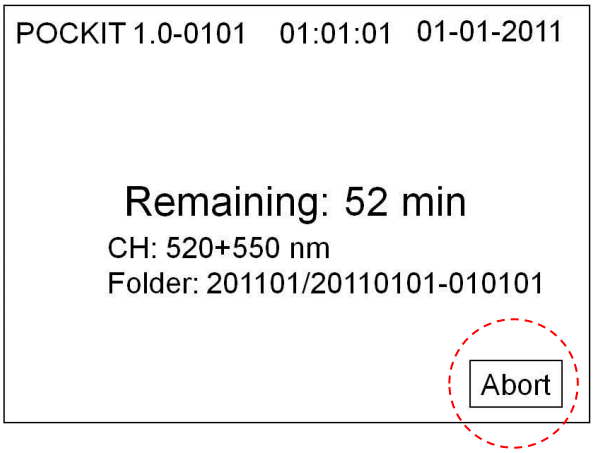
4.6 Review the Raw Data

1) Insert the SD card on a PC or Mac. Find the **raw.csv** file in the folder.

2) Please refer to the kit manual for data interpretation.

4.7 Exit the Experiment

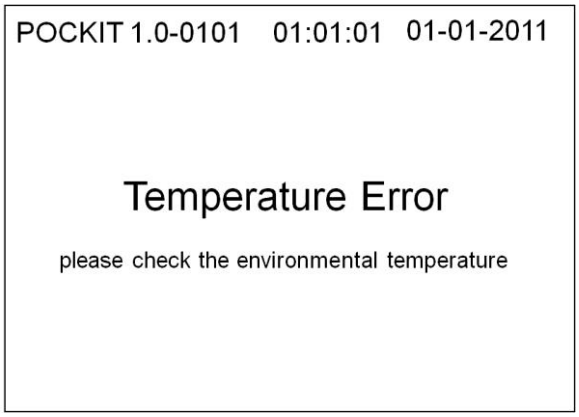
1) Press "**Abort**" to pause the reaction.

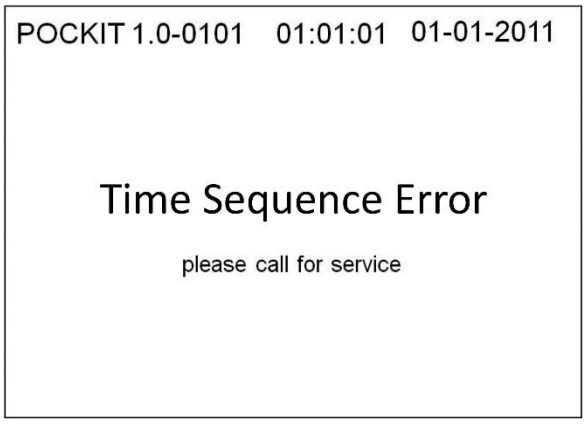


2) Press "**Yes**" to confirm and return to the self-testing screen, or press "**No**" to continue the reaction.

4.8 Errors Occurred During the Operation

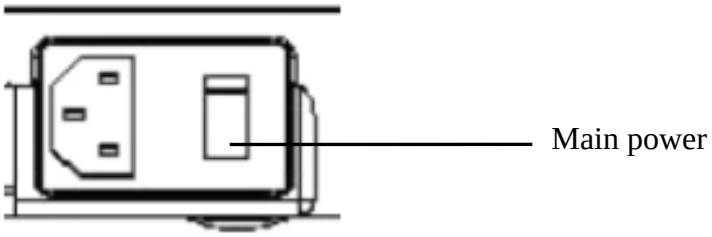
If any Errors listed below are shown, please see Troubleshooting.





4.9 Switch Off

After the reaction, switch off the main power and transfer the SD card to a PC or Mac to read the raw data.



⚠ **Caution**: Ensure the reaction has been completed before shutting down the device.

Section 5. Cleaning and Maintenance

5.1 General Care

Use only clean and wet paper towel or cotton swab to wipe off stains in the reaction chamber. Do not disassemble the **POCKIT** for cleaning as it will void the warranty. Do not use solvent, detergent or bleach to clean the **POCKIT** surface.

*__Note__: Always wear gloves, and always switch off and unplug the **POCKIT** before cleaning.

5.2 Dealing with Spills

1) Wipe off visible spills with disposable paper towel immediately, and contact your local distributor or GeneReach directly for further assistance.

2) Please use ultraviolet lights (UV) to irradiate **POCKIT** for 15 minutes.

Troubleshooting

Observation or Problems	Comments and Suggestions
(a) Self test runs more than 15 minutes	■ Re-start the device. ■ Contact your local distributors or GeneReach for assistance.
(b) System crash	■ Re-start the device, prepare new reagents in R-tube, and repeat the reaction. ■ If any further problems occur, please contact your local distributor or GeneReach for assistance.
(c) SD card error	■ Re-insert SD card, or restart device. ■ Contact your local distributor or GeneReach for assistance if the problem persists.
(d) No display on screen	■ Make sure the plug has been connected to the power system. ■ Replace fuse. ■ Contact your local distributor or GeneReach for assistance.
(e) System error	■ Contact your local distributor or GeneReach for assistance.
(f) Temperature error	■ Keep ambient temperature between 15-35°C during reaction. ■ Contact your local distributor or GeneReach for assistance.
(g) Camera error	■ Contact your local distributor or GeneReach for assistance.
(h) Time sequencing error	■ Contact your local distributor or GeneReach for assistance.
(i) Create data directory error	■ Check storage space is available in SD card. ■ Keep number of files/folders below 512 in each directory. ■ Contact your local distributor or GeneReach for assistance.
(j) No beep sound	■ Contact your local distributor or GeneReach for assistance.
(k) "⚠" symbol shown after the run	■ Contact your local distributor or GeneReach for assistance.

Reference

1. Chang, H. G., Tsai, Y., Tsai, C., Lin, C., Lee, P., Teng, P., *et al*. (2012). A thermally baffled device for highly stabilized convective PCR. *Biotechnology Journal*, 7(5), 662-666. doi: 10.1002/ biot.201100453
2. Tsai, Y., Lin, Y., Chou, P., Teng, P., Lee, P., *et al*. (2012). Detection of white spot syndrome virus by polymerase chain reaction performed under insulated isothermal conditions. *J. Virol*. Methods 181:134-137.
3. Tsai, Y., Wang, H. T., Chang, H. G., Tsai, C., Lin, C., Teng, P., *et al*. (2012). Development of TaqMan Probe-Based Insulated Isothermal PCR (iiPCR) for Sensitive and Specific On-Site Pathogen Detection. *PLoS ONE,* 7(9), e45278. doi:10.1371/journal.pone.0045278