

# TaKaRa PCR Thermal Cycler Dice™ *Touch*

Code TP350

## User's Manual for Software version 2.0.1



**TAKARA BIO INC.**

- Attention
- Users are recommended to carefully read the contents of this manual before operating the TaKaRa PCR Thermal Cycler Dice™ *Touch*
  - Carefully observe all special Warnings and Cautions outlined in this manual.
  - This manual should be stored for reference in a secure and accessible location.

## **NOTICE**

### L18 Gradient Thermocycler

This product is licensed under U.S. Patent Nos. 5,525,300; 5,779,981; 6,054,263; 6,962,821, and corresponding foreign counterparts thereto.

### L45 Heated Cover

This product is covered by the claims of U.S. Patent 5,552,580, and their corresponding foreign counterpart patent claims.

- Thermal Cycler Dice<sup>™</sup> is a trademark of TAKARA BIO INC.
- All marks are the property of their respective owners. Certain trademarks may not be registered in all jurisdictions.

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## Precautions for Using TaKaRa Scientific Instruments

- Users are recommended to carefully read the content of this manual before operating the TaKaRa PCR Thermal Cycler Dice™ Touch.
- After familiarizing themselves with the information in this manual, users are recommended to store it in secure and convenient location from which it is always available for reference

### Introduction

All Takara scientific instruments are sold strictly for use in research applications and should not be used by those who are not experts in this field.

Due to ongoing improvements, product specifications and the external appearance are subject to change without prior notification.

### Warranty and Responsibilities

Refer to the Warranty card included with this product for detailed description of the Warranty conditions and period.

This product is designed to ultimate safety standards. Nevertheless, should any safety-related issues arise, users are requested to immediately contact the nearest sales agent.

### Precautions (safety and accident prevention) for System Use

#### (1) Danger Warnings

The various messages and labels provided on the product itself and in the various manuals are designed to ensure the system is operated safely to prevent personal injury or damage to property. Users are strongly recommended to read and observe the warnings included with the symbols shown below.



**Warnings indicate incorrect system operation and handling procedures that can lead to serious accidents.**



**Cautions indicate incorrect system operation and handling procedures that can lead to accidents.**

## (2) General Precautions Regarding TaKaRa Scientific Instruments

It is important to observe the various precautions described below to ensure optimum system performance and prevent accidents before they happen. Ensure safe and correct system operation by carefully reading the precautions.

### 【Precautions for Installation Location】

Observe the following precautions in order to prevent fires and electrical shocks.



- Do not install the system on an unstable or sloped foundation or any other location subject unstable conditions.
- If the system tips over or falls, immediately turn off power to the system and all connected devices and disconnect the power supply cables.
- Avoid blocking the paths to any air vents included on the product. Blocked air vents can lead to internal overheating that may result in physical burns or fire.



- Avoid installing the system in locations subject to dust or strong vibrations.
- Avoid installing in locations subject to direct sunlight and wide temperature fluctuations as this may result in internal overheating and may cause physical burns or fire.
- Do not place objects on top of the system.
- Do not install the system in locations other than research institutions or related facilities.

### 【Electrical Precautions】

Observe the following precautions when using electrically powered scientific instruments in order to prevent electric shocks and fires.



- Avoid operating system with power sources that do not conform to system power supply specifications.
- Avoid sharply twisting, altering, marking or otherwise damaging the power supply cable. Avoid applying stress to, heating or placing objects on the power cable.
- Always ground the system to prevent electric shocks due to leakage current.



## WARNING

- Be sure to compare system power supply requirements with the rated power capacity of the power source to ensure system current requirements do not exceed power socket capacity. Confirm that the total power requirements of all connected equipment do not exceed the rated power supply capacity of the common power source.
- The system body and power supply cable are subject to high voltage levels(The maximum voltage is a line voltage AC100V~240V). Avoid inserting metal or flammable objects inside the system or handling it with wet hands, as this can result in electric shock and/or other dangers.



## CAUTION

- When moving the system, be sure to first disconnect the power cable as well as any peripheral devices.
- Be sure to disconnect the power cable prior to cleaning or servicing the system.

### 【Other precautions】

Observe the following precautions in order to prevent electric shocks and fires.



## WARNING

- Avoid inserting metal objects, flammable materials or other foreign objects into the various openings on the system case.
- Never remove the system cover or attempt to alter it in anyway.
- Avoid disassembling or making any direct contact with internal parts of the system.
- Should noxious fumes smoke or other abnormal signs appear, immediately terminate operation, turn off system power and disconnect the power cable.  
Wait until conditions stabilize before contacting the nearest sales agent or the company technical support line.
- Should water or other foreign matter enter the system, immediately terminate operation, turn off system power and disconnect the power cable.  
Wait until conditions stabilize before contacting the nearest sales agent or the company technical support line.






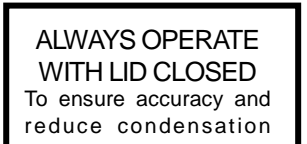


## CAUTION

- Do not sit on the system.
- Do not disassemble the system

### (3) Warning Safety Labels Applied to System Case

Users are advised to avoid accidents by carefully reading the warnings and cautions contained on warning stickers at key locations on the interior and exterior of the system.

Possible Danger	Warning Type Location of Danger <i>Type d'Avertissement</i> <i>Localisation du Danger</i>	Warning Label	Description of Danger
Electric shocks and fires	<b>Disassembly Prohibited</b> System Interior <b>Démontage Interdit</b> <i>Intérieur de l'Appareil</i>		Never disassemble system, as this may lead to electrical short-circuits, leakage current and/or fire.
Electric shocks	<b>Warning! High Voltage</b> Power cable <b>Attention! Haute tension</b> <i>Cordon d'alimentation</i>		The case and power cable are subject to high voltage levels, so take care to avoid electric shocks.
Electrical shocks and fires	<b>Grounding Mandatory</b> Power cable <b>Mise à la Terre Obligatoire</b> <i>Cordon d'alimentation</i>		Always ground the system to prevent electric shock from leakage current.
Burns	<b>High Temperatures</b> Heat cover & Heat block <b>Haute Température</b> <i>Couvercle Chauffant</i>		Avoid touching the heat cover, which reaches very high temperatures and may cause burns.
Burns and fires	<b>Installation Precaution</b> Air vents <b>Précautions d'Installation</b> <i>Prises d'air</i>		Be sure not to block air vents when installing the system, as this can cause internal overheating.
Low accuracy and/or Condensation	<b>ALWAYS OPERATE WITH LID CLOSED</b> <b>To ensure accuracy and reduce condensation</b>		Be sure to close the cover while the system is in operation as to ensure accuracy of control temperature and to reduce condensation around the sample block.



This symbol means caution or warning.



This symbol means an action is prohibited.



This symbol means an instruction must be followed.

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## ●Chapter 1: Overview

Thank you for purchasing TaKaRa PCR Thermal Cycler Dice™ *Touch*.

TaKaRa PCR Thermal Cycler Dice™ *Touch* is more small PCR device and easy to use the big touch panel, that reconfigure TaKaRa PCR Thermal Cycler Dice™ series as usual.

This page is introduced to the features of TaKaRa PCR Thermal Cycler Dice™ *Touch*.

### <Feature of device>

Achieve the ultimately miniaturized size of PCR device to reconfigure the TaKaRa PCR Thermal Cycler Dice™ *Touch* series as usual.

Size (lid closed, except the projection): 180 (W) x 285 (D) x 205 (H) mm

- Have a 7" color touch screen giving a vibrant and flexible means of run setup and monitoring.
- Utilize six Peltier devices to actively heat and cool the block are arranged into three zones with independent sensing and control capabilities.
- High performance block cycling system configured and optimized for industry standard 0.2ml individual or strip tubes (domed or flat-capped) or 96 well plates.
- Applications of thermal gradient technology (gradient of between 0~25°C, 12 steps across the block) include the ability to optimize the annealing temperature of an assay in a single experiment by determining the temperature of the wells that yield the best result.

### <Feature of software>

- A powerful thermal profile may contain up to 200 events. Each 4 kinds of 'event' can be either a hold a temperature, ramp, pause or 2 to 10 step cycling with up to 99 repeats,
- The Long Range feature enable the time of particular cycling step to be automatically increased or decreased by a specified range of cycle repeats. It is most useful for targets longer than about 1kb.
- The Touchdown function enables the temperature of a step to be automatically decrease ( or increase) by a preset amount over a range of successive cycle repeats.
- The Ramp function enables to set the time from initial temperature to end temperature.

- The Pause function allows the user to pause the profile at any number of pre-programmed points with an audible beep.
- The Holds are useful if there is a need to remove tubes at add reagents at a particular point in a run.
- The Auto Restart feature is restart a run if power has been lost for any reason during cycling.
- The Rate Limiting feature is controllable the rate of heating and cooling between 0.1°C/sec~2.5°C/sec during a run.
- Manual Control mode enables the user to set the block to a specific temperature quickly without creating a thermal profile. This function is useful for incubating reactions such as DNA digestion or ligation. (The feature is able to use directly not to save as a program file.)
- Save and transfer PCR run files and logs between the default or individual user directories and a USB memory drive.
- A facility has provided to update the software which resides on the TaKaRa PCR Thermal Cycler Dice<sup>TM</sup> Touch with USB memory stick.

## ●Chapter 2: Installation Requirements

### 1. Installation Conditions

To ensure optimum performance and long and stable product life, observe the following precautions when selecting an installation location.

Note that installing the system in a location that does not meet the requirements listed below can result in malfunctions and/or system breakdown. Replacement of components and system repairs for any deterioration in performance or damage caused by failure to adhere the following conditions will not be cover by warranty.

1. Install system in a comparatively dust-free location
2. Avoid locations subject to corrosive or flammable gases.
3. Avoid locations subject to either strong shocks or continuing low levels of vibration.
4. Install the system away from direct sunlight.
5. Install the system as far away as possible from electrical equipment that generates strong magnetic fields, electrical fields and high frequencies. Avoid locations near equipment that generate noise caused by electrical motors and transformers.
6. Choose a flat location capable of withstanding the design weight of the system.
7. The installation environment must be within 15 to 30°C temperature range and 20 to 80% relative humidity range.
8. Avoid locations subject to sharp temperature fluctuations, exhaust from air-conditioning systems and condensation caused by sharp humidity fluctuations.
9. Avoid locations air vents located on the right and left and rear sides. (Leave a space of the both sides at least 15cm and the backside at least 10cm)
10. Choose an operating location with good ventilation.
11. Do not operate the system in a cold room.
12. Select a room that can provide sufficient power (frequency, voltage and current) for system operation.
13. Do not attempt to move the system while holding it by the cable of backside, as this can damage to components. Doing so can also result in personal injury due to part breakage resulting in the system falling down.
14. Do not open the lid for the PCR reactions. It is expected to decrease the accuracy of temperature and generate the condensation at the low temperature (below 10°C)

## **2. Installation**

Use the following procedures when installing system.

1. Confirm that the system power switch is set to off.
2. Connect the system side of the power cable to the power connector on the rear of the system.
3. Plug the AC power plug of the cable into power outlet.

The system is designed to operate normally with a 100 to 240V AC, 50/60Hz power line. Make sure that the power outlet is designed for a 3-pronged plug with ground line.



### **CAUTION**

In the interests of safety, and avoiding electric shocks, be sure to connect the system to a properly grounded power outlet.

4. Turn on the system power.
5. The software starts as soon as power is applied.

Follow the installation procedures outlined in Chapter 4. System Operation.

## **3. Moving the System**

Follow the procedures described below when moving the system to a new location after it has been installed.

- **New Location Within the Same Site**

Follow the precautions listed below when moving the system to a new location within the same site.

1. Thoroughly clean the system and make sure that there are no tubes or plates remaining in the sample block.
2. Avoid any shock during movement that can affect the operation of this highly sophisticated system.
3. When lifting and carrying the system, be sure to place one hand on either side of the system and lift and carry in a balanced way.
4. Make sure that the new location conforms to the installation requirements described in section "1. Installation Conditions" in Chapter 2.
5. Follow the installation procedures outlined in section "Installation" in Chapter 2.

- **Moving to a New Site**

When moving the system to a new site, clean it carefully and repack it in the packaging in which it was delivered. Note that damage sustained by the system during transport due to improper packaging will not be covered by Warranty period is still valid. Follow the instructions provided in this chapter when reinstalling the system at the new location.

## ● Chapter 3: Names of Parts and Their Functions

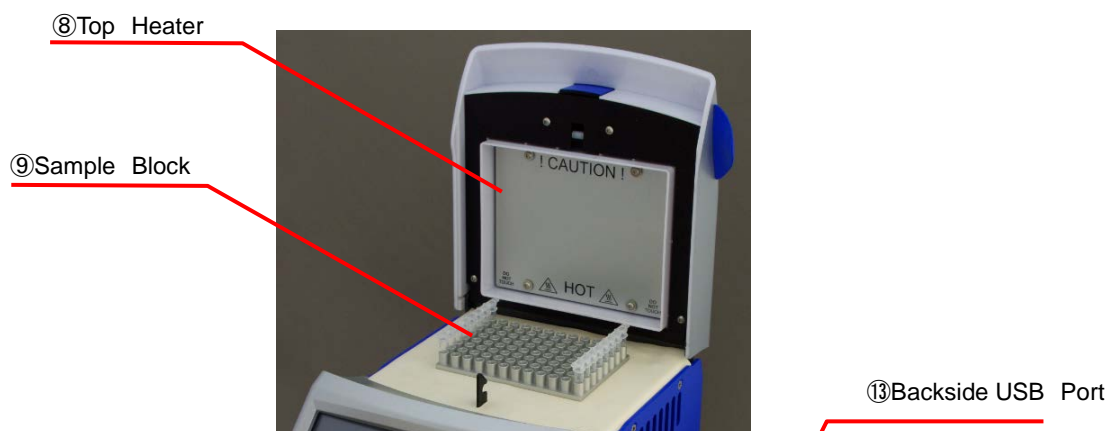
### Front View



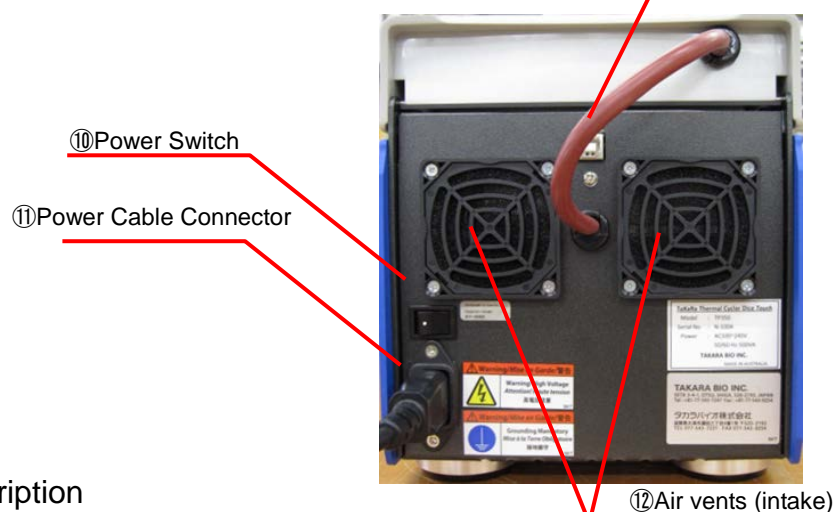
### General Description

- |                     |   |
|---------------------|---|
| ①Lid Lock           | The Lid Lock is slid behind the unit, so that the Lid picks a Lock.   |
| ②Lid Handle         | The Lid Handle bring up the same as sliding the Lid Lock behind the unit, when the Lid open.  |
| ③Lid                | The Lid is designed the Top Heater at the interior side to protect against evaporation resulting from heating of the reaction tube and reaction plate.<br><br><b>【Caution】</b> Avoid inserting fingers as the Top Heater (interior) of the unit reaches very high temperature (up to 115°C) in operation. |
| ④Touch Panel        | 7 inch, vivid color touch screen controls the program at your tip of your finger or stylus (touch pen).   |
| ⑤USB Port           | A handy USB port allows for file transfer and save the files, and also facilitates the direct use of mouse with the unit.   |
| ⑥Air Vents          | (Exhaust :Left and Right sides) Opening used to cool the interior of the unit.<br><br><b>【Caution】</b> Do not block any of the air vents  |
| ⑦Stylus (Touch pen) | Used to operate the program on the Touch Panel.   |

## Lid Block View



## Rear View



## General Description

- |                         |   |
|-------------------------|---|
| ⑧ Top Heater            | <p>The Top Heater protects against evaporation resulting from heating of the reaction tube and reaction plate.</p> <p><b>【Caution】</b> Avoid inserting fingers as the Top Heater (interior) of the unit reaches very high temperature (up to 115°C) in operation.</p> |
| ⑨ Sample Block          | <p>Section of the unit in which sample tubes and plates are placed.</p> <p><b>【Caution】</b> Do not touch the block as it reaches temperatures up to 99°C</p>  |
| ⑩ Power Switch          | <p>The Power Switch is main switch to put on or shut off the power.</p>   |
| ⑪ Power Cable Connector | <p>Socket for power cable</p> <p><b>【Caution】</b> Make sure to use the power cable provided with the unit.</p>  |
| ⑫ Air Vents             | <p>Intake, Openings used to cool the interior of the unit.</p> <p><b>【Caution】</b> Do not block any of the air vents</p>  |
| ⑬ Backside USB Port     | <p>Do not use this port.</p>  |

## ●Chapter 4: System Operation

### 1. Introduction

Plug the unit into a power outlet and power the unit on with the switch located on the rear of the unit. Do not worry about selecting the correct power voltage for your country, TaKaRa PCR Thermal Cycler Dice™ *Touch* is designed to operate in any country in the world with no charges.

The unit is also designed to be resistant to power surges and drop-outs that occur in countries with less reliable power grids.

Electrical AC100V~240V, 50/60Hz

Consuming electric power 500VA (5A @100V)

#### 1-1. Power Switch

On Power up the TaKaRa PCR Thermal Cycler Dice™ *Touch* will display the logo and take a few moments to initiate the software.

**【Caution】** Please do not touch the Touch panel and shut down the system until the main menu appear on the panel screen. That is the cause to the trouble of apparatus and wrong moments.

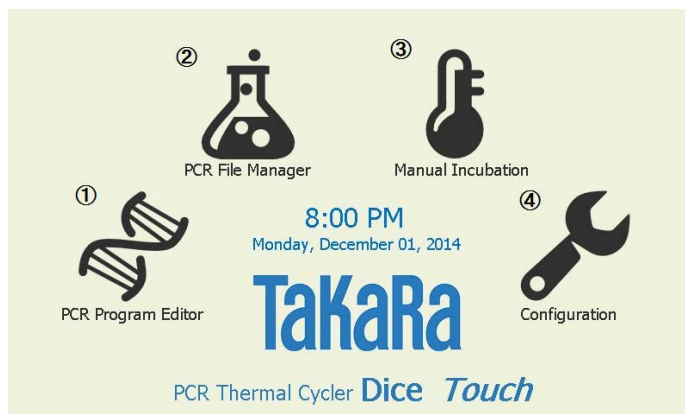
#### 1-2. Touch Panel

The TaKaRa PCR Thermal Cycler Dice™ *Touch* has a 7" color touch screen giving vibrant and flexible means of run setup and monitoring. This internal graphical user interface controller provides a powerful yet intuitive and easy to use interface, and directly control at your tip of your finger or stylus (touch pen) attached instrument above the icon and menu on the screen.

**【Caution】** If you use a sharp tip tool except stylus (touch pen) attached instrument to operate the Touch panel, that is damaged to the Touch panel depending on the situation.

### 1-3. Home

After power up the unit defaults to the home screen from where all features may be accessed.



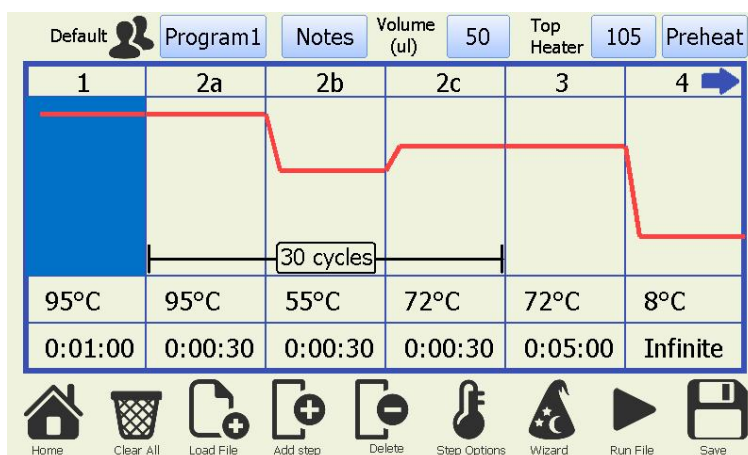
The 4 screen icons provide access the following features:

- ① PCR Program Editor- is used to create a new PCR thermal profile and initiate its execution.
- ② PCR File Manager- is used to load and edit PCR program files.
- ③ Manual Incubation- Allows immediate manual setting of block temperature.
- ④ Configuration -Takes you to the configuration page allowing of machine options.



## 2. PCR Profile Creation

From the 'home' screen the 'PCR Program Editor' icon will bring you to appear an initial display of PCR program. Create a new thermal profile using either the initial display or the Wizard mode to click witch hat icon (worn Wizard) under the screen. An Active step become blue in a color on the program. Appear continuation of the program (Not documented on the screen) using a blue arrow on the upper right of display.



**Load File:** Load a stored program on the device

**Add Step:** Add a step file to specify the location of the displayed profile.

- Add to end of Profile : Add a step to end of the displayed profile
- Insert after X : Add a step close behind the active (blue) step
- Insert after X within Cycling : Add a step behind the active step within Cycling
- Insert at start of Profile : Add a step at a start of displayed profile

**Delete:** Delete a active (blue) step

**Step Options:** Move a active (blue) step and  
Setting of specific function (p.19)  
using Advanced Edit



**Wizard:** Configure the running profile using Wizard Mode

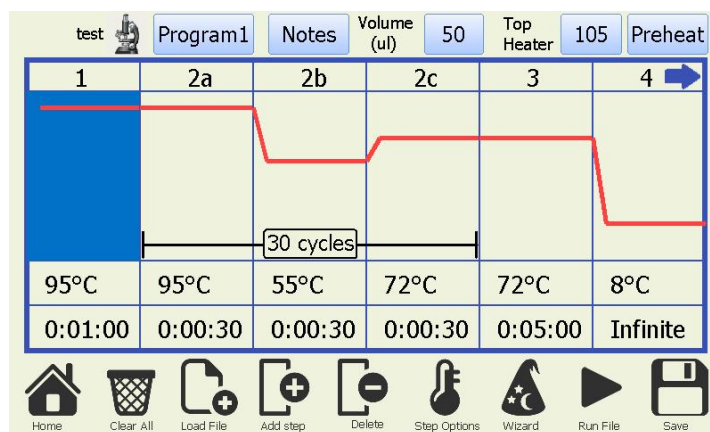
**Run File:** Run the displayed profile

**Save:** Save the displayed profile

**Home:** Return the Home page.

## 2—1. Configure and Edit a new thermal profile

Appear an initial profile that is a default profile or a profile for previous measurement in PCR Program Editor. If you want to display a default profile but not a profile for previous measurement, you would click hat icon (worn Wizard) under the screen and open the default profile.



Change a block temperature to click a temperature column.

Change a reaction time to click a time column

Change a number of cycles to a cycle column within Cycling.

Enter hold temp (deg C)  
(max 99)

95

1	2	3
4	5	6
7	8	9
.	0	<-

✓ Done ✗ Cancel

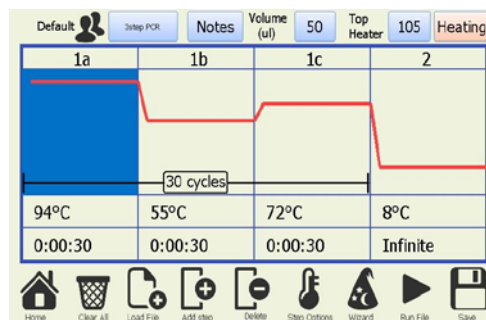
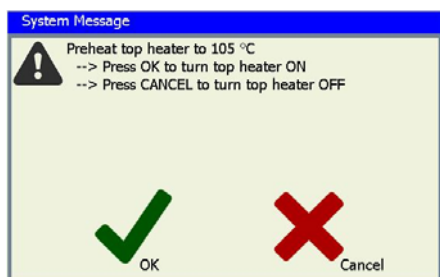
Enter time (h:mm:ss)

0:00:30

1	2	3
4	5	6
7	8	9
Infinite	0	<-

✓ Done ✗ Cancel

Preheat a top heater before commencing the run when click a 'Preheat' button on the upper right corner. Press OK to turn top heater ON or cancel to turn top heater OFF of the next system message. Change 'Preheat' button to 'Heating' one.



## 2—2. Configure a new profile using Wizard Mode

The TaKaRa PCR Thermal Cycler Dice™ Touch software includes a Wizard utility which enables the user to configure easy to moderate complexity profiles in just moments. To activate select 'Wizard' from the PCR or One Step RT-PCR start-up screen.

The screenshot shows the 'PCR Experiment Wizard' interface. It has two columns: 'Temperature (°C)' and 'Time (mm:ss)'. The steps are listed on the left with checkboxes. A red 'X' is in the top right corner, indicating an error. A green checkmark is in the bottom right corner.

Step	Temperature (°C)	Time (mm:ss)
<input type="checkbox"/> cDNA	50.0	30:00
<input checked="" type="checkbox"/> Preheat (Activation)	95.0	1:00
Denaturation	95.0	0:30
Anneal <input type="checkbox"/> Gradient	55.0	0:30
<input checked="" type="checkbox"/> Extension step	72.0	0:30
<input checked="" type="checkbox"/> Post Cycling Extension	72.0	5:00
<input checked="" type="checkbox"/> Hold on Completion	8.0	
<input checked="" type="checkbox"/> Top Heater (°C)	105	

Sample Volume (ul): 50

Cycles: 30

The Wizard screen displays each of the steps which occur in a typical range of profiles. At a usual there are 3 steps, Preheat and then denaturation and anneal which are cycled. You may enable up to a further 3 steps (cDNA, Extension & post run hold) by clicking on the corresponding check boxes. Each of the steps will be executed in the order they are shown arranged down the screen with the denaturation, Anneal and Extension (if enabled) steps being cycled. After the amplification run has been completed the temperature may be held at a defined temperature until the user disables the unit.

'Hold on Completion' is checked to hold at 8°C (default) that amplified samples keep cooling.

To adjust any of the parameters click on the corresponding time or temperature boxes and keypad will be presented allowing entering of new numbers. The number of cycles can also be adjusted between 1 (single execution, no loops) and 99 cycles.

### 【Range of values】

Block temperature: 4°C~99°C、 Time: 1sec~9hour、

Number of cycles: 1~99Cycles、 Top heater temperature: 60~115°C

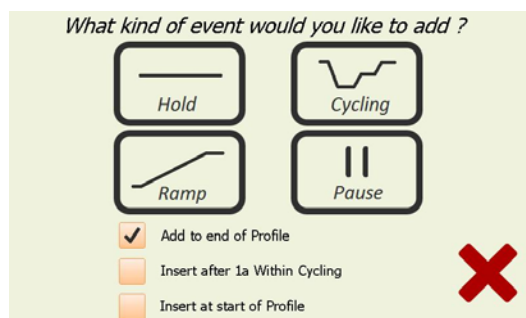
### 2—3. Explanation of functional icons for editing the profile

#### <Creating a new Event using Add Step>

To create a new event select an 'Add Step' icon in the 'PCR Program Editor'.

The first screen of the Add Event Wizard which will be displayed lets the user select the type of event.

Change the items of Add Event Wizard for setting the point of Add Step.



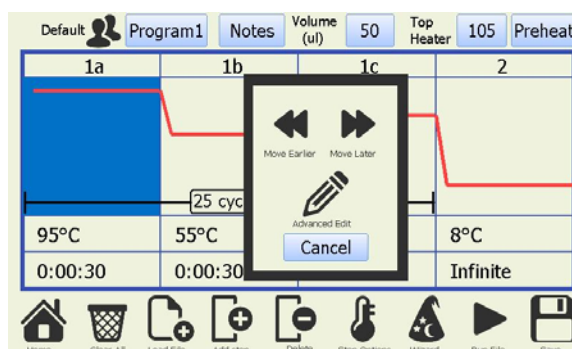
You may choose from 4 event types.

- ①Cycling x Step – will proceed to generate a multi-step cycling event. The scroll button to the right allows you to change the number of steps between 2 and 10 for the cycling event.
- ②Hold – is a simple hold at given temperature for a set time. It may be performed either with or without a gradient across the block. If you wish to hold the temperature infinity, you may touch the 'Infinite' button.
- ③Ramp – Allows the block temperature to be ramped either up or down between two set temperatures over a preset length of time. The block target temperature is updated every second and with a 0.025 degree minimum step resolution. It may be performed either with or without a gradient across the block.
- ④Pause – will hold the temperature at the last set point and pause the run with an audible warning. This is useful if the operator needs to perform a certain action of the samples at given point in the run. The operator clicks OK when complete and the run will continue with the next event.

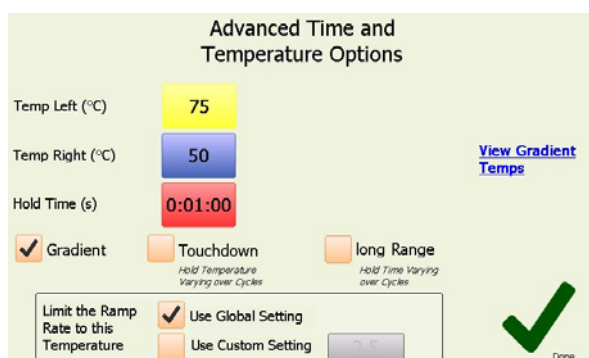
## &lt;Explanation of specific function (Advanced Edit)&gt;

Within the cycling configuration screens there are numerous options.

There are also options for Gradient, Touchdown and Long range features to use the Advanced Edit.



**Gradient**: allows both the left and right temperatures (range of temperature values: 4~99°C) that is programmable 0~25°C across block width (12wells) may be set separately and the predicted well temperatures can be shown by clicking the '[View Gradient Temp](#)' link.



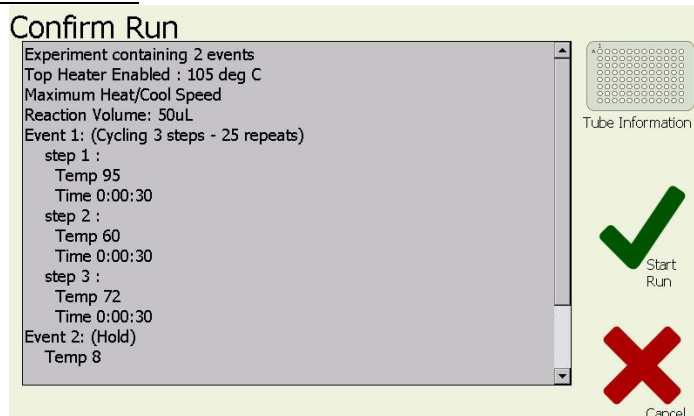
**Touch down**: allows for the temperature of a given step within a cycling event to be progressively increased or decreased from an initial value to a final value over a defined number of steps.

**Long Range**: allows the hold time of a given step within a cycling event to be progressively increased or decreased from an initial value to a final value over a defined number of steps.

After the parameters for each step are configured the operator is prompted to enter the number of times to repeat the cycle.

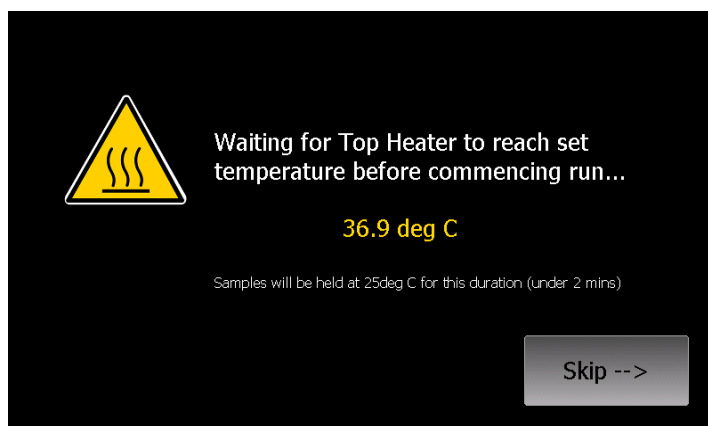
**Limit the Ramp Rate to this Temperature**: Default settings is checked on Use Global Setting that based on the Global rate limit heating cooling rate of Configuration/Machine Settings. Default temperature rate is maximum rate (2.5°C/sec). When you are checked on Use Custom Setting, you control the temperature rate (0.1~2.5°C) from former step to this step.

## 2—4. Confirm Run

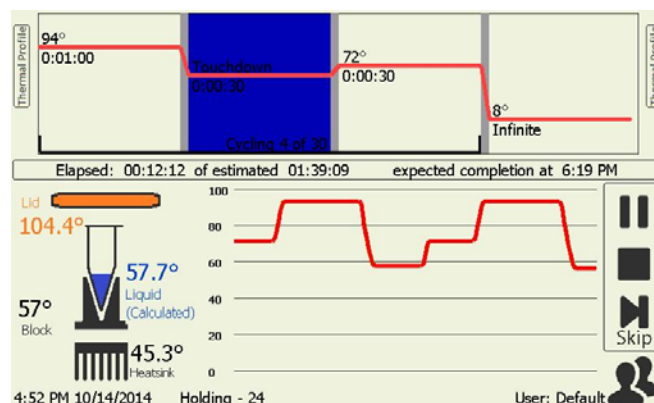


When the user is happy with the profile parameters just click on the tick. A run review screen will now be shown with a text description of the profile steps. Click on OK to commence run execution.

Once the profile is confirmed, if the 'Use Top Heater' checkbox option is selected (default) then you will be prompted with a screen asking if you wish to wait for the top heater or reach target temperature before commencing the run. If you select to wait for the top heater to achieve temperature a waiting screen will be displayed. You may skip the waiting step at any time if you wish to commence the run immediately. Depending on the set temperature of the Top Heater it will take up to several minutes to preheat to this temperature.

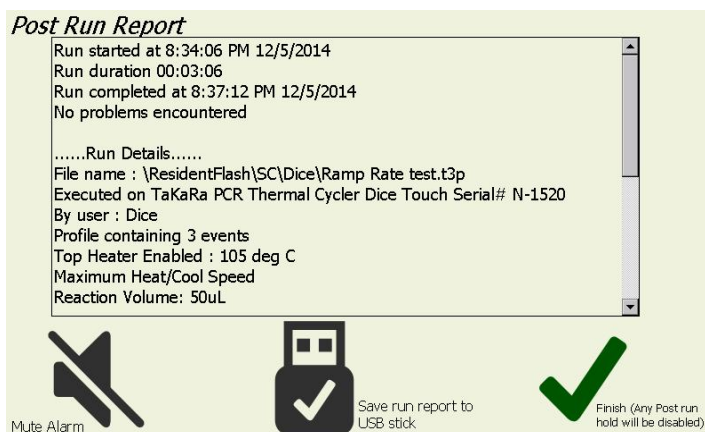


When the run commences the software will automatically proceed to the 'Run' screen. You are not able to modify the profile once a run has commenced.



You are able to skip a step , pause and stop using right icons on the Run Screen.

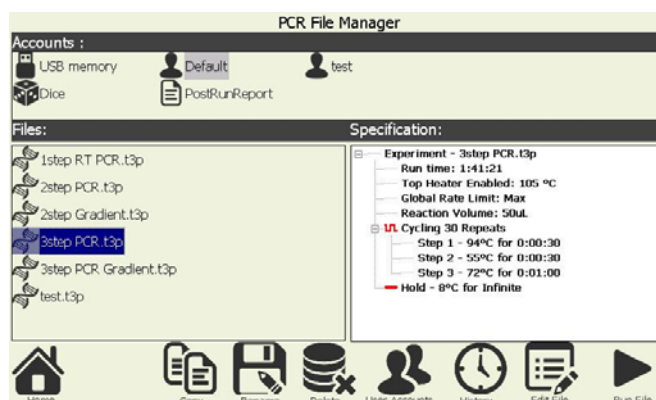
On run completion the post run report screen will show and if enabled an audible alarm will sound. The alarm may be muted by pressing the mute alarm button. The post run report can be saved as a PostRunReport text file on the PCR File Management (maximum recent 10 files) and text file to a USB memory stick for inclusion into lab books etc.



### 3. PCR File Manager

The PCR file manager area enables you to confirm and copy/paste PCR run files between the default or individual user directories and an USB memory drive. Plug your USB drive into the connector on the front of the unit and you may browse the directories on the Takara Thermal cycler Dice™ Touch and copy/paste files to or from. You may also delete any thermal profiles from the Dice™ Touch.

Files may be copied between different user directories (excluded security) by first copying them to a USB stick and then back into the destination user directory.



**Copy:** Copy program files into an user directory or an USB memory drive.

Drag a screen of 'Files' around plural target files by a stylus and then select 'Copy' icon on the lower side of screen.

**Paste:** Appear a 'Paste' icon when select a 'Copy' icon on the lower side of screen.



Paste copied files for other user directories or an USB memory drive.

**Rename:** Rename the name of a target program file using 'Rename' icon on the lower side of screen.

Disappear the original file name when rename he name of a program file.

**Delete:** Delete the target program files using 'Delete' icon on the lower side of screen.

**User Accounts:** Log in an User Acoountment and set a new user accountment.

**History:** Appear a table of recent running file lists containing file name, running date and conclusion of running. Clickt a file into the table of lists and select 'Run program Again' and then restart the file again.

**Edit File:** Edit a select program file

**Run File:** Run a select program file.

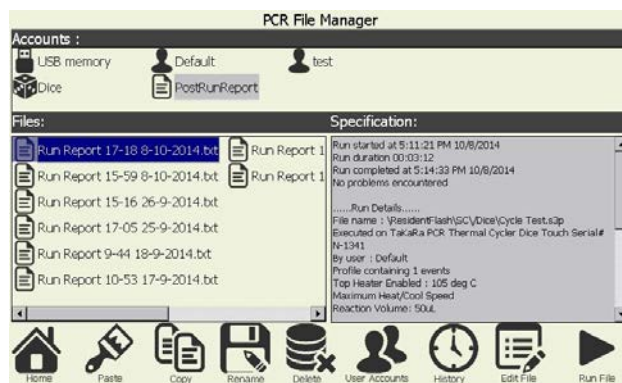
**Home:** Return the Home page.



## &lt;PostRunReport&gt;

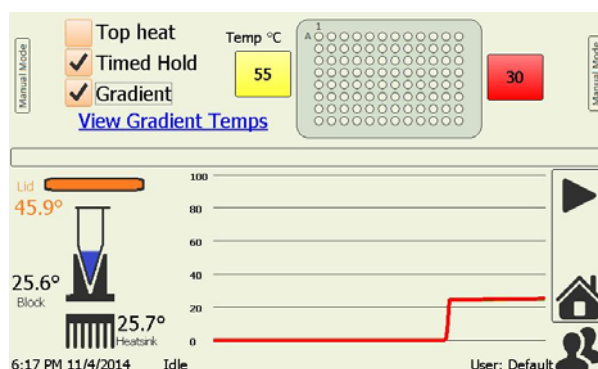
The post run report can be saved as a PostRunReport text file on the PCR File Management (maximum recent 10 files).

Specification is described content of a PostRunReport file.

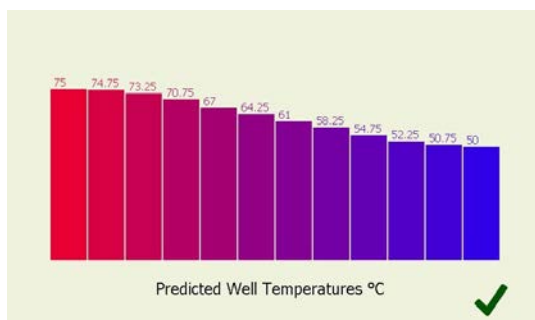


#### 4. Manual Incubation

The manual incubation mode screen allows immediate manual setting of the block temperature. To activate this mode simply press the blue 'start' button. Terminating the mode is achieved by pressing the red 'stop' button. To program the set temperature press the 'Temp' button to the left of the graph and enter the desired value. You may program the temperature set point to 0.1 degree C resolution.



Gradient: If the 'Gradient' checkbox is checked the 'Temp Left' and 'Temp Right' buttons appear and you are able to set different temperatures that is programmable 0~25°C across block width (12wells) for both the left and right sides of the block with a roughly linear thermal gradient presented between the two outer well sides and the predicted well temperatures can be shown by clicking the '[View Gradient Temp](#)' link.



Predicted well Temperature is refer to the left, center and right zones when looking at the machine.

Top Heat: To enable the Top Heater evaporation control click the 'Top Heat' checkbox. The target temperature of the top heater is configured under the Machine settings on the Configuration. Note the top heater will take a few minutes to reach its operating temperature. (using above 30°C)

Time Hold: The 'Time Hold' checkbox is a simple hold at given temperature for a set time. It may be performed either with or without a gradient across the block (maximum 23 hours 59 minutes).

The picture on left side of the screen displays the present temperature .

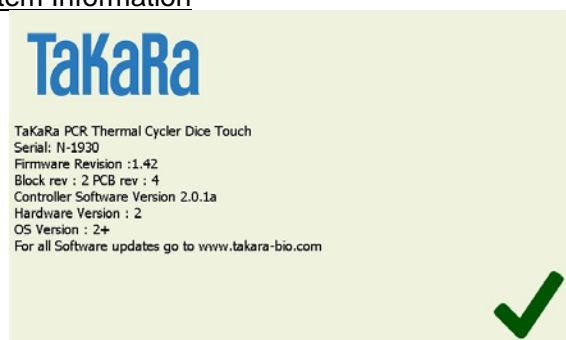
## 5. Configuration Tools



The configuration page provides access to the following features.

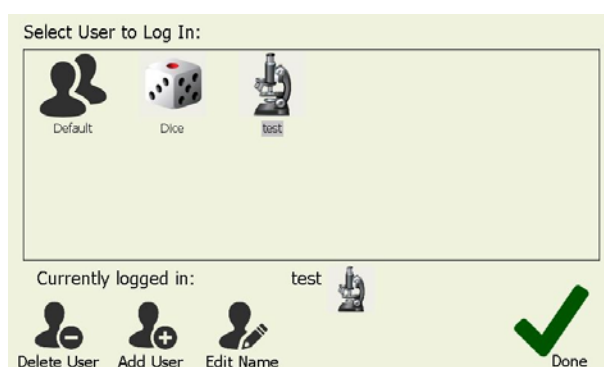
- ① **System Information**: Displays a general information screen which includes such information as serial number, software and hardware version numbers. An on-screen user manual is accessible from under this page menu.
- ② **Machine Settings**: Allow changes to be made to the instruments settings.
- ③ **Time & Date**: Used to set the Time for the instruments internal clock.
- ④ **Thermal Calibration**: The thermal calibration feature is used to adjust the machine calibration. Takara Thermal cycler Dice™ Touch are factory calibrated and should not require user recalibration for the life of the machine. The recalibration procedure is not covered in this user manual. If it is required, contact the support line service of Takara-Bio. The thermal calibration is password protected to prevent it accidentally being changed.
- ⑤ **User Accounts**: User account control.
- ⑥ **Software Update**: Allows upgrading of the Takara Thermal cycler Dice™ Touch operating Software.
- ⑦ **Touch panel calibration**: You can also perform a calibration of the touch-panel interface using the calibration wizard. If the calibration has varied click on this button and follow the instructions to re-calibrate the screen. If you are having difficulties navigating to this option because the touch panel is out of calibration then you may use a USB mouse plugged into the front USB port to reach the touch panel calibration wizard.

### 5—1. System Information



Confirm a general information screen which includes such information as serial number, software ( N-xxxx ) and hardware version numbers and Controller Software Version.

### 5—2. User Accounts



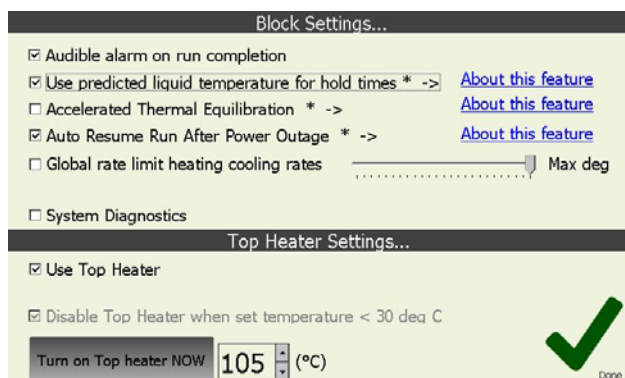
In the users area you are able to select an existing user or create or delete a user profile. When a user is selected thermal profiles will be loaded or saved to a directory specific to that user. Logging out will change back to default user.

To create a new user select the 'Add New User' Icon and then enter name and choose a user profile image.



### 5—3. Machine Settings

The following features are available under this page.



< 96 well thermal block settings >

Audible alarm on run completion:

toggles whether there is an audible alarm or just a screen message to alert the operator that the run has completed.

Use predicted liquid temperature for hold times:

The Takara Thermal cycler Dice™ *Touch* software implements a thermal model which predicts the actual liquid temperature inside the reaction vessels (Sample volume is 10~50 µl). Hold times can be based on this model (default) or based purely on the block temperature. Using the predicted temperature effectively increases the hold time (and total run time) slightly but gives a more accurate representation of the hold time of the actual sample liquid. Most manufacturers' thermal cyclers purely use the block temperature for timing.

Accelerated Thermal Equilibration:

If this feature is selected the temperature model will use overshoot and undershoot to get the liquid to temperature faster (Sample volume is 20~30 µl). This is useful for highly sensitive chemistries or thermal profiles with short hold times.

Auto Resume Run After Power Outage:

If this feature is available on your cycler (not available on all models) then when this box is checked a run will automatically resume at the same place if power should be momentarily lost during a run.

Rate limit heating cooling rates:

sets the rate limit for a run. This has a limit of 0.1°C/sec to 2.5°C/sec.

This feature is only available in runs not manual mode.

< Top heater evaporation control settings >

Use Top Heater:

will cause the top heater to be used during a run if it is checked. Entry box

for top heater temperature. Temperature is programmable between 60~115°C (default 105°C). 'Turn on Top heater NOW' Button for manually enabling the top heater to preheat it if required and Top heat checkbox is checked on the manual mode screen at the same time.

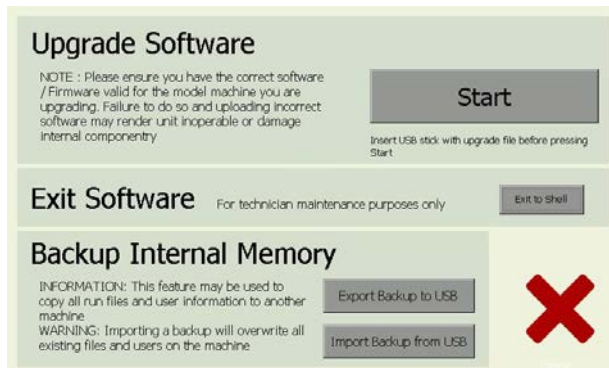
Disable top Heater when set temperature < 30 deg C:

feature is implemented to reduce the high thermal load placed on the peltiers when holding the samples at low temperature (i.e. 8 degrees). This prevents excess heat from the top heater heating the chilled samples. It is best to leave this option enabled.

【Note】 The Top Heater is only activated when a run is started or the operator enables it in manual mode.

#### 5—4. Software Update

A facility has been provided to update the software which resides on the Takara Thermal cycler Dice™ Touch. The upgrade file you receive from our support team should be placed on the main root directory of your USB memory stick. You may then select it to upgrade the unit's software. Before the upgrade software, you may backup the internal drive files to USB memory stick using button of 'Export Backup to USB'.



After selecting the software file read the message box and press OK and wait. Upgrade will take up to 1~2 minutes. Once upgrade is complete you can check that the new version is installed by visiting the 'Information' page from the Configure and check the installed software version.

After the upgrade software, you may import the backup files from the USB memory stick using button of 'Import Backup from USB'.

【Important Note】 Do not interrupt the unit while a file upgrade is in progress. Switching off the power during upgrade may render the unit inoperable.

## ●Chapter 5: Diagnosis Functions

The following are provided in three test files to program of 'Dice' account folder.

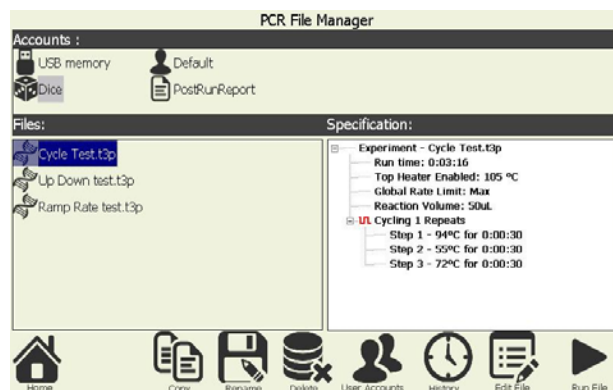
- Cycle Test: Test cycling time and stability of control operations
- Up Down Test: Measures time required from heat up to 98°C to cool down to 20°C
- Ramp Rate Test: Tests heating and cooling rate

**【Caution】** Confirm a standby temperature is set at room temperature prior to commencing test.

The Diagnosis function performs the following three tests

### 1. Cycle Test

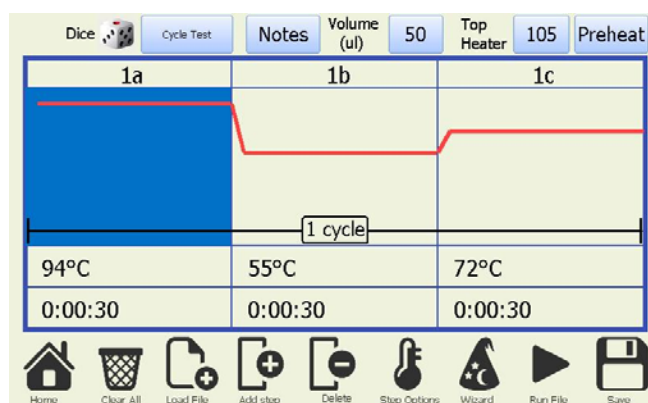
- ① From the 'home' screen the 'PCR File Manager' icon will bring to the experiment page. You can load an existing experiment from the internal drive.
- ② Click the 'Dice' icon from some accounts



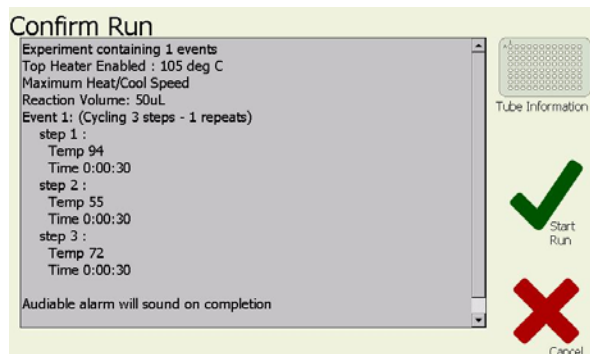
- ③ Select the Cycle Test.t3p file to preset program in 'Dice' and appear the specification of this program at the right side of PCR File Manager.

Touch a 'Edit File' icon, show the content of program.

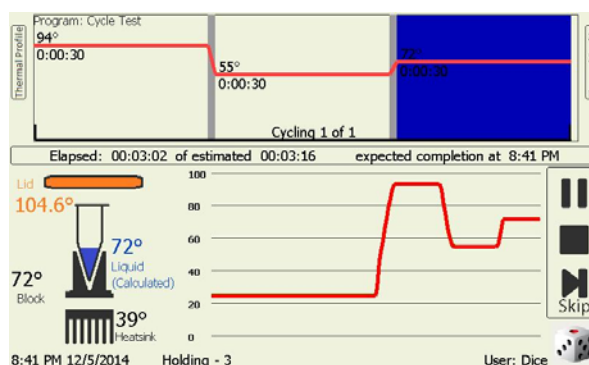
Program details: 94°C for 30sec, 55°C for 30sec, 72°C for 30sec (1 cycle)



- ④ Activating 'Run File' button under the icons will show a profile review page which allows the operator to check over the profile (displayed in text format) before confirming commencement and then click 'Start Run'.

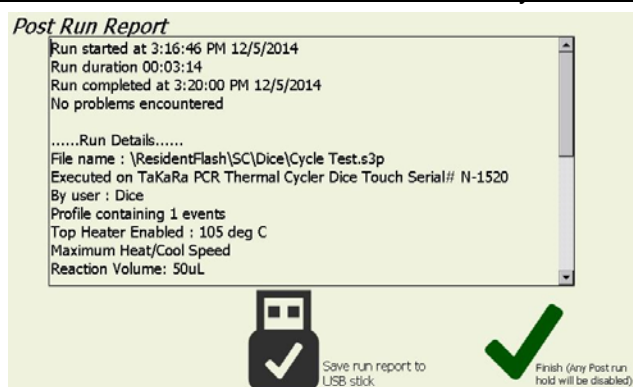


- ⑤ The Program is started.



- ⑥ The below report is described to the end of Cycle Test program.  
Run Started, Run completed and Run duration is appeared.  
The report is saved a PostRunReport file
- ⑦ You checked that the run duration (cycle time) is less than the Standard Value.

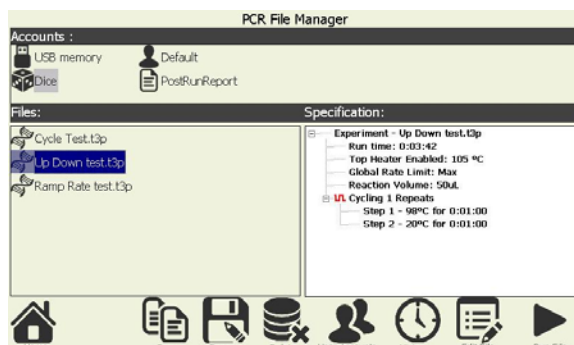
The Reference Value : less than 4 minutes (Cycle time)



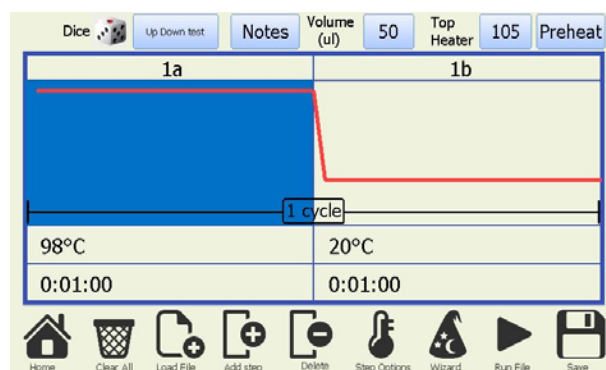


## 2. Up Down Test

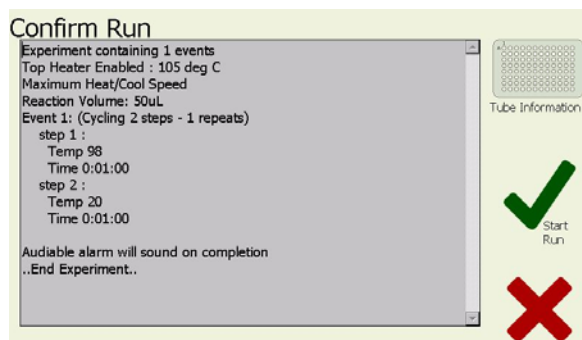
- ① From the 'home' screen the 'PCR File Manager' icon will bring to the experiment page. You can load an existing experiment from the internal drive.
- ② Click the 'Dice' icon from some accounts
- ③ Select the Up Down Test.t3p file to preset program in 'Dice' and appear the specification of this program at the right side of PCR File Manager.



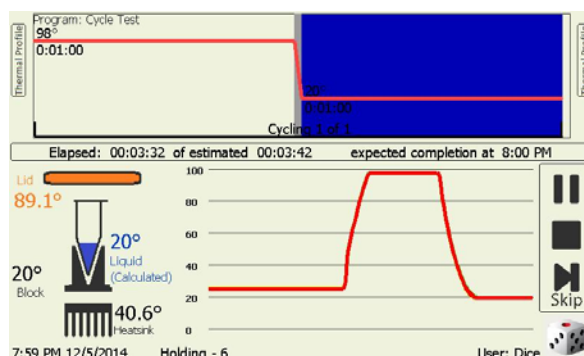
- ④ Touch a 'Edit File' icon, show the content of program.  
Program details: 98°C for 1min, 20°C for 1min. (1 cycle)



- ⑤ Activating 'Run File' button under the icons will show a profile review page which allows the operator to check over the profile (displayed in text format) before confirming commencement and then click 'Start Run'.



- ⑥ The Program is started.



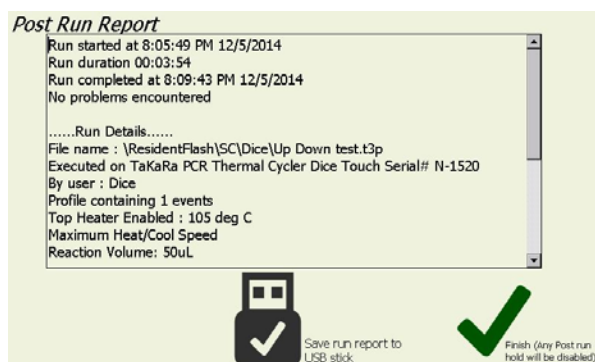
- ⑦ The below report is described to the end of Up Down Test program.

Run Started, Run completed and Run duration is appeared.

The report is saved a PostRunReport file

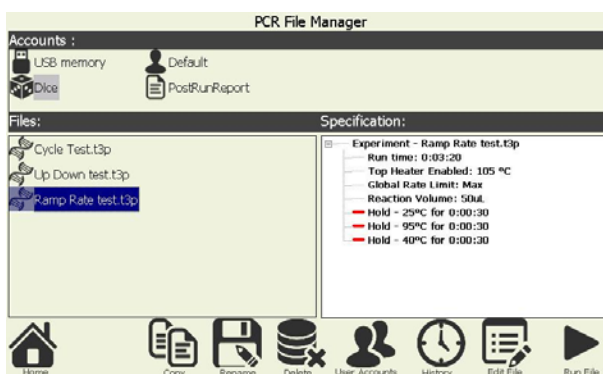
- ⑧ You checked that the run durations less than the Standard Value.

The Reference Value : less than 5 minutes 30 second (Cycle time)



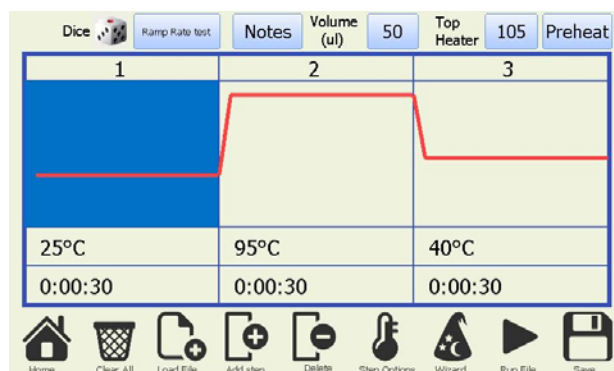
### 3. Ramp Rate Test

- ① From the 'home' screen the 'PCR File Manager' icon will bring to the experiment page. You can load an existing experiment from the internal drive.
- ② Click the 'Dice' icon from some accounts
- ③ Select the Ramp Rate Test.t3p file to preset program in 'Dice' and click the checkmark



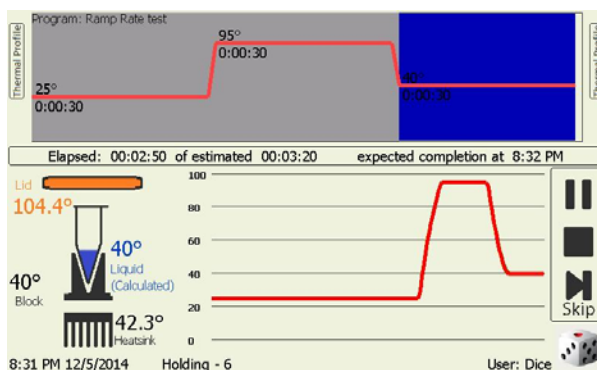
- ④ Touch a 'Edit File' icon, show the content of program.

Program details: 25°C for 30sec, 95°C for 30sec, 40°C for 30sec (1 cycle)

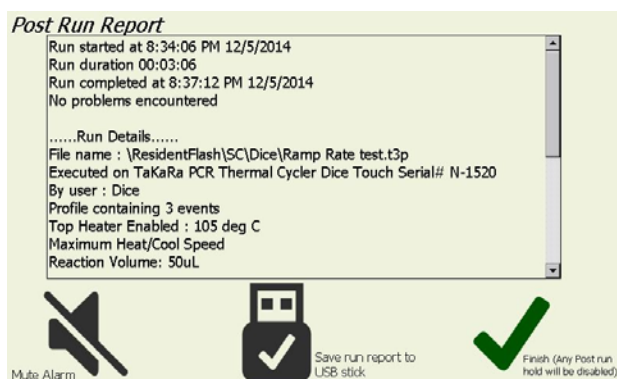


- ⑤ Activating 'Run File' button under the icons will show a profile review page which allows the operator to check over the profile (displayed in text format) before confirming commencement and then click 'Start Run'.

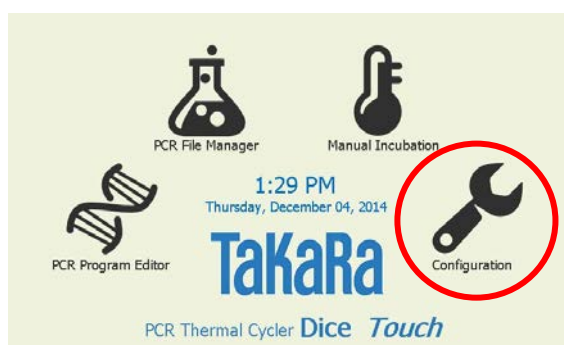
- ⑥ The Program is started .



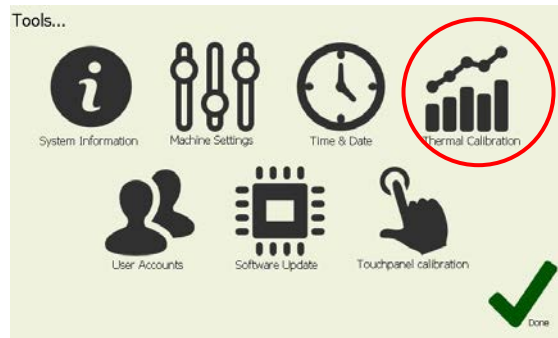
- ⑦ The below report is described to the end of Ramp Rate Test program.



- ⑧ Click the lower right check then the 'Configuration' is selected from the 'home' screen.



- ⑨ Select the 'Thermal Calibration' from the 'Configuration' menu.



- ⑩ Touch the 'Ramp Rate' button on the Calibration Wizard screen.



- ⑪ The Max Cool rate and Max Heat rate is displayed on the System Message

Reference Value:

Max Cool is more than 2.5°C/sec

Max Heat is more than 3.0°C/sec



- ⑫ After ramp rate is checked, OK (Green check) is clicked.

The System message is reset to change the initial rate (0.00°C/sec).



## ●Chapter 6: Troubleshooting and Maintenance

If a problem with Thermal Cycler Dice™ *Touch* arises the table below outlines the troubleshooting steps that should be followed and the possible solutions to the problem.

Problem	Possible Cause	Solution
Unit does not power up.	The power cable is unplugged.	Plug the power cable into the back of the machine.
	The Main power is not turned on.	Turn the main power switch on.
	The Power Supply is not working correctly.	Need to replace the Power Supply Unit.
	The Fuse is blown.	Need to replace the fuse with a 20A blade fuse.
The machine restarts when heating or cooling is commenced.	The PCB is fault.	Need to replace the Main module.
The Top Heater does not heat.	The thermal fuse has blown in the Top Heater module.	Need to replace the Top Heater Module.
	PCB fault.	Need to replace the Main Module.
Touch screen does not work but when a mouse is plugged in it works and the touch screen cannot be recalibration.	The touch screen has become defective.	Need to replace the Front Screen Module.
The screen does not turn on but fans can be heard come on when initial power up.	The LCD screen has become defective.	Need to replace the Front Screen Module.
Bank(S) heats to fast.	The Main block is malfunctioning.	Need to replace the Main Module.
Bank(S) do not heat.		
Top Heater Temperature on screen is zero (0) degree or a warning is displayed on screen indicating a Top Heater sensor failure.	The temperature connector has come malfunctioned.	Check the connector.
	The thermistor on the heater board as malfunctioned.	Need to replace Top Heater.
One of the peltier banks reads zero (0) degree.	The Main block is malfunctioning.	Need to replace the Main Block.

Problem	Possible Cause	Solution
Warning message "Block Sensor Failure" is displayed on screen indicating a block sensor failure.	The Main block is malfunctioning.	Need to replace the Main Block.
Warning message is displayed on screen indicating "system has restarted".	The Main block may be malfunctioning.	If problem occurs repeatedly then replace the main block.
Warning message "Heat sink sensor Failure" is displayed on screen.	The heat sink temperature sensor on the cooling fin (Heat sink) under the main block fails.	Please contact your distributor support for service.
Log message "The power was interrupted during the run...."	Power loss during a programmed run operation.	Refer to the next page.

## **Maintenance**

Be careful especially of the following point before beginning maintenance check.

1. Especially the maintenance work without directions of operation should surely turn off the main power switch and take off the power cord for safety.
2. Warn to spill neither water nor a reagent to mechanism parts and electric parts. Moreover, please place neither detergent nor medicine on equipment.
3. Please do not touch with a hand other than the appointed place.

- Routine maintenance work

1. Please clean a main part periodically and suitably.
2. Wipe all outside surfaces of the equipment with a diluted neutral detergent solution.
3. When a liquid is spilt, please wipe off a sample block circumference part as early as possible.
4. Since dust is easy to collect, please clean a sample block frequently. If dust and garbage adhere to a sample block, a temperature control performance will fall and temperature homogeneity will also become bad simultaneously.
5. Please check it that the air filters of the back of equipment, the left and right-hand side is not closed. Please wipe off, when dust has adhered.

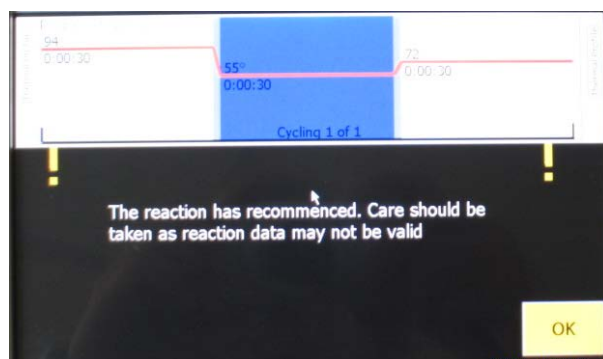


### **CAUTION**

Neither strong alkali, high-concentration alcohol nor use of the organic solvent can be performed. It becomes the cause of breakage, such as discoloration, deterioration, and a crack.

## Power failure

Power failure occurred on the program running and then power was recovered. The machine was resumed and the following message 'Care should be taken as reaction data may not be valid' appeared on the screen.

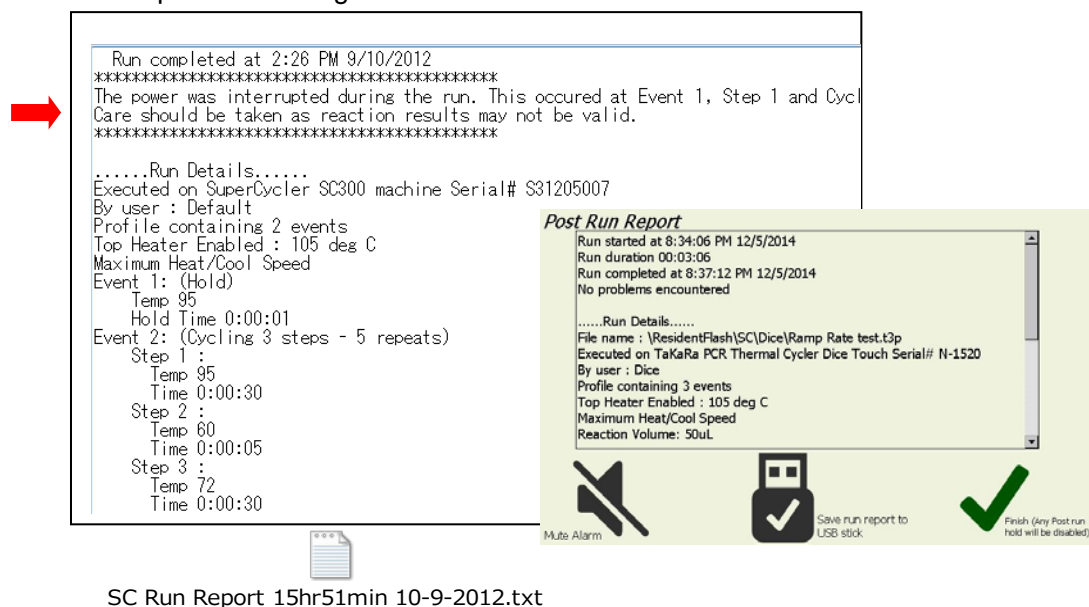


When touch the **OK** button, start to run the program from the stopped state.

When a heated top heater becomes by power failure below in a predetermined temperature, resume operation after warming a heated top heater to an appropriate temperature.

The program will be ended and then the "Post Run Report" will appear on the screen.

Show a sample as followings.



SC Run Report 15hr51min 10-9-2012.txt

"Post Run Report" message can be saved on PostRunReport text file on the PCR File Management (maximum recent 10 files) and USB memory of yours.



## ● Chapter 7: Specification

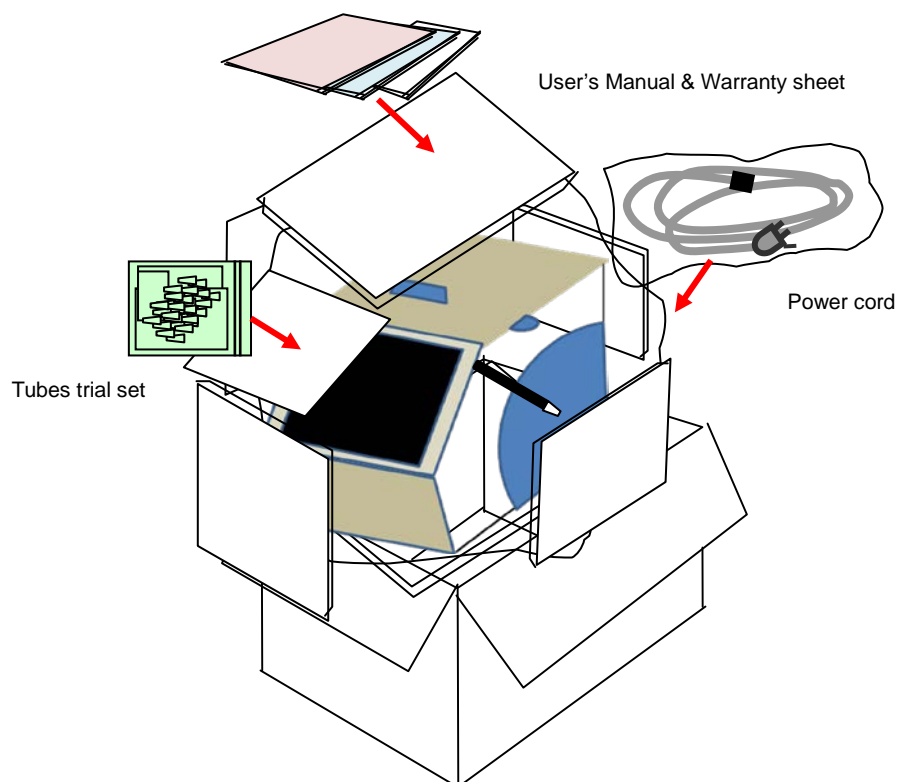
(\*) Performance specification apply when system is operated in the 20 to 23 degree C temperature range.

Product name	TaKaRa PCR Thermal Cycler Dice™ Touch
Model No.	TP350
Operating environment	Ambient temperature 15°C~30°C Humidity 20% ~ 80% RH
Heating and cooling effect	Peltier Device
Heating rate	Max. 3.0 °C/sec
Cooling rate	Max. 2.5 °C/sec
Temperature Accuracy (*)	±0.5 °C (30°C~99°C)
Temperature Uniformity (*)	±0.3 °C (30°C~99°C)
Temperature Range	4 °C ~ 99 °C
Tubes and Plates	0.2ml x 96 Tubes 0.2ml 8 Strips x 12 96 Well Microtiterplate (12 x 8 ) x 1
Internal Memory	256MB, enough for 10,000+ saved profiles (USB Flash memory is enable to use)
Heated Top Heater range	Controllable 60°C~115°C
Internal Interface	Embedded graphical controller with 7" widescreen touch sensitive color backlight display
Linear thermal gradient	Programmable 0-25°C across block width (12wells) Allowable in range 4-99°C
Programming Function	Long Range function、Touch down function 、Ramp function、Pause function、Auto Restart function、Rate limit heating cooling rates function、Manual control function
Security Device	Main module: Fuse(15A) Top Heater : Temperature Fuse(144°C)
Battery for backup	Lithium battery (3V) Model CR2032
Electrical	AC 100V ~ 240V 50/60Hz, 5A (@100V)
Dimensions(mm)	180(W) x 285(D) x 205(H) (Lid closed, Exclude projection)
Weight	5.0 kg

## ● Appendix 1: Accessories list and packing

Confirm that the following items are included in the system package when delivered.

<u>Standard accessories</u>		Quantity
1. Power cable		1
2. User's Manual		1
3. Stylus (Touch pen)		1
4. Warranty sheet		1
5. TaKaRa Supplied PCR Tubes trial set		
< Single Tube >		
0.2 ml Hi-Tube Dome Cap	Single Tube (Cat.# NJ200)	100
< 8 Tube & Cap >		
0.2 ml Hi-8-Tube	8 Tube (Cat.# NJ300 )	12
0.2 ml Hi-8-Flat Cap	8 Cap (Cat.# NJ302 )	12
< 96 well plate & cap >		
96 well snap plate	96 well plate (Cat.# NJ710)	1
Flat cap for snap plate	8 Cap for snap plate (Cat.# NJ720)	12



## ● Appendix 2: Consumable list

### List of Supplies (Tubes and Plates)

Cat. #	Product Name	Quantity
<b>0.2 ml Single Tube</b>		
NJ200	0.2 ml Hi-Tube Dome Cap	1,000
NJ201	0.2 ml Hi-Tube Dome Cap Recovery※	1,000
NJ202	0.2 ml Hi-Tube Flat Cap	1,000
NJ203	0.2 ml Hi-Tube Flat Cap Recovery※	1,000
<b>0.2 ml 8-Tube &amp; 8-Cap</b>		
NJ300	0.2 ml Hi-8-Tube ( 8 - Tube)	125
NJ301	0.2 ml Hi-8-Dome Cap	125
NJ302	0.2 ml Hi-8-Flat Cap ( 8 - cap)	125
NJ600	0.2 ml 8-strip tube, individual Flat Caps	120
<b>0.2 ml Plate &amp; Cap</b>		
NJ710	96 well snap plate ( 12x8, 96 well Plate)	10
NJ720	Flat cap for snap plate ( 8- Cap)	120

\* High recovery type that the sample is not hard to remain on the tube.

### 【Attention】

**Please be aware that recommended caps must be used for each tube and plate.**

**Use of other caps or seal might decrease reaction volume by vaporization.**

## Servicing Request and Safety Check

Attention: Distributor of Takara Bio Inc.

Product Name: TaKaRa PCR Thermal Cycler Dice™ Touch

Serial No \_\_\_\_\_ Date of request: \_\_\_\_\_

Requested by

Name	Contacts : (Telephone, Email)
------	-------------------------------

Company/Institute Name \_\_\_\_\_

Address

Details of request:

(Current status)

Customers are requested to provide the following information on the type of the function and any safety considerations. Safety check covers all personnel involved in using the system, as well as safety of the location in which the system was operated. If contaminated, the customer is requested to decontaminate the system prior to servicing.



1. Material in use( )

•Pathogenicity:《 ☐none, ☐possibly, ☐yes 》 •Toxicity《 ☐none, ☐possibly, ☐yes 》

•Radioactive substances:《 ☐ not used, ☐ used:nuclide( )》

## 2. System contamination status

☐ no contamination, ☐ decontamination, ☐ possibly contaminated

☐ This is to confirm that the system is free of contamination

☐ This is to confirm that there is risk of contamination and the specific safety measures and decontamination procedures were implemented.

Date (year/month/day)                      /                      /

Company/Institution \_\_\_\_\_ Witness by (signature) \_\_\_\_\_



The Safety Confirmation Form shall be presented as statement of the safety of the equipment to be serviced by customers requesting servicing and maintenance work. We request your cooperation as it is designed to ensure the safety of all those who come into contact with the system.

\*Note that we may decline to perform servicing and maintenance work if we do not receive the Safety Confirmation Form.

MEMO

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NAME\_\_\_\_\_

# **TAKARA BIO INC.**

SETA3-4-1, OTSU, SHIGA, 520-2193

URL: <http://www.takara-bio.com>