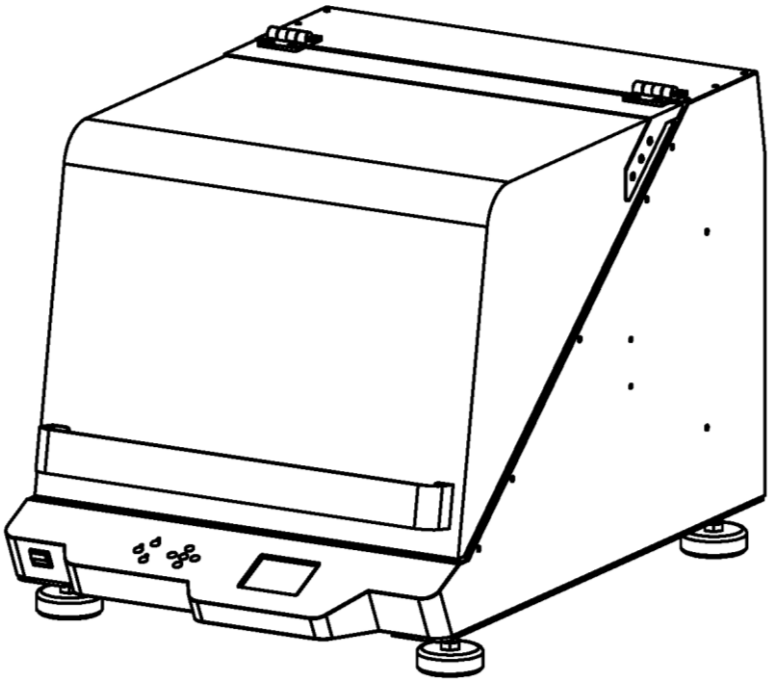
Shaking Incubator

Catalogue No. SI-200



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major science Innovative Life Sciences Tools

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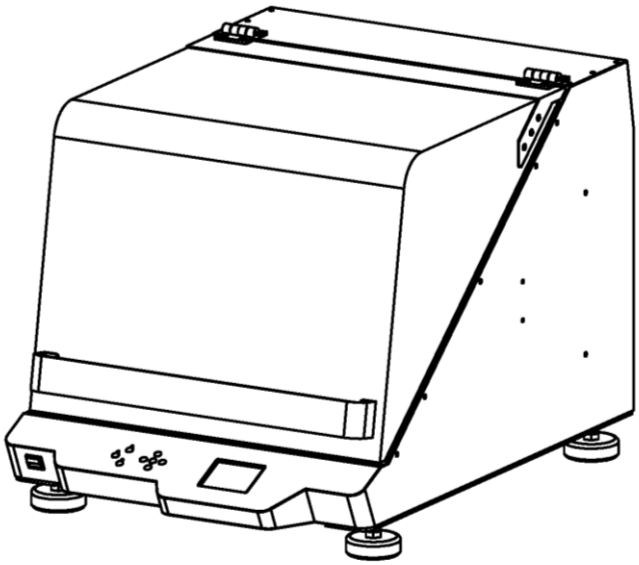
Packing List

- Winpact Shaking Incubator × 1
- Instruction Manual × 1
- Power Cord x 1
- Foot Stand (Pre-installed) x 4
- Universal Platform x 1



WARNING

This equipment has been tested and verified to comply with safety limits. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment may generate, use, and radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their expense. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. It is strongly recommended that the user carefully read the following prints before operating any equipment.

1. Read and follow the instruction manual thoroughly.
2. Do not modify the equipment. Failure to adhere to these directions could result in personal and/or laboratory hazards, as well as invalidate the equipment warranty.
3. Use a properly grounded electrical outlet with correct voltage and current handling capacity.
4. Disconnect the equipment from power supply before servicing and maintenance.
5. In the event of spilling solutions accidentally into the instrument, disconnect the grounded plug and user must have an appropriate decontamination. And replace the damaged parts.
6. Do not use in the presence of flammable or combustible material, which may cause fire or explosion. The instrument contains the components that can ignite such materials.
7. Refer maintenance and servicing to qualified personnel.
8. Ensure that the system is connected to electrical service according to local and national electrical codes. Failure to properly connect may cause a fire or shock hazard.
9. Ensure the use of appropriate materials and correct operation to avoid possible hazards of explosion, implosion or release of toxic or flammable gases arising from the heated materials.
10. Handle the culture vessel with cares to prevent the glass vessel from any damages or crashes, especially before and after autoclave / sterilization.
11. Always use the supplied handle or appropriate protection to handle the culture vessel to prevent hands from heat burns, especially after autoclave/sterilization.

ATTENTION: Hot Surface!

12. The instrument is intended for scientific research use only, and must be operated by qualified personnel who realize the potential risks of the use of this instrument. Major Science makes no claim that its instrument are designed or certified as medical device; no representation, promises, express warranty, or implied warranty will be made concerning the suitability of these instruments for any medical use. Major Science will not provide customers any notice or certification concerning its products being compliant as medical device.

Safety Information

The device may only be operated by trained lab personnel who have carefully read the operating manual and are familiar with the device functions.
Before operating SI-200 incubator, make sure that anyone involved with its operation has been instructed in both general safety practices for laboratories and safety practices for this apparatus.

The user is also responsible for following local guidelines for handling hazardous waste and biohazardous materials that may be generated from the use of this equipment.

⚠WARNING! Risk of explosion and injury or death!

Do not use equipment with flammable substances or organisms with flammable by-products.

⚠WARNING! Heavy!

- Do not attempt to lift the SI-200 by yourself.
- Ask for assistance or use suitable equipment when raising or handling the device.

⚠WARNING! Risk of electric shock and/or damage to unit!

- Check that the voltage and frequency of your unit are compatible with mains/power supply.
- Do not remove caution label from unit.
- Use a grounded power supply.
- Turn off the device and disconnect from power supply before replacing fuses.

⚠WARNING! Damage to device!

Never run shaker without a platform.

⚠CAUTION! Still Running!

The shaker still runs after the cover has been opened. Wait for it to stop running.

⚠NOTICE! A torpedo level is needed before operation.

To keep device as balanced as possible, it is recommended to apply a torpedo level especially necessary at the first time delivery, adjust the foot to ideal level (refer to p.33).

Auto Shuts Off Situation:

-

Device Interrupt shuts off power to SI-200 when lid opens. Auto resume when the lid closes.
-

Deviations form temperature set point.
-

Over temperature warning.

Use high levels of precaution when using any electrical device. Before connecting the electric supply, check to see if the supply voltage is within the range stated on the rating label, and see to it that the device be seated firmly. Place the unit in a safe and dry location; it MUST NOT touch any surrounding objects. Follow the safety precautions for chemicals/dangerous materials, and hot surfaces (after autoclave/sterilization). If needed, contact a qualified service representative or service@majorsci.com.

Environmental Conditions

Ensure the instrument is installed and operated strictly under the following conditions:

1. Indoor use only
2. ≦ 95% RH
3. 75 kPa – 106 kPa
4. Altitude must not exceed 2000 meters
5. Ambient to 40℃ operating temperature
6. Pollution degree: 2
7. Mains supply voltage fluctuations up to ± 10% of the normal voltage

Electrical Shock Precaution

Follow the guidelines below to ensure safe operation of the unit.

The Winpact Shaking Incubator has been designed for use with shielded wires thus minimizing any potential shock hazard to the user. Major Science recommends against the use of unshielded wires.

1. Dry out for a period of time and restore the instrument to NORMAL CONDITION before operation.
2. NEVER connect or disconnect wires leading from the power jacks when the red indicator light on the "ON/OFF" key is on or when the device is running.
3. Wait at least 5 seconds after stopping a run before handling output leads or connected apparatus.
4. ALWAYS make sure that user's hands, work area, and instruments are clean and dry before connecting any cables or operating the device.
5. ONLY connect the power cord to a properly grounded AC outlet.

Preventive Measures of Damaging Instrument

1. Do not attempt to operate the device if damaged.
2. Protect this unit from physical damage, corrosive agents and extreme temperatures (direct sunlight etc.).
3. For proper ventilation, leave at least 10 cm of space behind the instrument, and at least 5cm of space on each side.
4. Do not operate the instrument in high humidity environments (> 95%), or where condensation may occur.
5. Before using any cleaning or decontamination method except those recommended by the manufacturer, user should check with the manufacturer that the proposed method will not damage the equipment.

Equipment Operation

1. Check that the device and all the accessories are assembled well and undamaged before starting operating.
2. It is recommended that to have stopper for tubes user possesses before the operation to prevent any splitting of solution.
3. NEVER access any HAZARDOUS LIVE parts that violate International Biosafety Regulations.

Symbols

The symbols used on the device are explained below:

The symbol indicates an area where a potential shock hazard may exist.

The symbol indicates a warning. Consult the manual to avoid possible personal injuries or instrument damages.

ATTENTION: Hot Surface!

Two people are required to lift the device. Ask for assistance or use suitable equipment when raising or handling the device

I. Introduction

Major Science is introducing our newly innovated Winpact Shaking Incubator. The ultimate bench-top shaking incubator provides user the stability and durability for all user's fermentation and incubation needs.

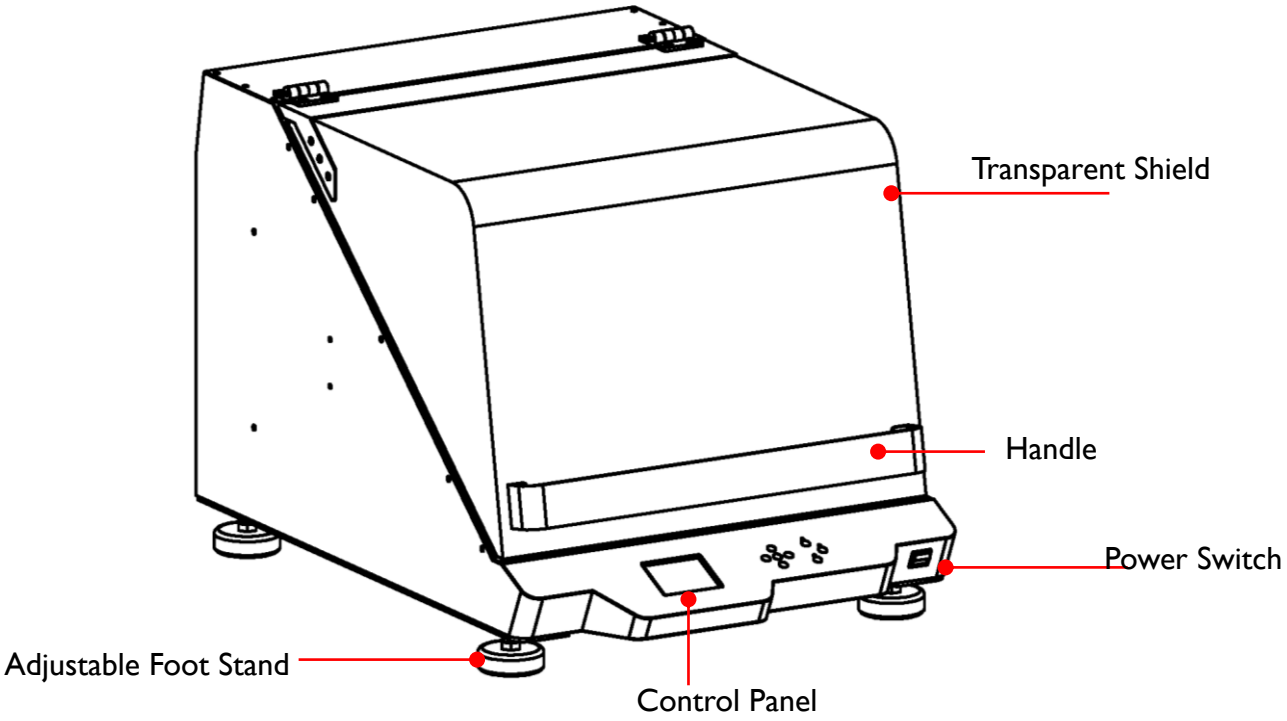
Features

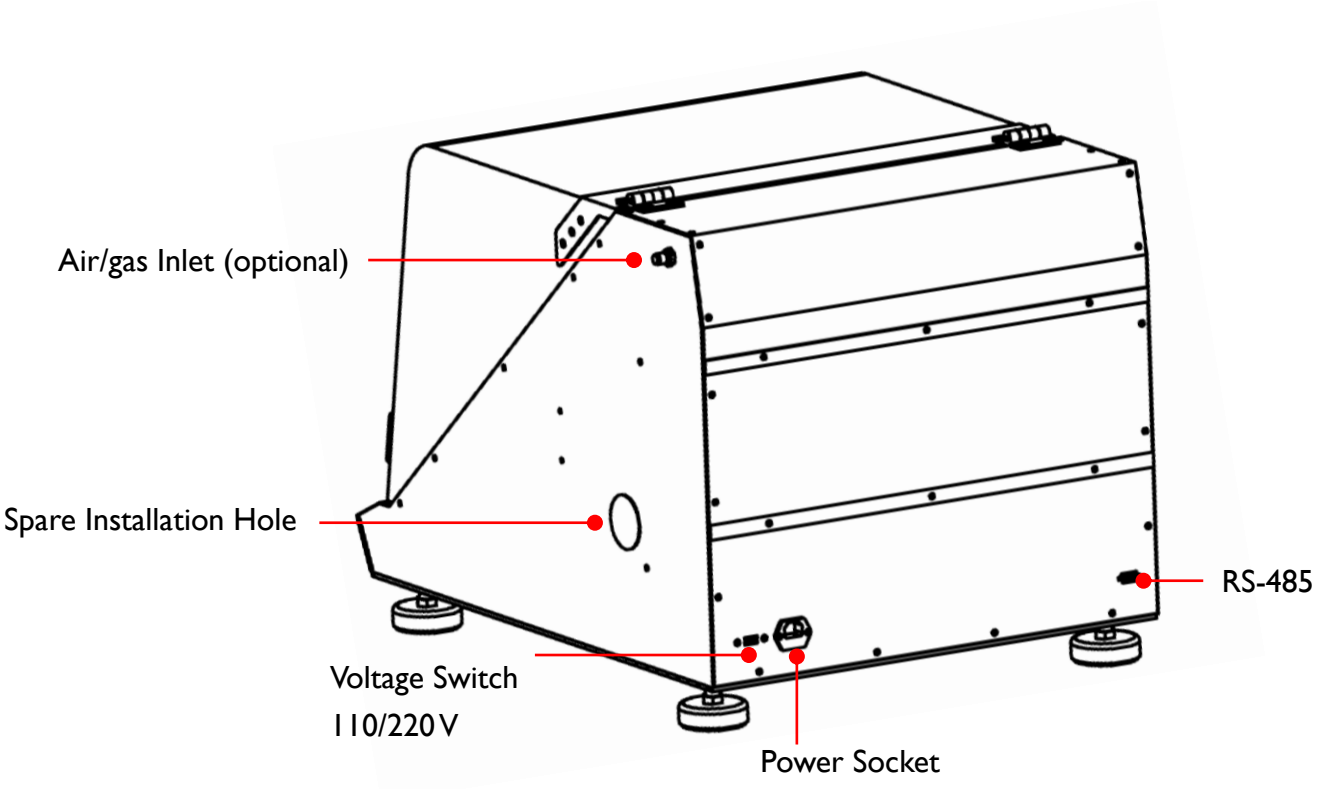
- Automatic shut off over temperature protection.
- Sensitivity adjustable G-sensor with warning embedded for imbalance weight detects.
- Safety interlock stops platform motion.
- External temperature probe available upon order for precision temperature measurement.
- Programmable or continuous mode for user application.
- Wide shaking speed 20-500 rpm satisfies different types of culturing.
- Brushless DC motor for long and quiet operation, durable and maintenance free usage.
- Various selection for accessories
- Temperature calibration for different user needs
- A spare air/gas inlet to create particular environment for specific kinds of cell/microbial

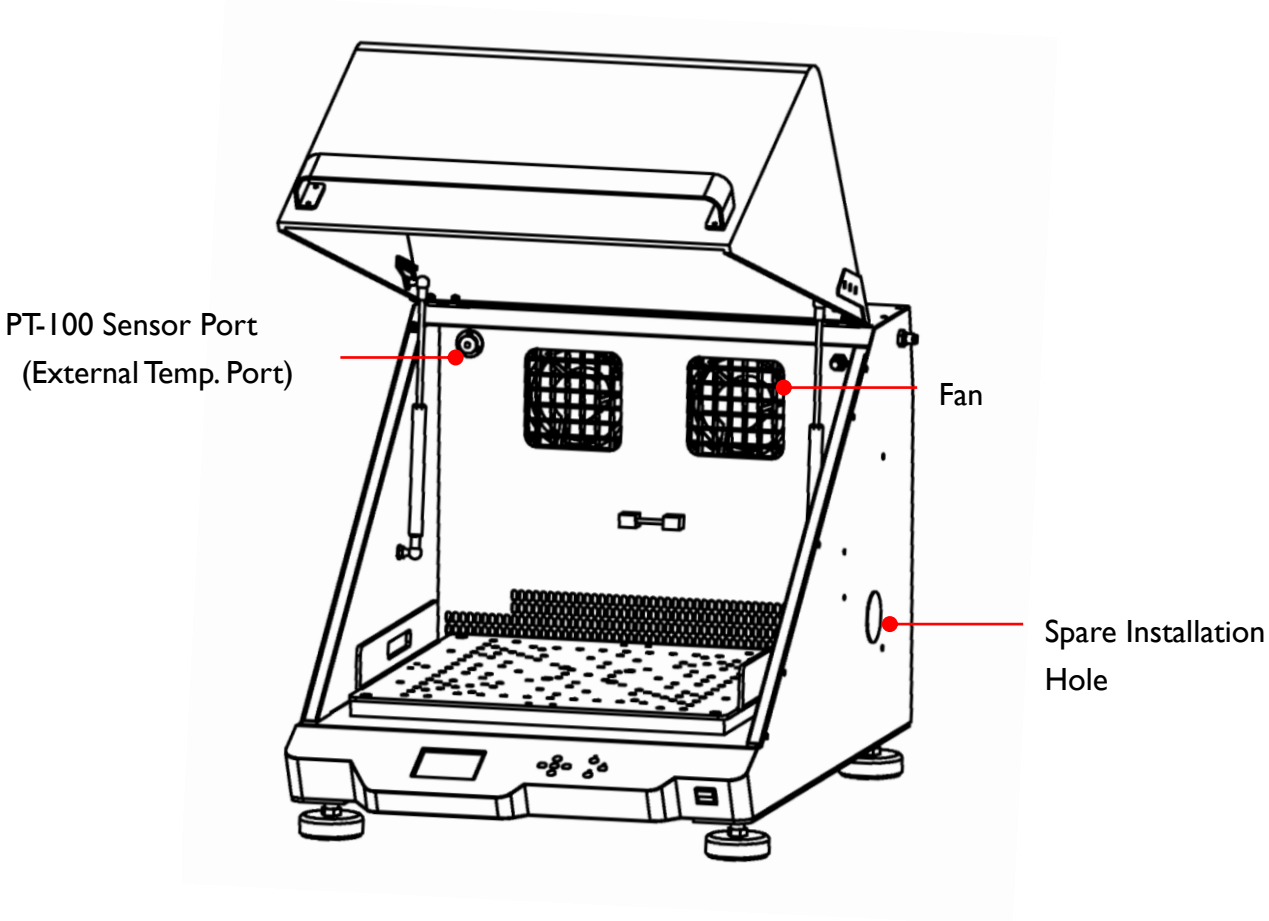
II. Product Specification

Unit Dimension	23.3" ×32.3" × 20.9" (Approx. 59 × 82 × 53 cm)
Platform Size	18.1" x 18.1" (46 × 46 cm)
Shaking Orbit	3/4" (19 mm)
Speed Range	20 rpm – 500 rpm
Speed Increment	1 rpm
Communication Port	RS485
External Temp. Port	PT-100
Heating Temperature Range	Ambient +5℃ to 65℃
Output	600 W
Temperature Accuracy & Uniformity	± 0.25℃ at 37℃
Timer	999 (hr):59(min)/ Continuous operation
Display	3.5" Color TFT LCD screen
Power Rating	100~240V, 50/60 Hz, 6.3A
Weight	Approx. 70 kg
Certification	CE, FCC
Carrying Capacity	Approx. 20 kg
Material	Acrylic, SPCC
Auto Resume Function	Yes

III. Component Guide






PT-100 Sensor Port
(External Temp. Port)
Fan
Spare Installation
Hole

IV. Installation Instruction

Winpact Shaking Incubator is a ready-to-use product when delivered to user. Before user start the device, make sure it is placed on a level, steady surface and stored in safe and dry environment.

To adapt different laboratory containers and experiment purposes, Major Science provides a variety of optional holders and trays for user. Its easy installation feature allows user to assemble the accessories on the platform by themselves. Also, user can install different accessories simultaneously on the platform for a more flexible setup to meet user's personal requirement.

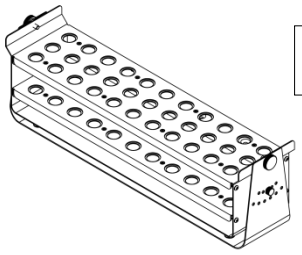
Regarding the detailed instructions on the installation of incubator accessories, please refer to the following sections.

Installing Adjustable Angle Tube Rack

(SI-200-02 / SI-200-03)

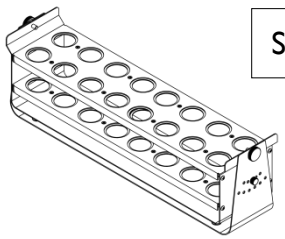
Things Required:

- Adjustable Angle Tube Rack (SI-200-02 or SI-200-03)
- M4 × 6mm Truss Head Screws *(the numbers of screws depend on the numbers of racks.)*
- M3 x 6mm Slotted Head Screws *(the numbers of screws depend on the numbers of racks.)*
- Phillip Screwdriver



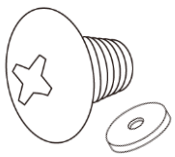
SI-200-02

Adjustable Angle Tube Rack (33 × 15ml)



SI-200-03

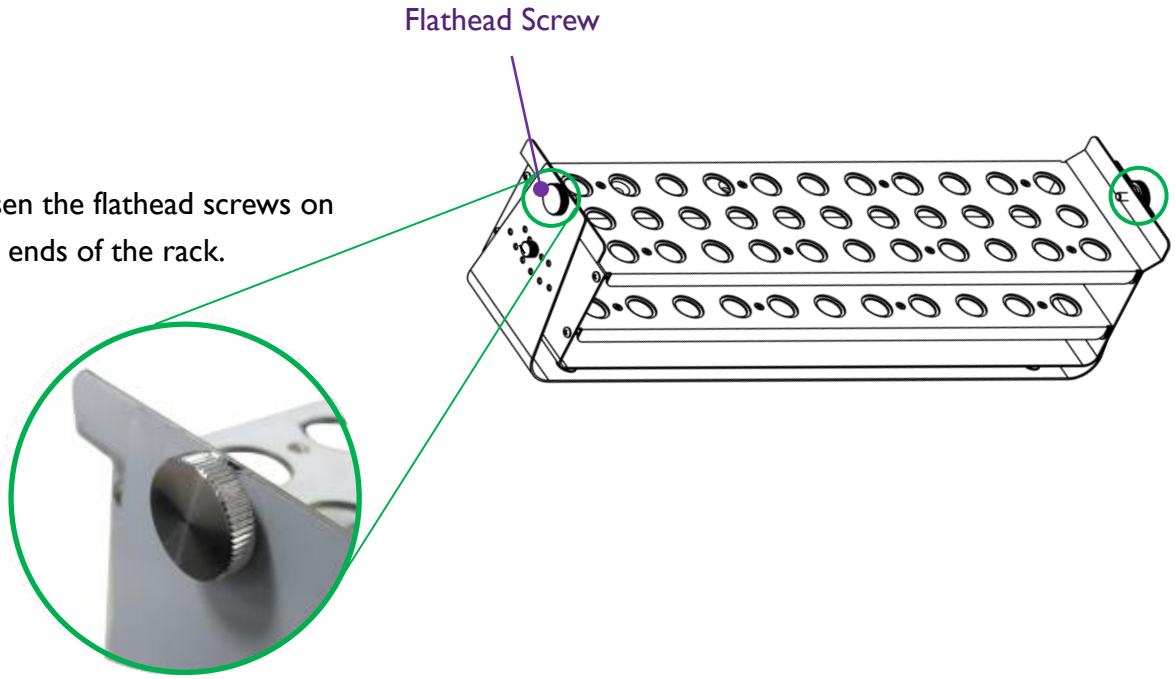
Adjustable Angle Tube Rack (16 × 50ml)



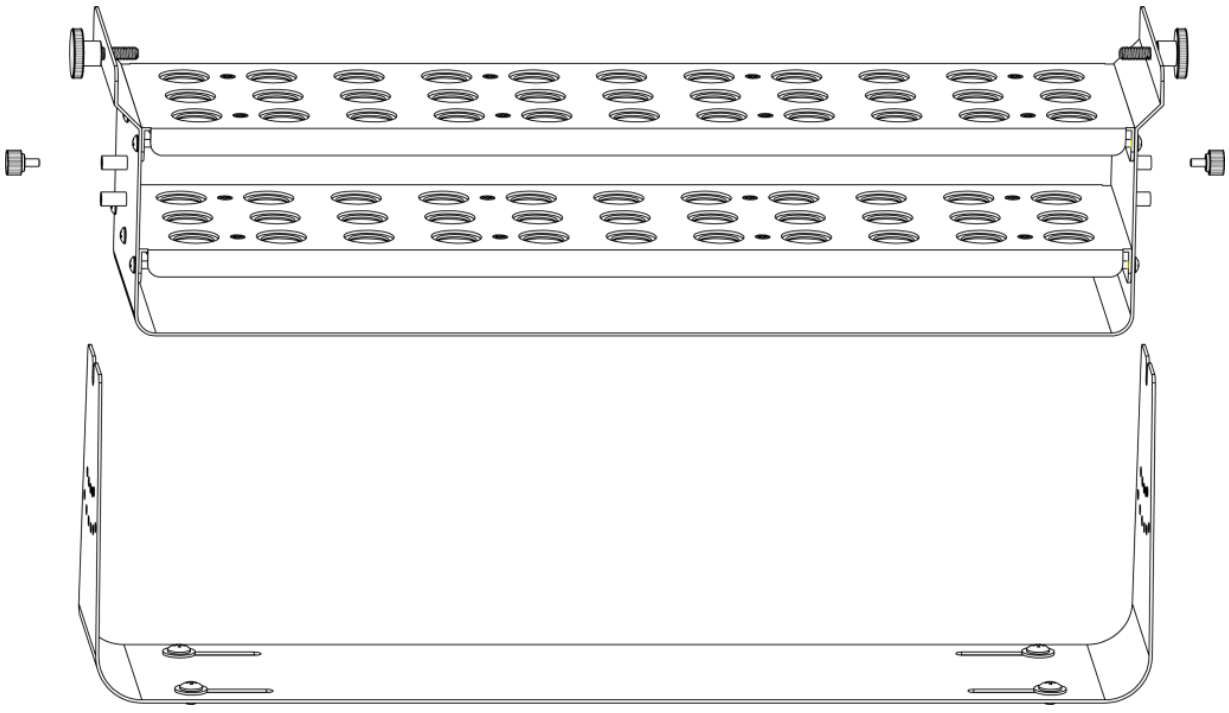
M4 × 6mm Truss Head Screw and M4 Washer

M3 × 6mm Slotted Head Screw

Phillip Screwdriver

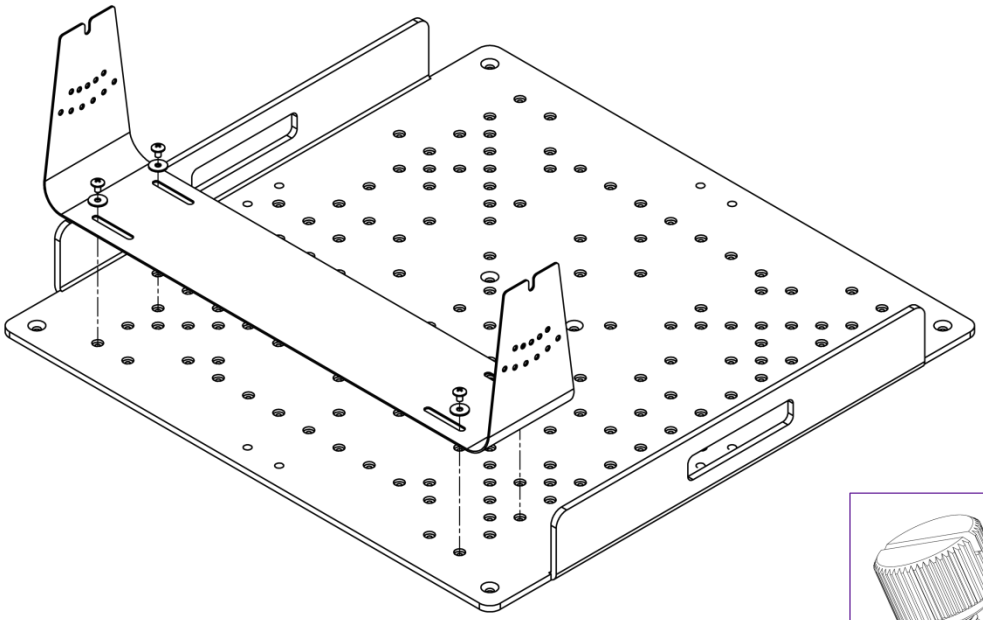


▶ Loosen the flathead screws on both ends of the rack.



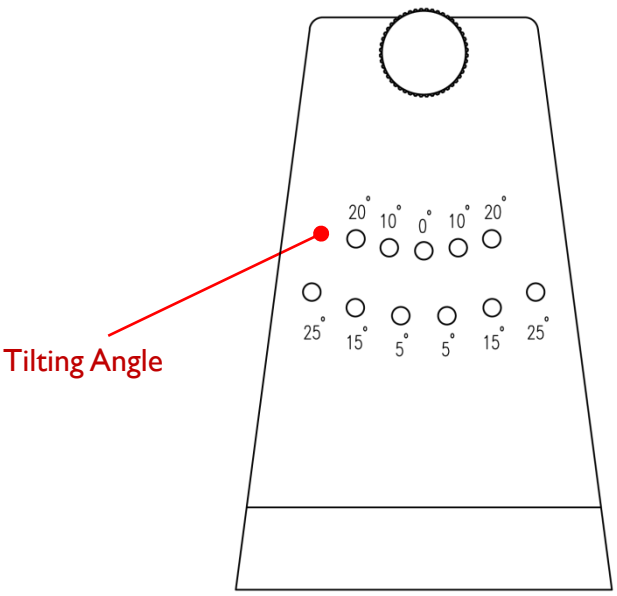
▲ Lift up the rack from the bottom plate.

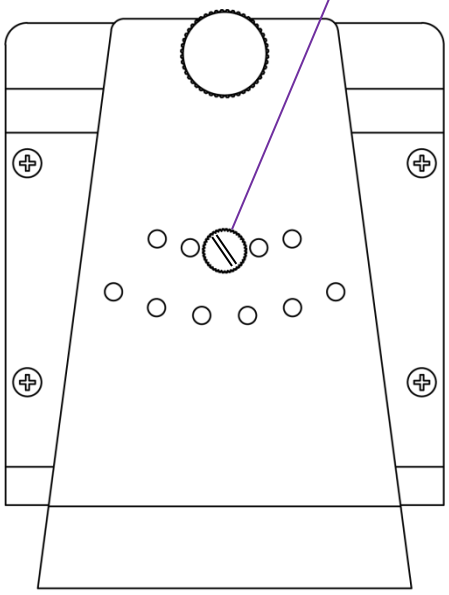
▼ Place the bottom plate to the desired position on the platform. And use four truss-head screws and their corresponding M4 washer to fasten the bottom plate through the slots.



M3 × 6mm Slotted Head Screw

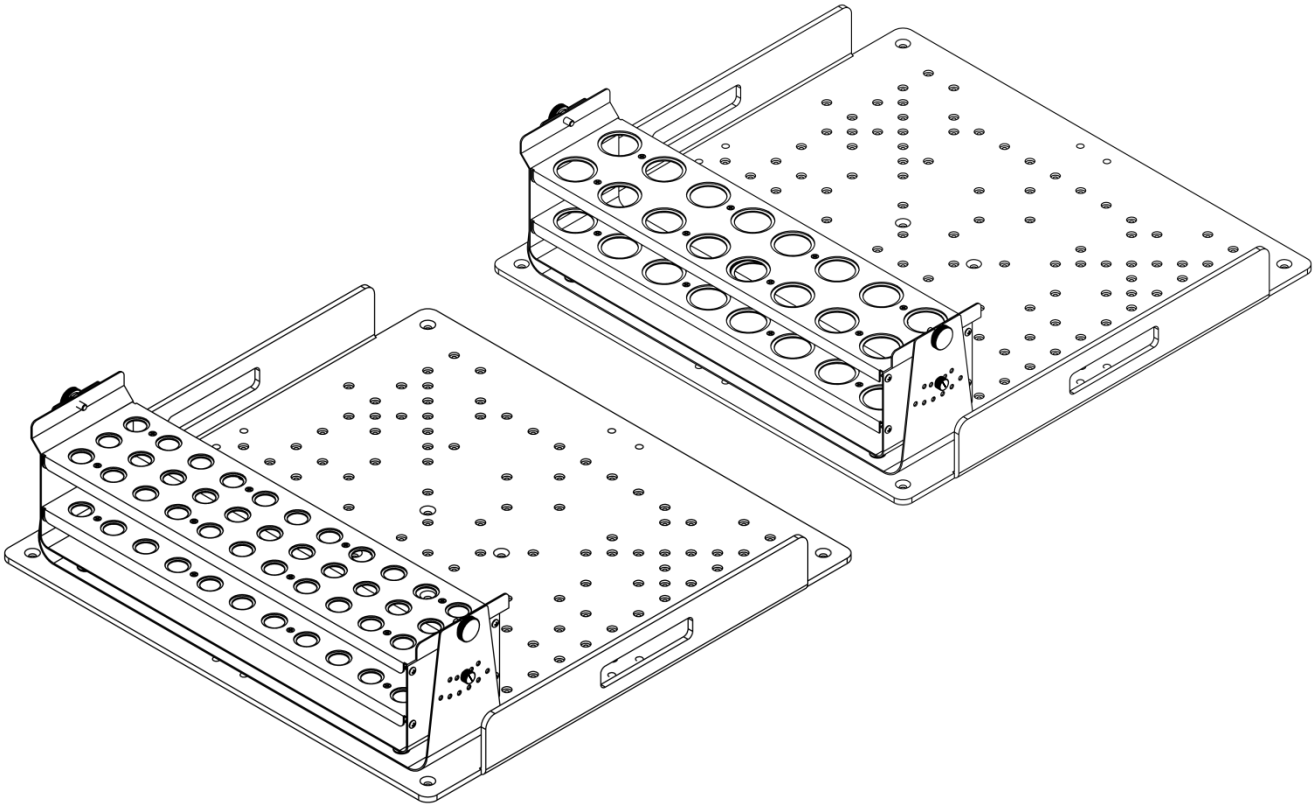
The design of slots on bottom plate allows user to arrange the tube racks in various angles without fixed angle of racks.



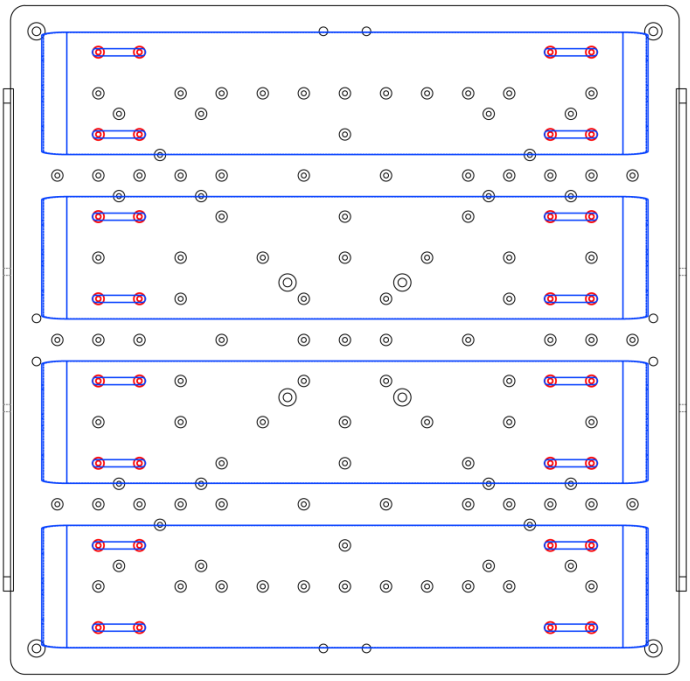


Remove the slotted head screw first then fasten onto the right angle holes for user's requirement.

▼ Place the tube rack back to the bottom plate. Adjust the tilt angle of the rack before user fixes it on the bottom plate.



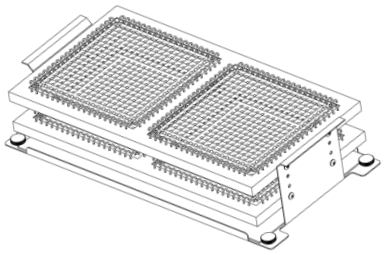
A maximum of 4 tube racks can be installed on the platform.



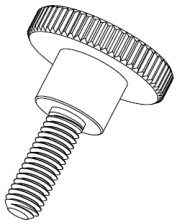
Installing Universal Spring Rack (SI-200-04)

Things Required:

- Universal Spring Rack (SI-200-04)
- M5 × 15mm Flathead Screws
- Phillip Screwdriver



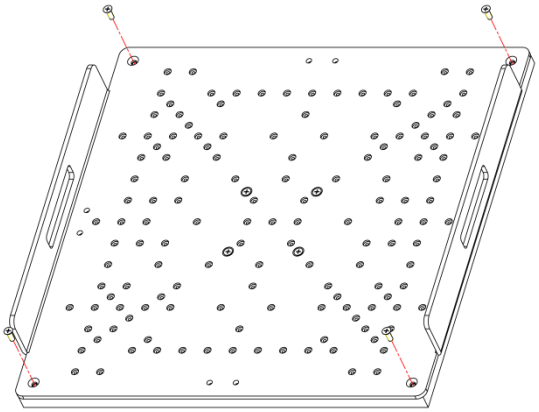
Universal Spring Rack (SI-200-04)

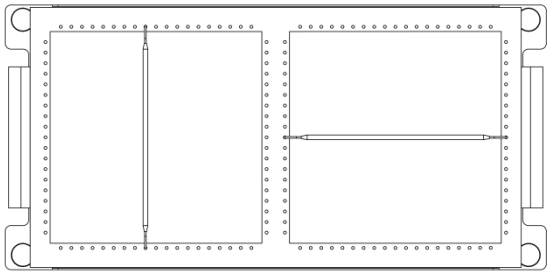


M5 × 15mm Flathead Screw

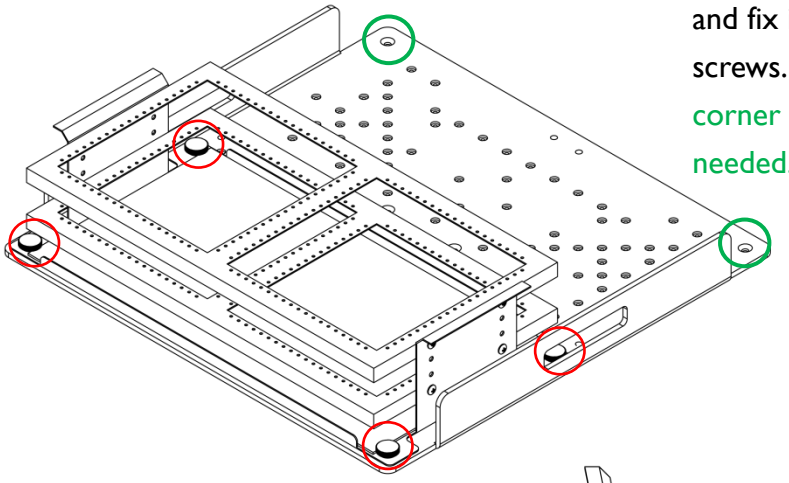
Phillip Screwdriver

▶ Remove four countersunk head screws at corners. (Put them away in the case of further usage)

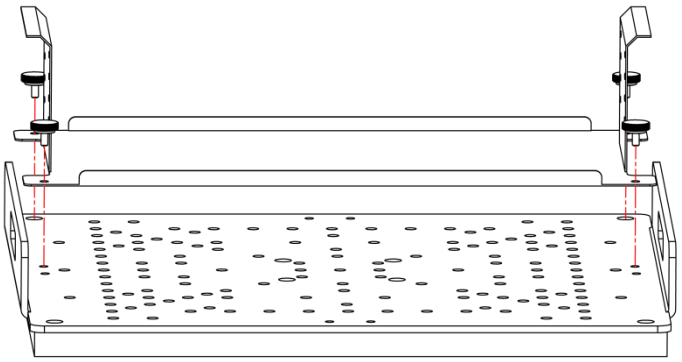


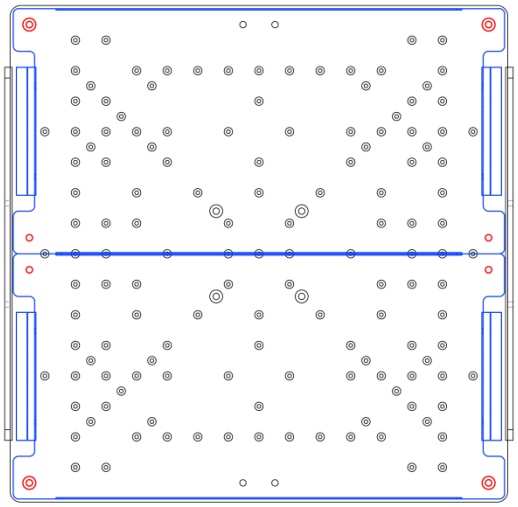


User can arrange the springs in any way for various requirements of usage with maximum 152 springs (or purchase more if it is needed).



◀ ▼ Place the spring rack on the platform, and fix it onto platform with four flathead screws. Leave the screws of the rest of corner untouched if only one spring rack is needed.



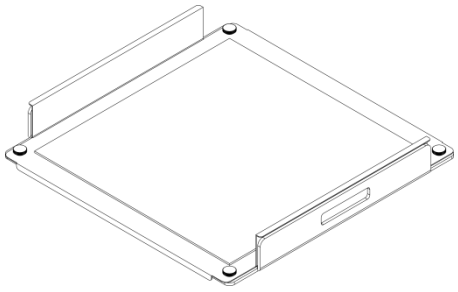


Note: Spring rack should be fixed on either side on the platform, instead of on any place of platform.

Installing Sticky Pad Platform (SI-200-05)

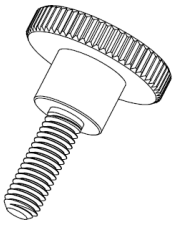
Things Required:

- Sticky Pad Platform (SI-200-05) *(With blue sticky pad 200 x 200 mm x 4 pcs.)*
- M5 x 15mm Countersunk Head Screws x 4 pcs.
- M5 × 15mm Flathead Screws x4 pcs.
- Phillip Screwdriver



Sticky Pad Platform & Sticky Pad

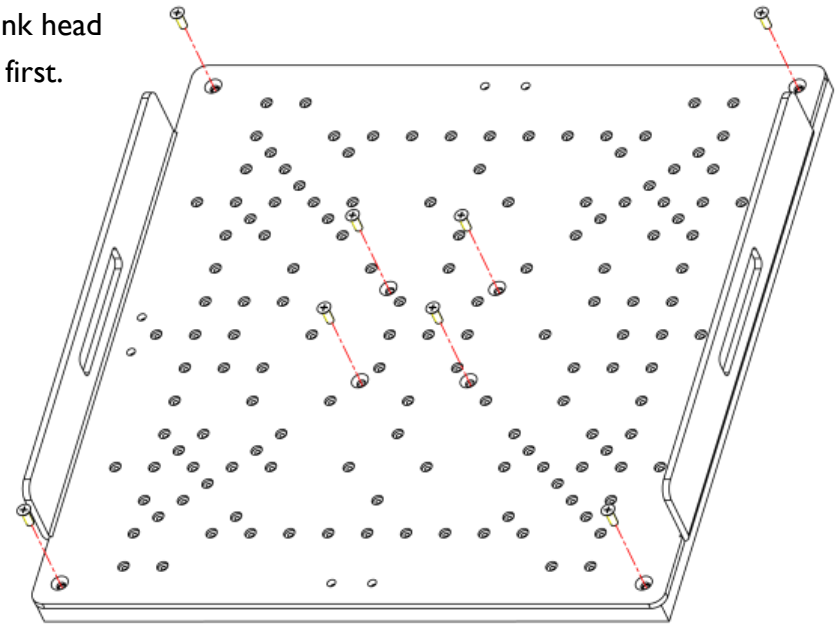
M5× 15mm Countersunk Head Screw



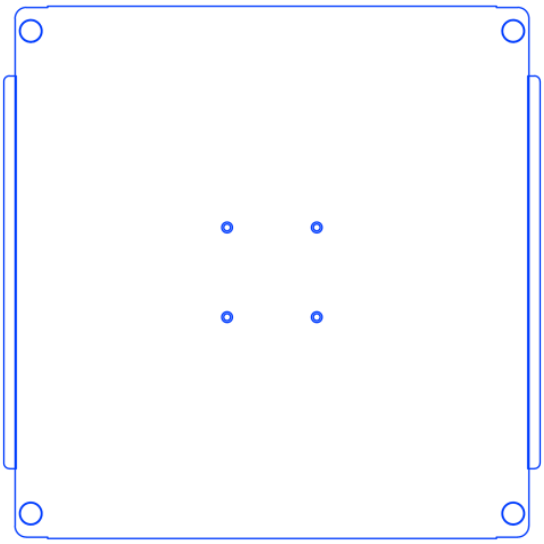
M5 × 15mm Flathead Screw

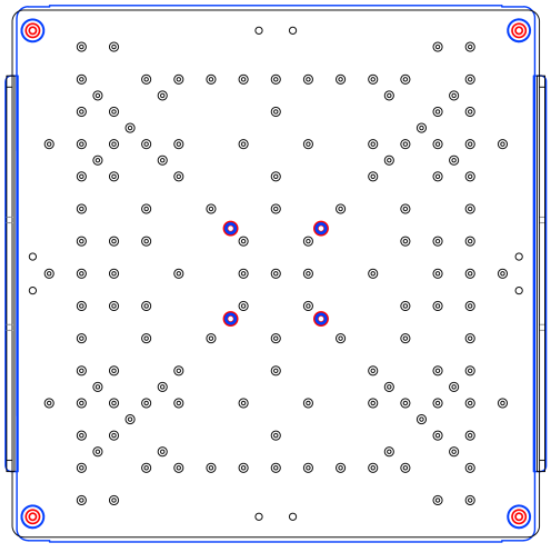
Phillip Screwdriver

▶ Remove eight countersunk head screws with a screw driver first.

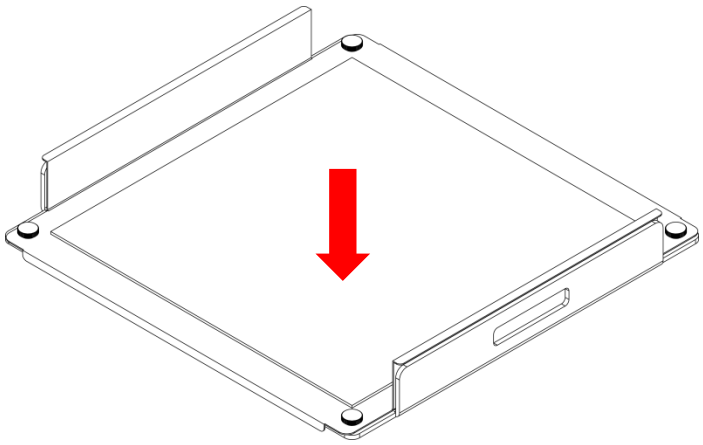


▼ Place the sticky pad platform onto platform then fix sticky pad platform with four countersunk head screws at the center and four flathead screws at corners.





Note: The washable sticky pad can be stored by being covered with cling wrap (plastic wrap) when not being used.



◄ Place sticky pad onto sticky pad platform.

Note: User can arrange the four blue sticky pads in various ways for their respective usage.

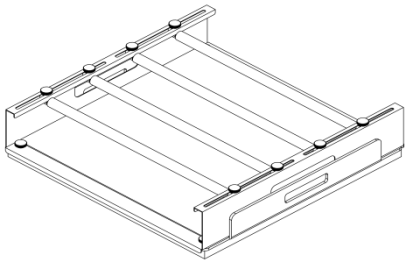
▶It is recommended that to only apply DISH on sticky pad while operating SI-200-05 Sticky Pad Platform.

Installing Universal Cushioned Crossbar

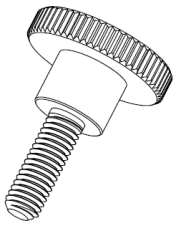
(SI-200-06)

Things Required:

- Universal Cushioned Crossbar (SI-200-06) *(With silicone cushioned pad 455 x 415 mm x1 pce)*
- M5 × 15mm Flathead Screws
  (the numbers of screws depend on the numbers of crossbars.)
- Phillip Screwdriver



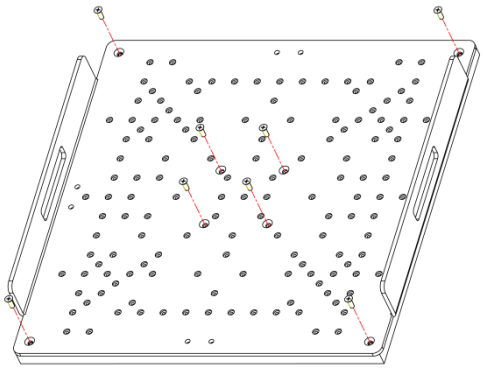
Universal Cushioned Crossbar & Crossbar Platform (SI-200-06)

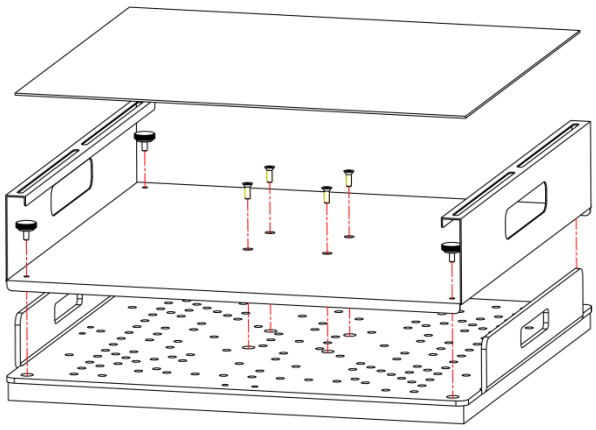


M5 × 15mm Flathead Screw

Phillip Screwdriver

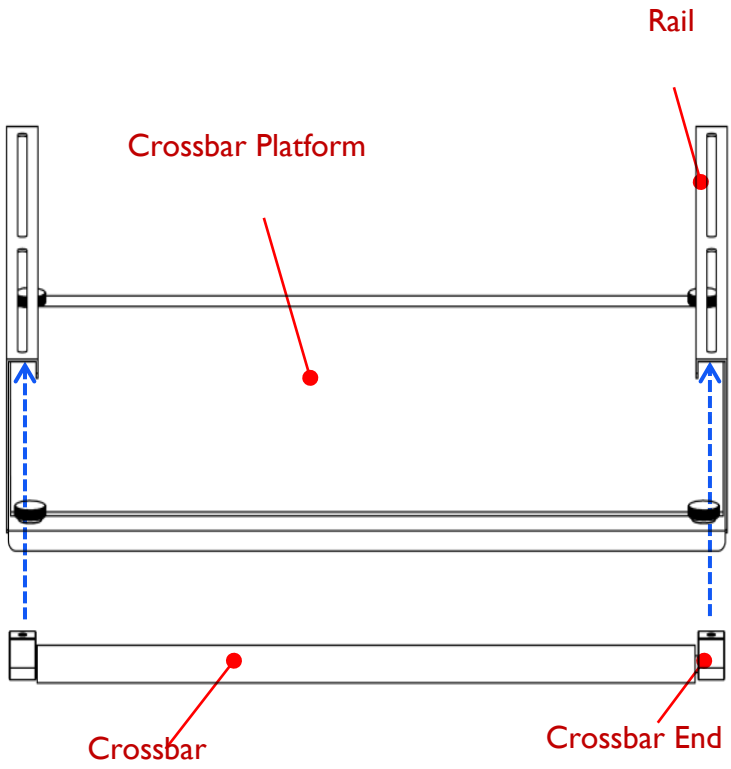
▶ Remove eight countersunk head screws with a screw driver first.

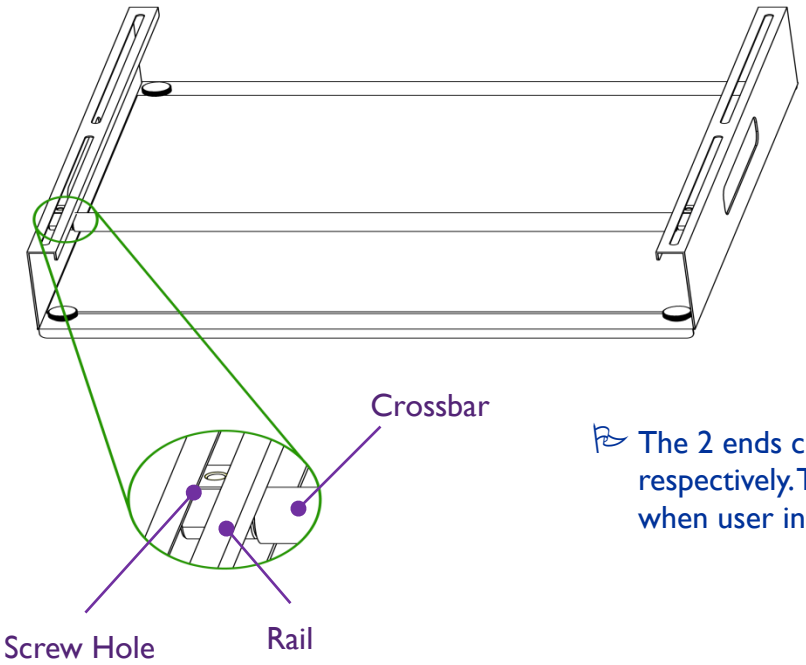




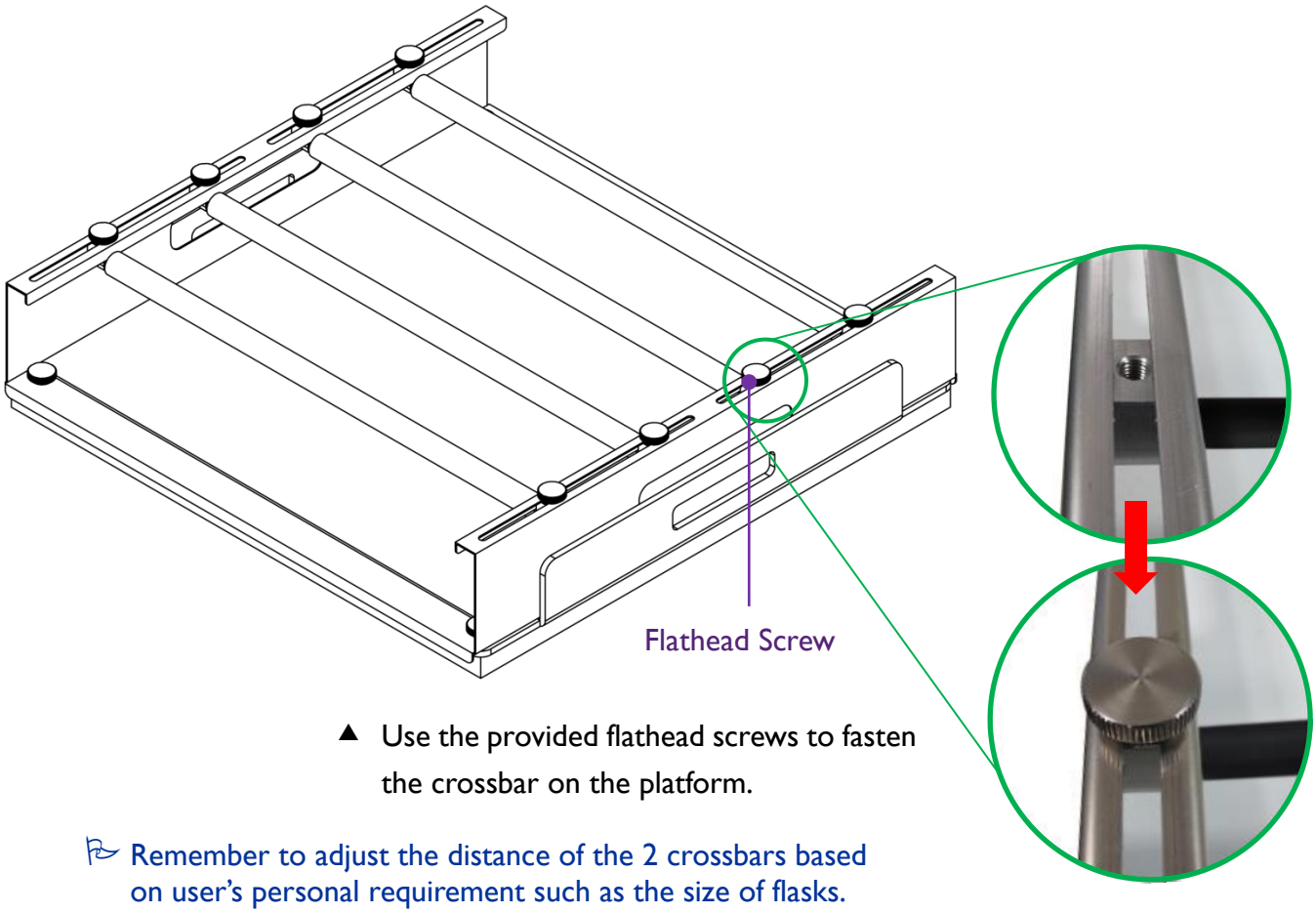
▶ Remove the silicone cushioned pad first, place crossbar platform onto platform. Then fasten crossbar platform with four countersunk head screws at the center and four flathead screws at corners. Place sticky pad afterwards.

▼ Insert the bars into the rails on both ends of crossbar platform.



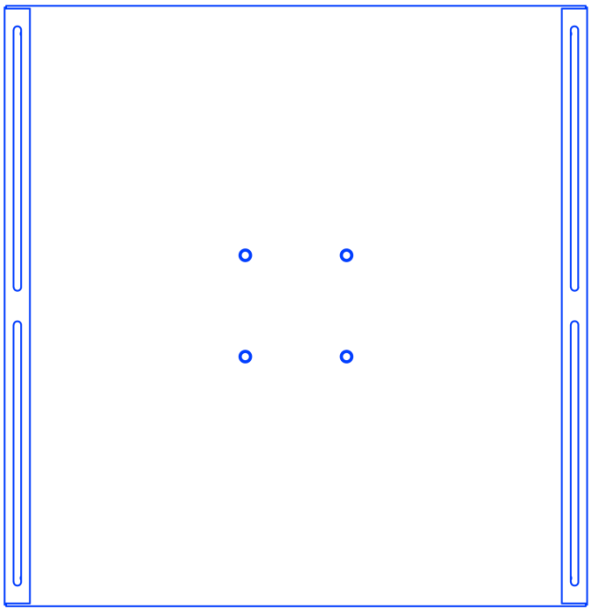


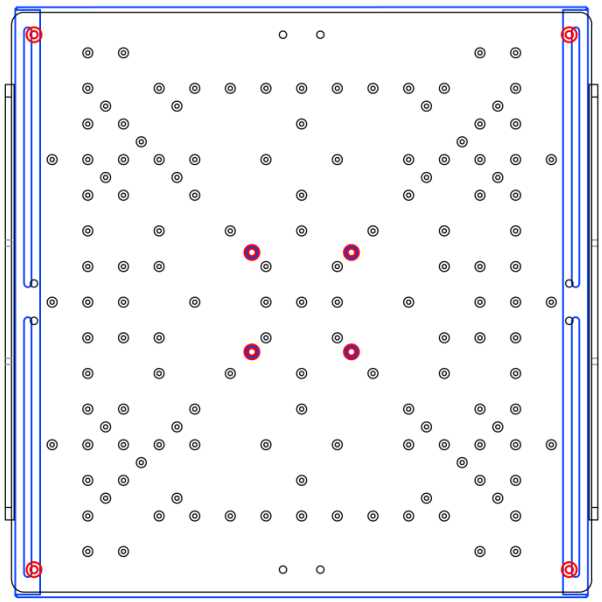
The 2 ends contain 2 screw holes respectively. The holes should face upward when user insert them into the rails.



▲ Use the provided flathead screws to fasten the crossbar on the platform.

Remember to adjust the distance of the 2 crossbars based on user's personal requirement such as the size of flasks.



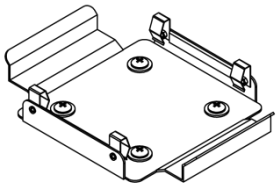


▲ Four countersunk head screws at the center and four flathead screws at the corners when assembling the crossbar platform.

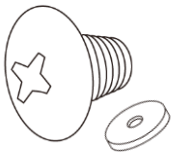
Installing Microplate Holders (SI-200-07)

Things Required:

- Microplate Holders (SI-200-07)
- M4 × 6mm Truss Screws × 4 pcs. (With M4 Washer)
- Phillip Screwdriver



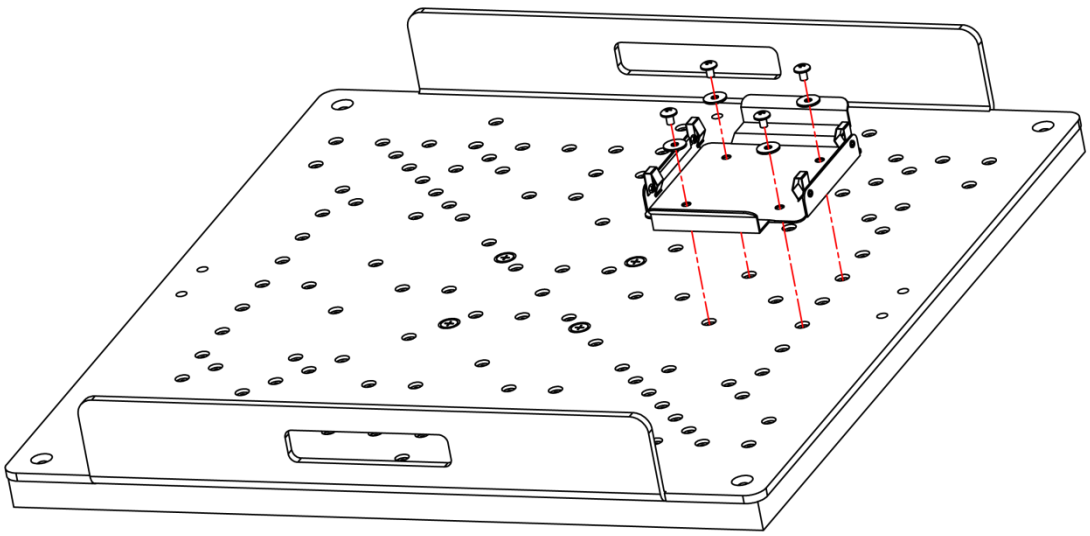
Microplate Holders

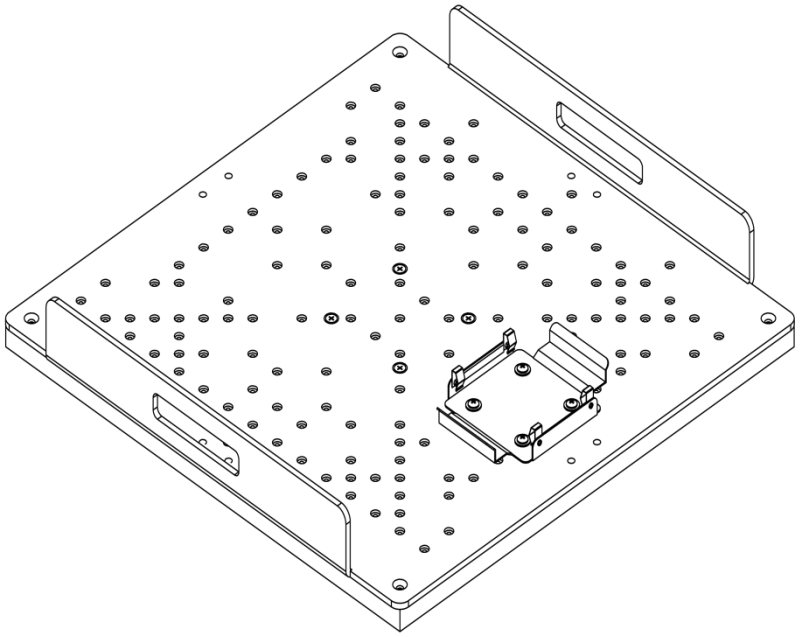


M4 × 6mm
Truss Head Screw
and M4 Washer

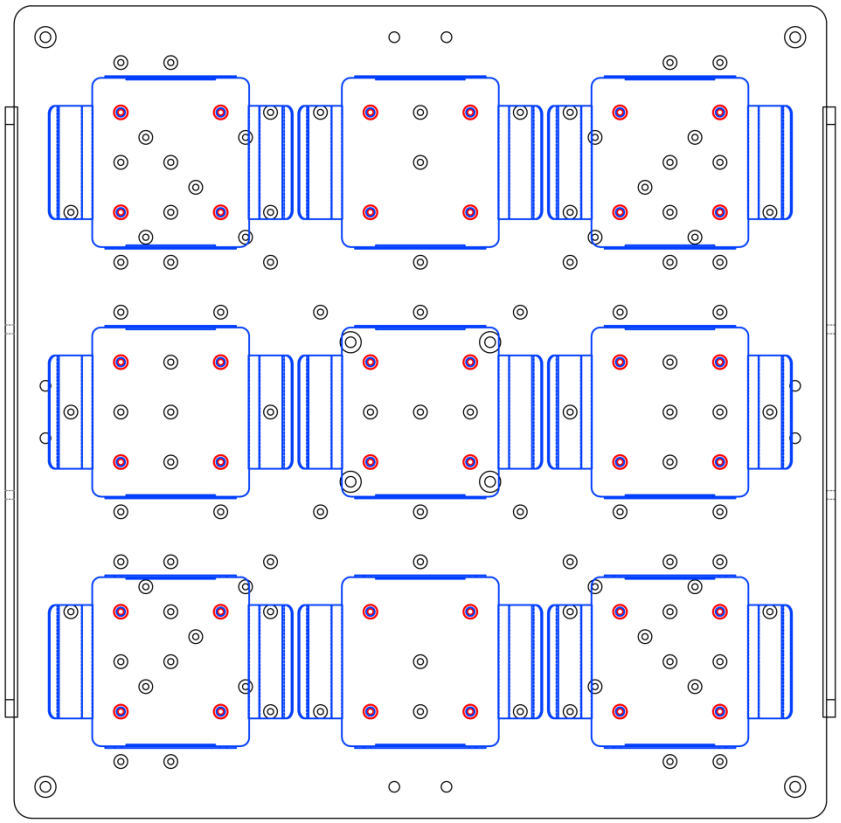
Phillip Screwdriver

▼ Place the microplate holder on platform, and fasten the microplate holder with screws as well as M4 Washer with a screw driver onto the platform.





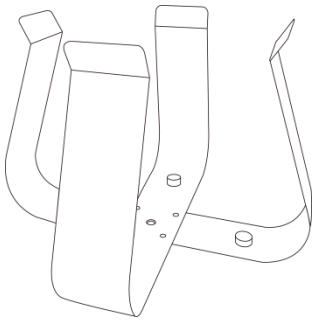
A maximum of 9 microplate holders can be installed if the same type of holders is used.



Installing Flask Holder (SI-200-08~13)

Things Required:

- Flask Holder (50/ 125/ 250/ 500/ 1000/ 2000 ml) in the number of user's requirement
- Phillip Screwdriver

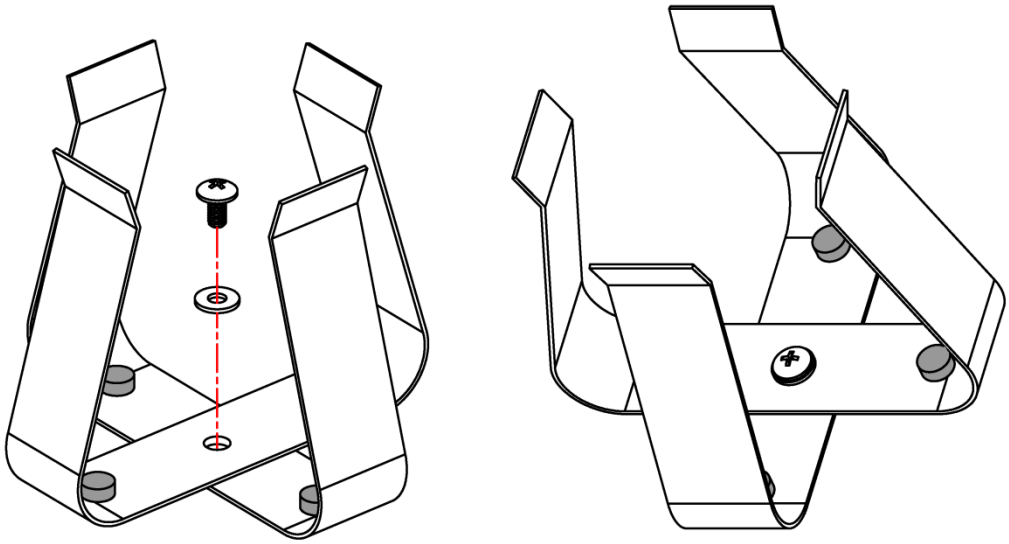


Flask Holder

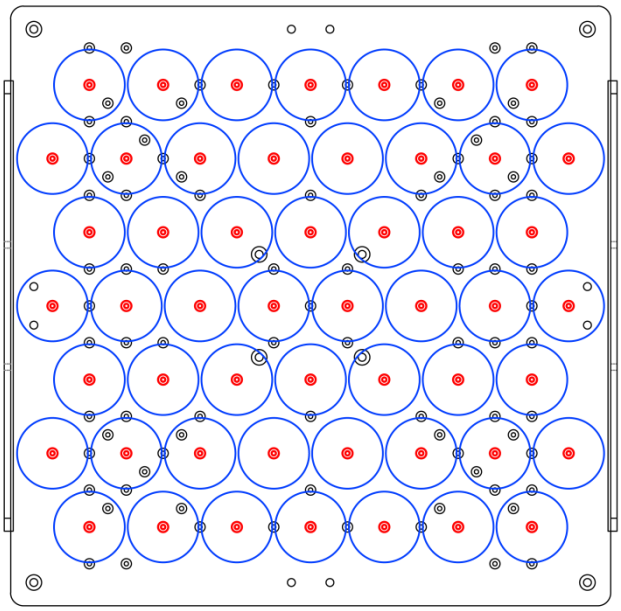
M4 × 6mm Truss Head Screw and M4 washer

Phillip Screwdriver

Apply the installation of flask holder to all types of flask holder with reference of the figure below.

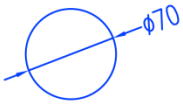


50 ml FLASK x 52 SI-200-08

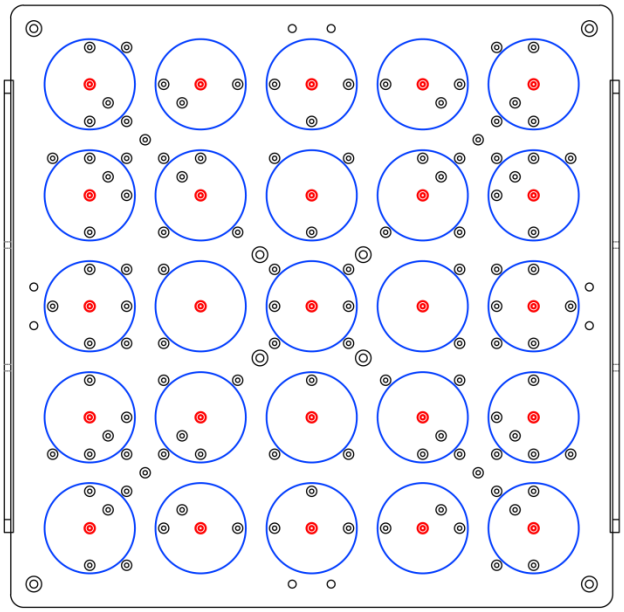


◀ Maximum 52 50ml-flask holders for one platform.

NOTE: Try to keep the platform as balance as possible to ensure the longevity of bearings and belt.

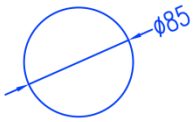


125 ml FLASK x 25 SI-200-09

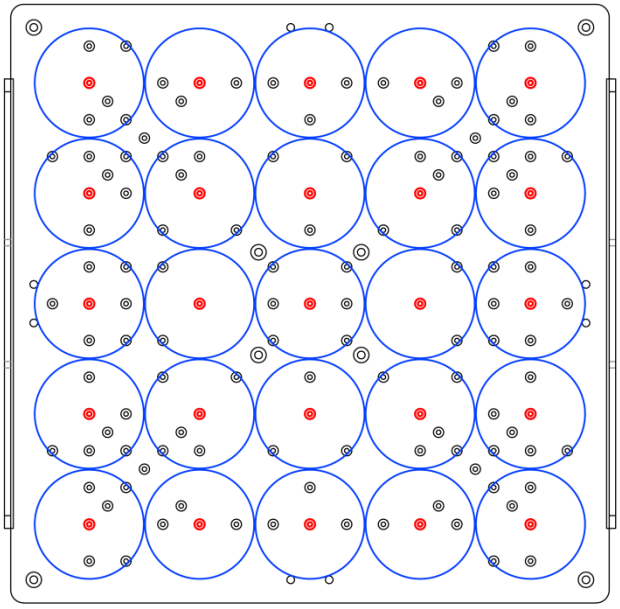


◀ Maximum 25 125ml-flask holders for one platform.

NOTE: Try to keep the platform as balance as possible to ensure the longevity of bearings and belt.

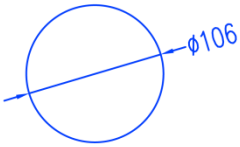


250 ml FLASK x 25 SI-200-10

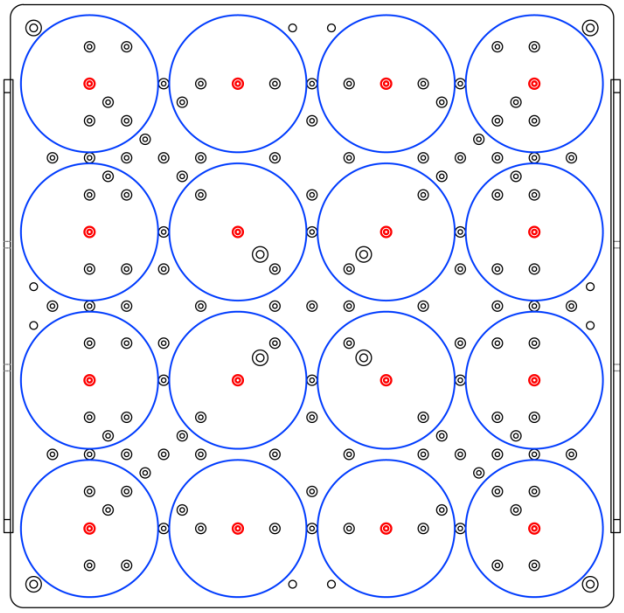


◀ Maximum 25 250ml-flask holders for one platform.

NOTE: Try to keep the platform as balance as possible to ensure the longevity of bearings and belt.

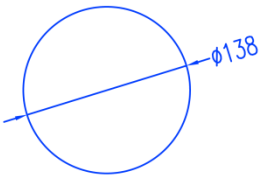


500 ml FLASK x 16 SI-200-11



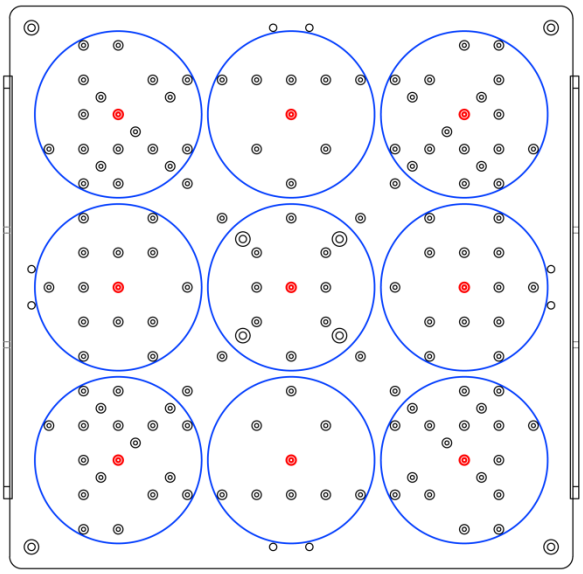
◀ Maximum 16 500ml-flask holders for one platform.

NOTE: Try to keep the platform as balance as possible to ensure the longevity of bearings and belt.



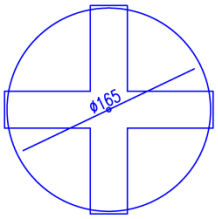
1000 ml FLASK x 9

SI-200-12



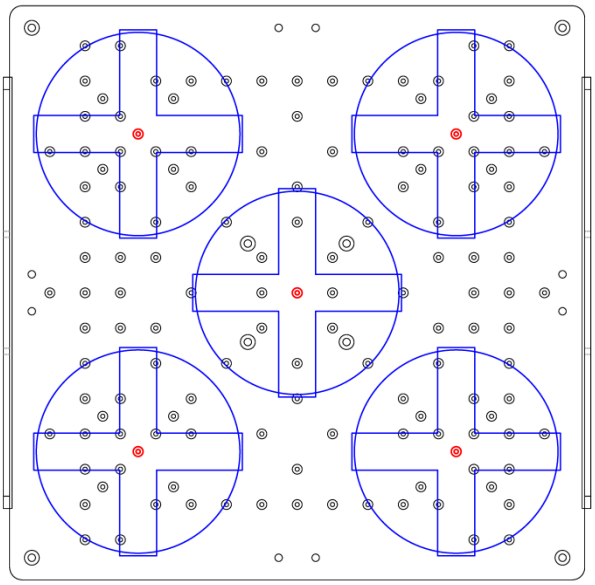
◀ Maximum 9 1000ml-flask holders for one platform.

NOTE: Try to keep the platform as balance as possible to ensure the longevity of bearings and belt.



SI-200-13

2000 ml FLASK x 5



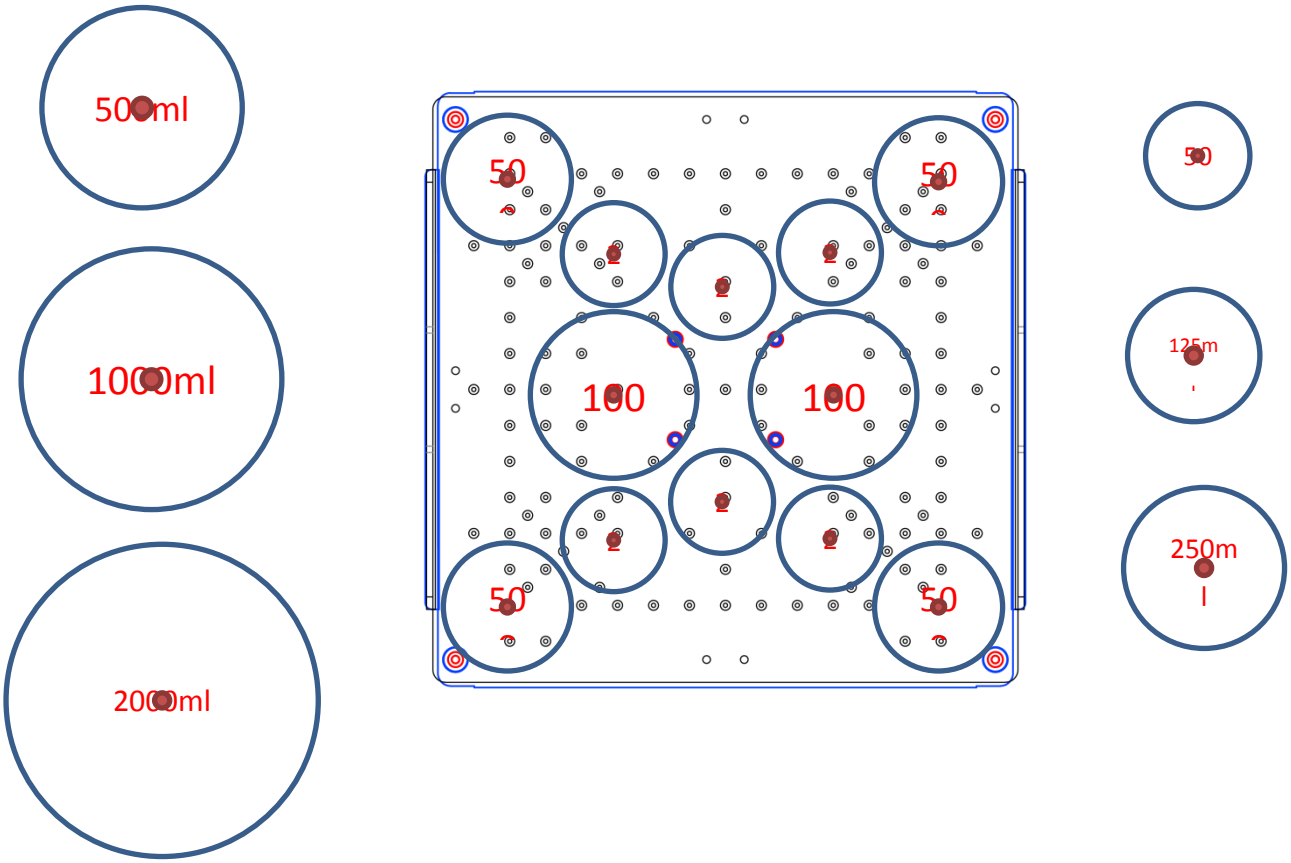
◀ Maximum 5 2000ml-flask holders for one platform.

NOTE: Try to keep the platform as balance as possible to ensure the longevity of bearings and belt.

Flexible Arranging Possibility

Example:

User can select and arrange the universal platform with flexibility.



For the flask of 1000 and 2000 ml, it is suggested to have spring band which is included with the purchase of 1000/2000 ml flasks to prevent any leakage or over deviation while device is under operation, especially at the high speed. For the rest of types of flasks, it is suggested to have a cable tie to make sure flasks are firmly fixed with flask holder on the plate. (Refer to the pictures below)

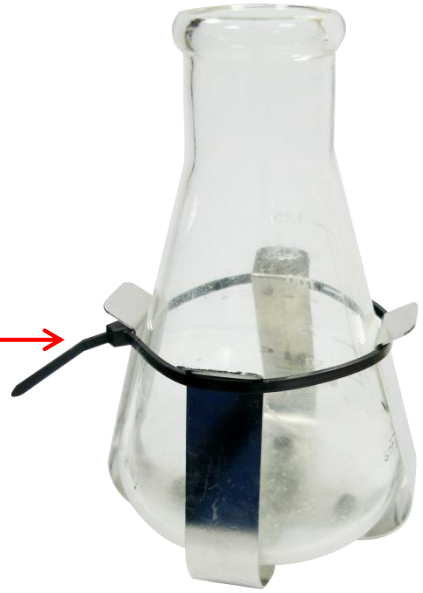
◀ Figure of the demonstration of the spring band position on flask holder (for flask type above 1000 ml)

NOTE:

- Stop operation and check the tightness of flask holders, spring band etc., and the evenness of loading on platform, the speed limit when there is any abnormal noise of collision of flasks or any other noise while operation.

NOTE:

The rubber stopper of flask holder can be removed if handled incautiously, be aware of them and check before start operation each time.



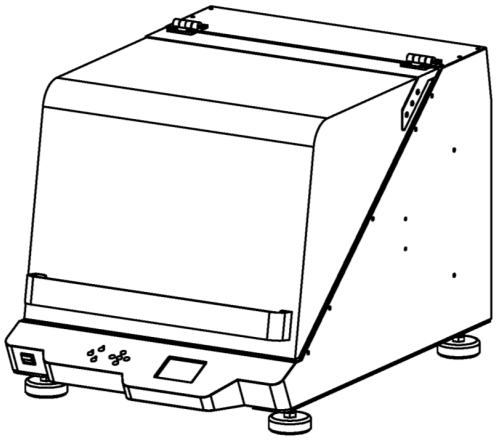
▶ Figure of the demonstration of the cable tie position on flask holder (for flask type below 1000 ml)

Adjusting the Foot Stand

Prepareaion:

- Winpact Shaking Incubator (SI-200)
- 25-27mm Chrome Wrench

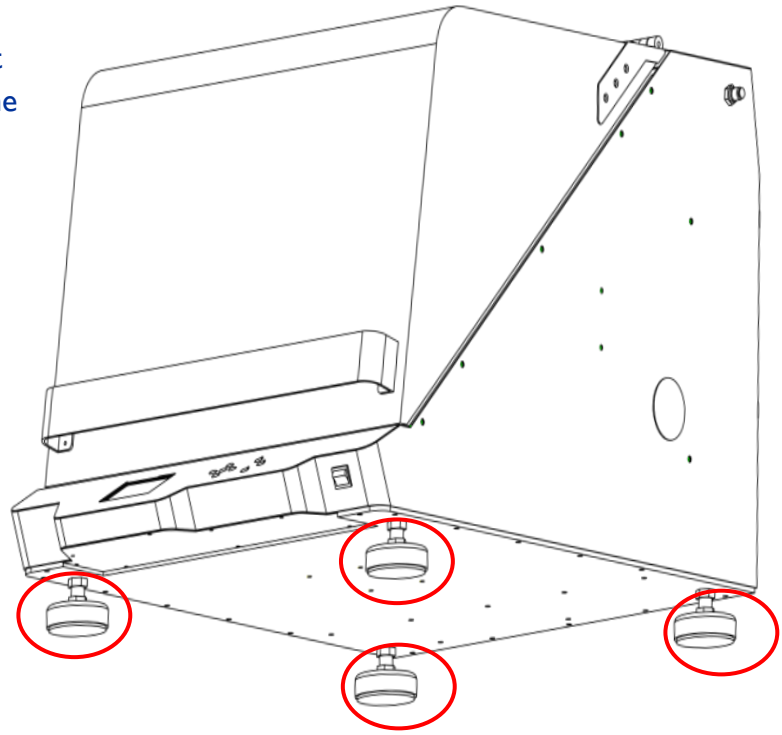
Chrome Wrench



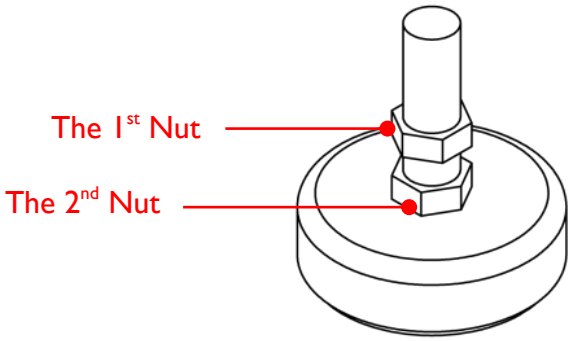
Winpact Shaking Incubator (SI-200)

To stable the device when it is operating, user can adjust the foot stands to balance the device on the floor or lab bench.

NOTE: It is recommended to adjust the foot to keep device as balance as possible, since unbalance of device could lead to warnings of G-sensor as well as the splitting of solution while operating.
(User can use a torpedo level to check the balance of device.)

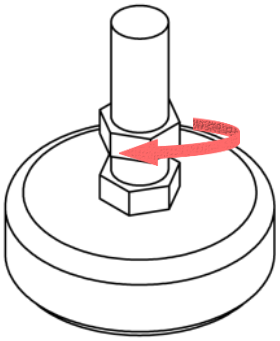


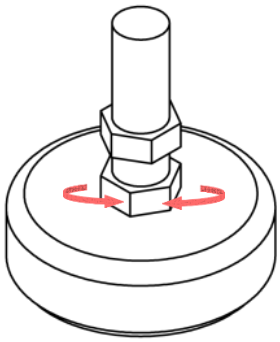
▲ Four foot stands are all adjustable.



◄ There are 2 nuts on each adjustable foot stand.

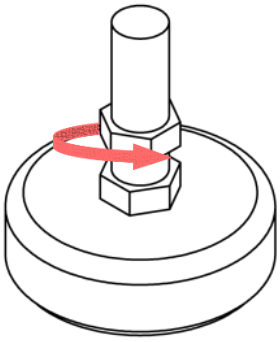
▶ Rotating the first nut in clockwise with 25-27 mm chrome wrench to loosen the foot stands.





◄ Rotating the second nut either clockwise or counterclockwise with 25-27 mm chrome wrench to the favorable height.

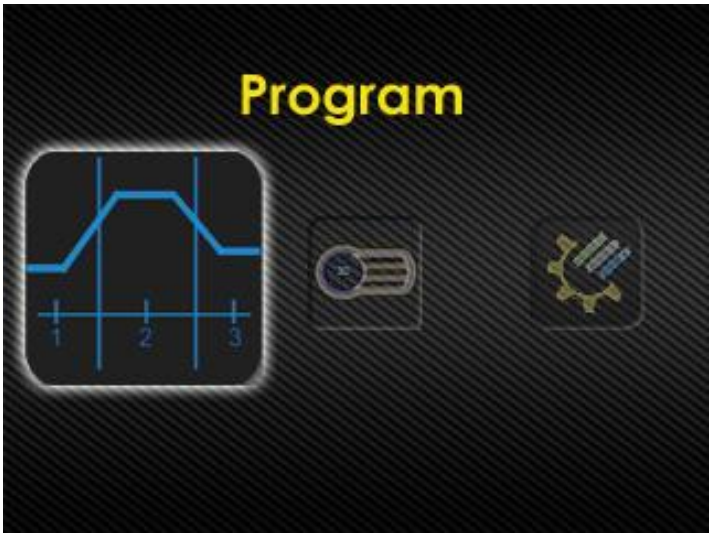
▶ Fasten the first nut counterclockwise with 25-27 mm chrome wrench, after four foot stands are with the favorable height, the height adjustment is finished.



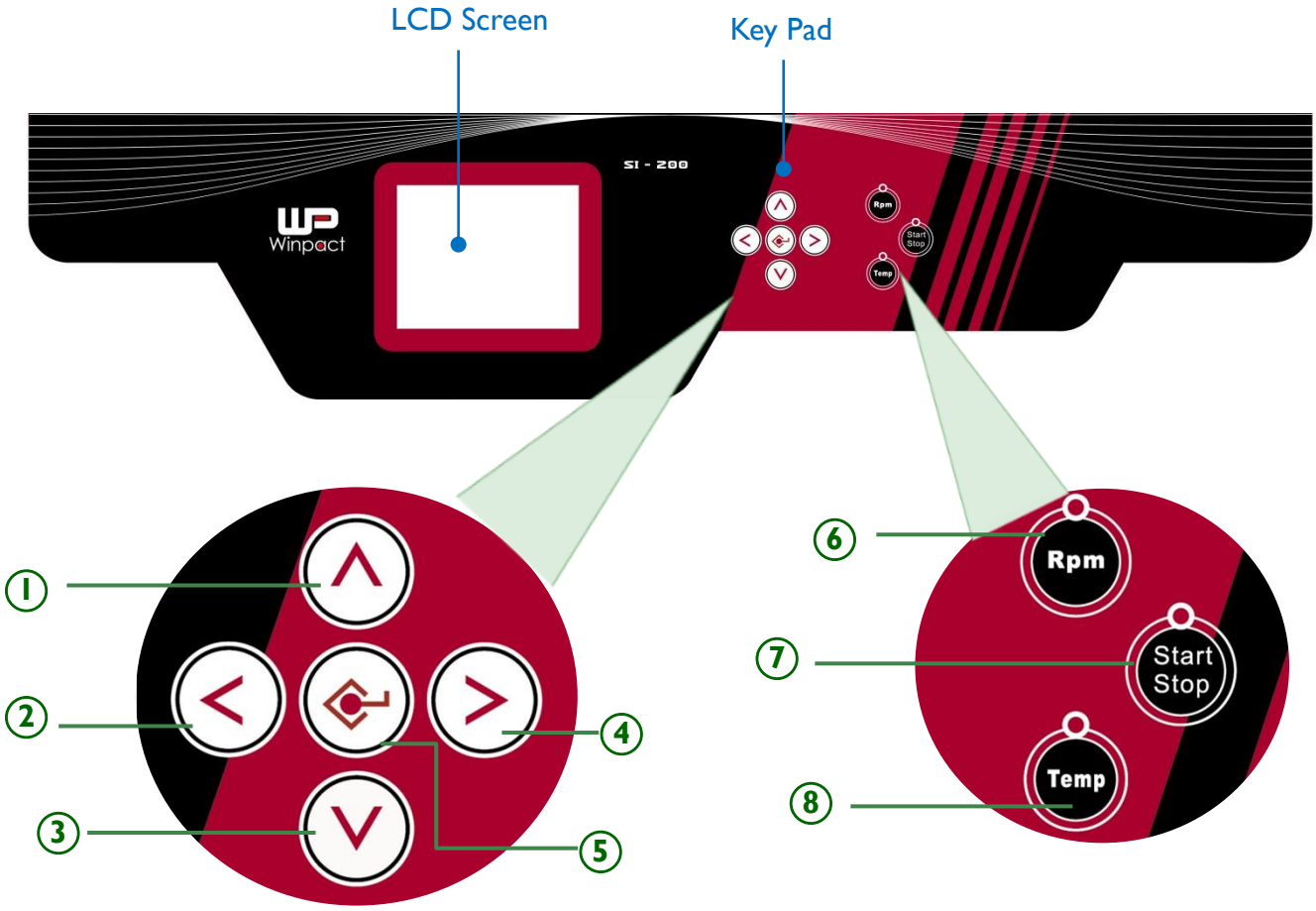
V. Operation Instruction

Winpact Shaking Incubator provides 2 types of operation modes for user to meet most of user's experiment needs. Generally, the first image user see after turning on the incubator displays 3 options: Program, Continuous and System Setup.

In this chapter, we will elaborate all the functions with 5 sections: *features of control panel, program mode settings, continuous mode settings, system setup and remote control operation*. The following sections will introduce the control panel of Winpact Shaking Incubator, and explain the features and functions of all the settings and programs.



Features of Control Panel

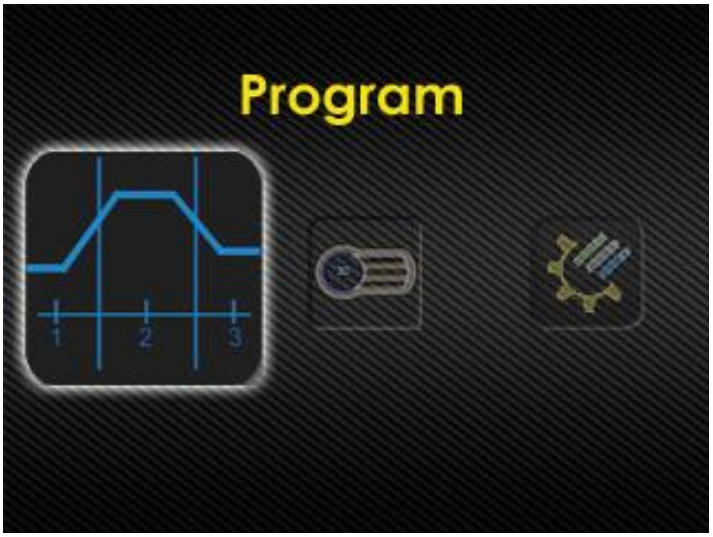


Numbers	Description	Function
①	• Selection Key (Upward)	- Press to move upward.
②	• Selection Key (Leftward)	- Press to move leftward.
	• Return Key	- Press to return to last page.
③	• Selection Key (Downward)	- Press to move downward.
④	• Selection Key (Rightward)	- Press to move rightward.
⑤	• Enter Key	- Press to enter the selected page.
	• Confirmation Key	- Press to confirm the adjusted value.
⑥	• Rpm Key	- Press to start shaking when under Continuous Mode.
⑦	• Start / Stop Key	- Press to start or stop the operation.
⑧	• Temp Key	- Press to start heating when under Continuous Mode.

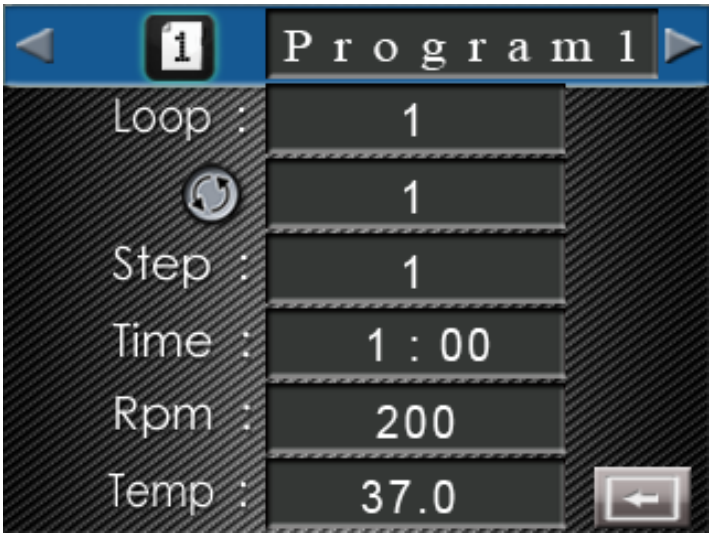
***Notice:**

The value column will be flashing when user is able to adjust the settings, please note that any change can only be adjusted within 10 seconds Therefore, if user does not press "Enter" after any value adjustment for 10 seconds, system will read and run the previous value before user enter the setting mode.

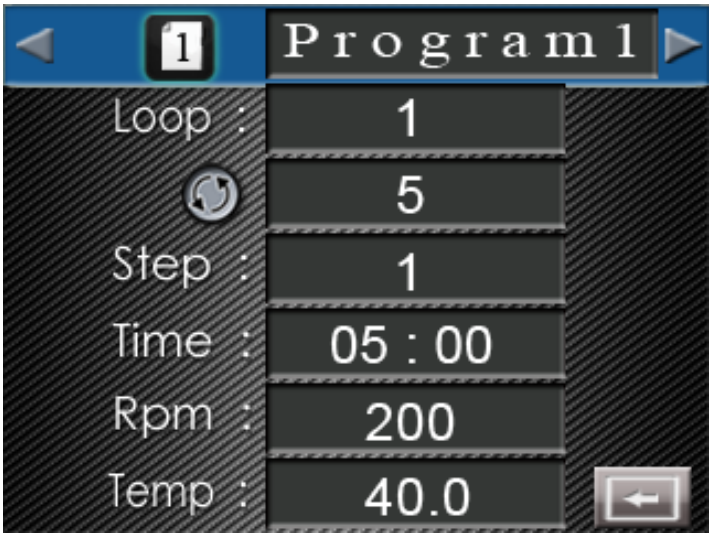
Program Mode Settings



Winpact Shaking Incubator allows user to setup the schedules based on user's requirement in Program Mode. Press to enter the setting page of different programs.



Naming the Program Mode Operation



In Program Mode page, Press to name user's first program; user will see the first letter is flashing*1. Press or to choose the letters, numbers, punctuation marks or space. When user have decided the first letter, press to move on to the next letter, and use and to select the letter user want; then press to go to the third letter. And set up the rest of 5 letters in the same method as mentioned above.

*2 When user set up all the letters, press to confirm the program name, and the letter will stop flashing. Press to move on to the next parameter.

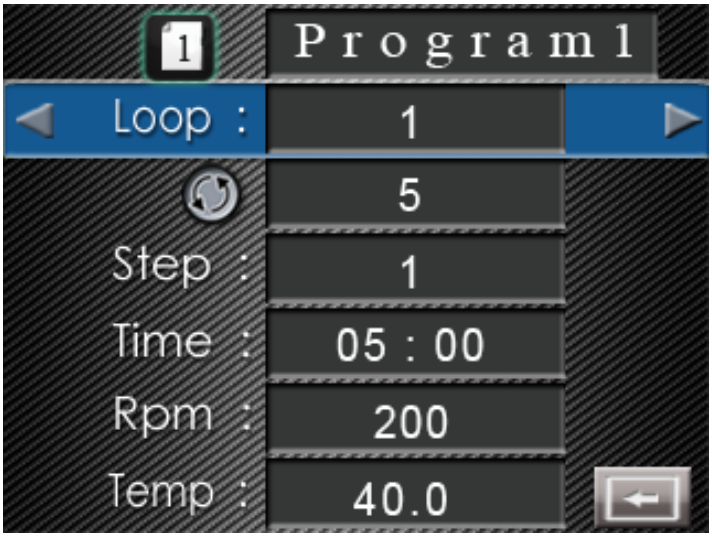
Note (1):

To move to the next or previous program, move the cursor to the program name column, use or to move forward or backward and select the program user wants. Press to name the program or and to adjust other parameters.

Note (2):

User can set up the program name in 8 letters. Each letter contains 94 options, including English capitals, lowercases, numbers, punctuation marks and space. The system can store up to 10 programs.

Setting Up the Program Parameters



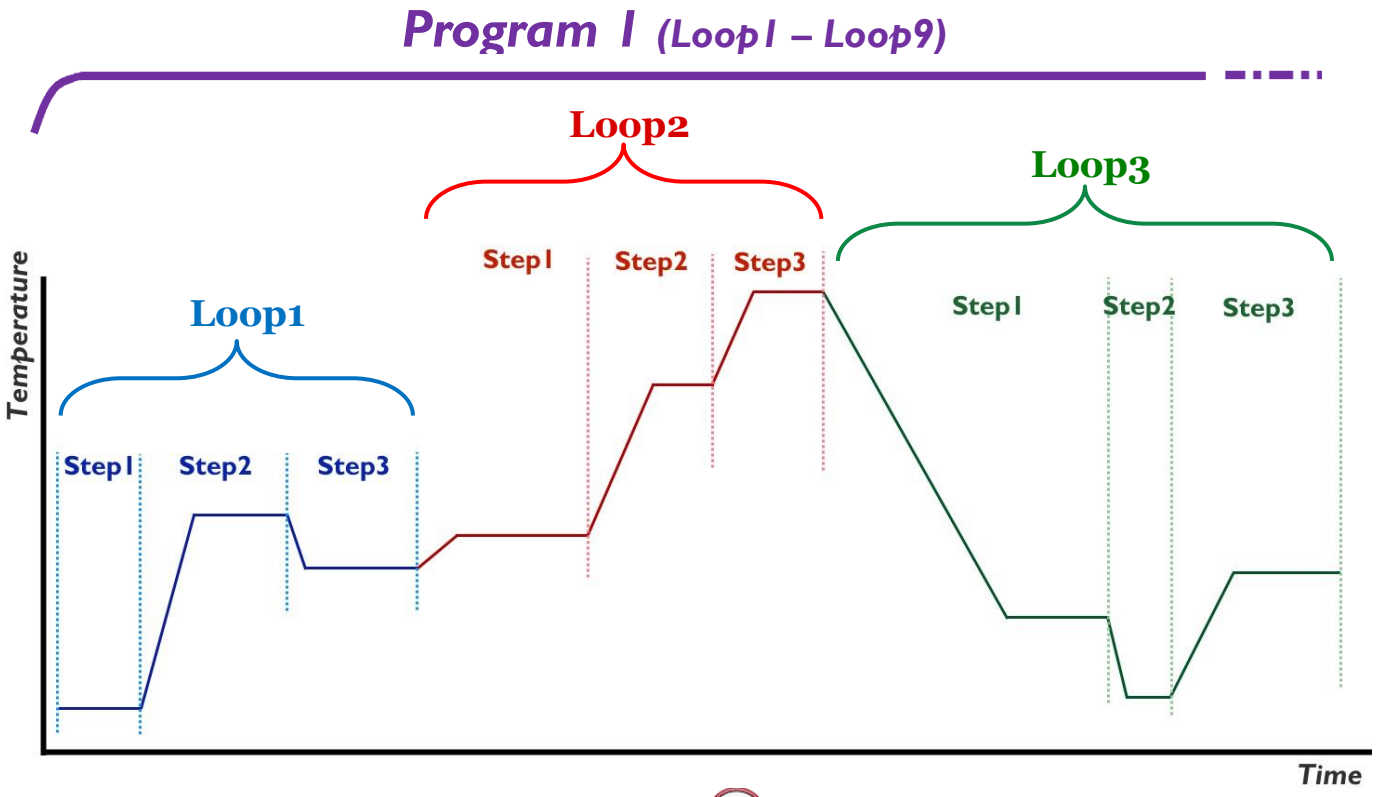
After deciding the program name, press to confirm the adjustment and the letter will stop flashing. Press to select next column and it will be highlighted.

Loop	3 steps in 1 loop. A program can contain up to 9 loops.
Cycle	The cycles of a loop. Each loop can repeat up to 999 cycles.
Step	Each loop contains 3 steps. The operation time, shaking speed and incubator temperature can be set within each step.
Time	The running time (hhh : mm) of the step. The maximum of time is 999 hours and 59 minutes (999 : 59).
Rpm	The shaking speed that is set for the assigned step. The value can be set at 20 ~ 500 rpm.
Temp.	The incubator temperature that is set for the assigned step. The setting range is from 15℃ to 65℃.

Every program contains 9 loops, and a loop consists of 3 steps. Each step allows user to set up the running time, shaking speed and incubator temperature.

The symbol represents "Cycle", which is related to the repetition of **EACH LOOP**.

The maximum value of "Cycle" can be set up to 999 times; it means a loop can repeat 999 times at most.



To set up the parameters within each step, press and the selected column will be highlighted, use and to select the loop.*3 Confirm the loop user is going to set up; then press to cycle column. Press first, and use and to adjust the numbers of cycles. User can long press to fast forward or backward to the numbers user wants. Press again to confirm settings.*4

Switch to "**step**" column to set up all the parameters in each step. Select the step by pressing and . Push and then to set up the running time.*[5] Use and to adjust the numbers; then press or to move from the hour and the minute parameter. After finishing the time setting, push to confirm the adjustment. Then use to move on to the rest parameters. Press to start setting up and press again to confirm the adjustment.

Note (3):

The program will run the loops in sequence from Loop1 (Step1-Step3) to Loop9 (Step1-Step3).

Note (4):

If user doesn't need all the loops in the program, set the cycle at 0 in the next loop. For example, only 3 loops are needed in the program; then just set 0 in the column of cycle in Loop4, the system will automatically ignore the rest settings of loops. But each program should contain at least 1 loop. In that, the cycle of ***the first loop*** in every program is restricted to the range from 1 to 999 times. And the cycle of the rest loops is from 0 to 999.

Note (5):

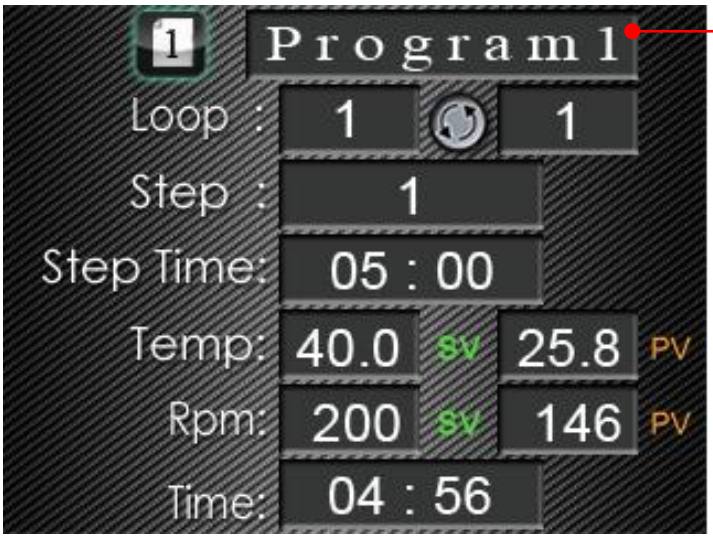
If user only needs 1 step or 2 steps in a loop, set 0 : 00 in the time column. The system will ignore the rest of steps in the same loop. For instance, the time is set at 0 : 00 in Loop1, Step2; then the program will run Loop1, Step1, and skip the rest steps in Loop1, and directly proceed to Loop2.

Starting the Program Mode Operation

After setting up all the parameters, press

in the left side of control panel to start up the operation based on user's settings.

The screen will show up the current status of incubator, as the picture below.



The current-operating program

Loop	The current loop.
Cycle	The remaining cycle.
Step	The current running step.
Step Time	The running time user set up.
Temp	"SV" represents "the set value of temperature"; "PV" represents "the present temperature".
Rpm	"SV" represents "the set value of shaking speed"; "PV" represents "the present shaking speed".
Time	The remaining time.

To stop the program running, just press

again. The device will cease the operation and the screen will return to the program setting page.

Continuous Mode Settings

In addition to Program Mode, Winpact Shaking Incubator allows user to use Continuous Mode to run the experiment under the specific circumstance. User can manually control the incubator temperature, shaking speed and operation time according to the experiment condition. Press to enter the setting page and adjust the values.

Setting Up the Continuous Mode

Press to adjust the temperature value; the numbers on the left side of the screen will start flashing. Use and to increase or decrease the value. Press again to confirm the set temperature. Then press to continue to shaking speed setting, and adjust the value in the same way that user adjust the temperature.

Temperature	The desired temperature when operation. The incubator temperature ranges from 15℃ to 65℃.
RPM	The desired shaking speed when operation. Range from 20 rpm to 500 rpm.
Run Time	The operation time. Range from 0 minute to 999 hours and 59 minutes. If user set the time at 000 : 00, the system will recognize the time as infinity, and the device will run the operation until user stop it manually.

To set up the running time, press first to make the numbers flashing, and use and to move from the hour and minute parameters. Press to increase the value; to decrease it. Then push to confirm the adjustment.

Press to go back to the main page.

Starting the Continuous Mode Operation

In Continuous Mode, user can choose to start up either the heating or shaking operation by pressing either Temp or Rpm. Or user can have both of the heating and shaking operated by pressing Start Stop.

When user starts the operation, the screen will switch to the monitor page*6 to check the status of all parameters, like the picture below.

Note (6):

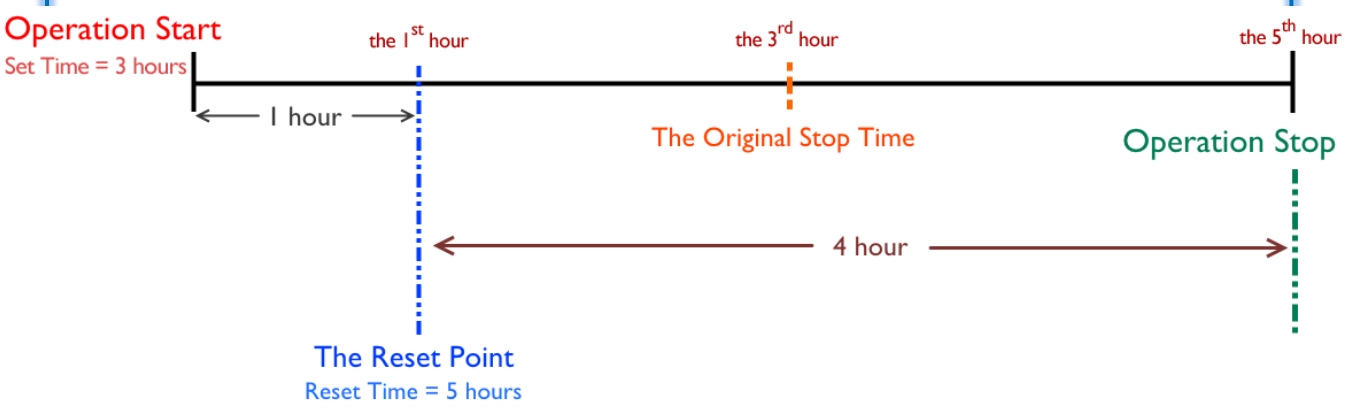
User can change the parameters during the operation. Just press , and the value of shaking speed will flash. Press and to move from different parameters. Then use and to adjust the numbers. When finishing the change, press again to confirm.

The system will run the device under the early settings during the adjustment until user confirms it with key.

Note (7):

If user wants to increase or decrease the running time in the middle of the operation, the ongoing time will be calculated in the new setting.

Take the timeline drawn below for example,



the original setting is 3 hours, but when the device has run for 1 hour, user changed the running time to 5 hours. The system will count in the previous hour, and only run 4 more hours in this operation.

If the reset running time is shorter than the original setting, the system will stop earlier. Besides, the operation might cease immediately if user's resetting is less than the counted time.

Note (8):

When the running time is set at 0 : 00, this column will count the operation time until user stops the device. When the device has operated for over 999 hours and 59 minutes, the system will stop counting on the monitor page, but the operation will continue until user stops it manually.

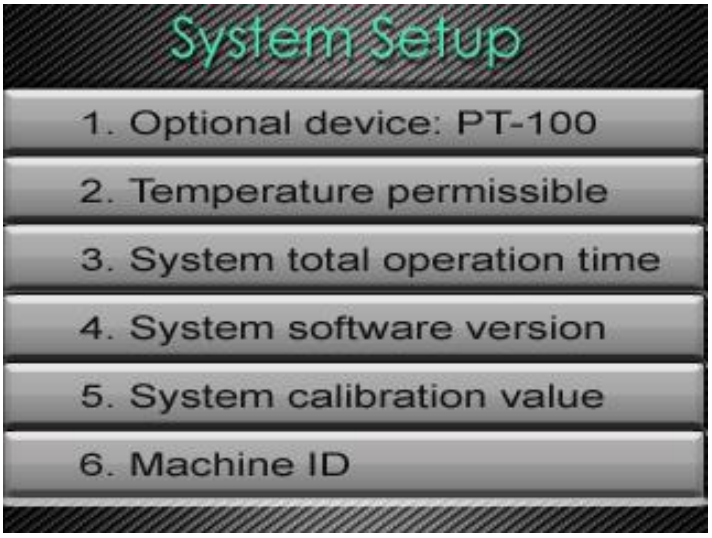
If user wants to change the running time setting during the operation, the system will start to display the remaining time based on user's resetting, instead of continuing counting the operation time.

To end the operation, user can press Temp for stopping the heating only; or press Rpm to terminate the shaking operation only. And press Start Stop to cease both functions.

System Setup

In System Setup page, user can activate the optional device, check the total operation time, calibrate the parameters and acquire other system information.

Press to enter System Setup page. Then use and to move from the settings and information. Press to go into each setting page.

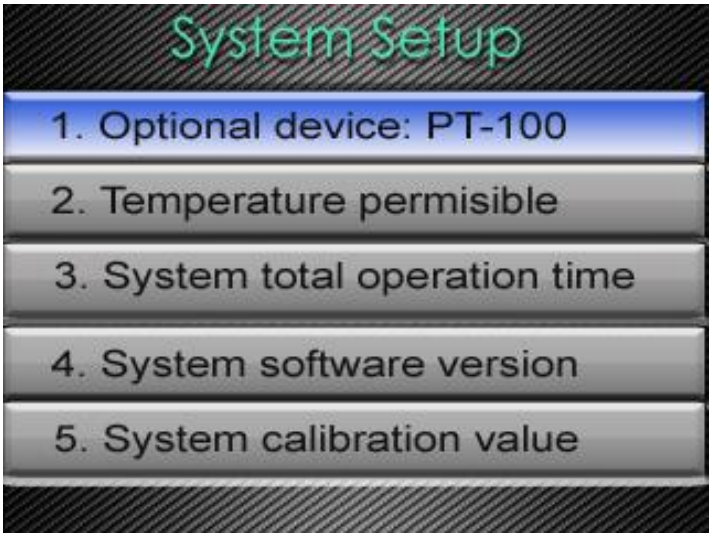


Notice:

When user adjusts the settings, the selected value / column will flash; if user doesn't change and confirm the settings within 10 seconds, the value / column will stop flashing and keep operating with the previous settings.

Optional Device: PT-100

If user has purchased our Winpact Temperature Probe, user can install it on Winpact Shaking Incubator to increase the accuracy of temperature measurement, for example, the temperature in the flasks environment. Before user changes the system setting, make sure that user has installed the temperature probe correctly.

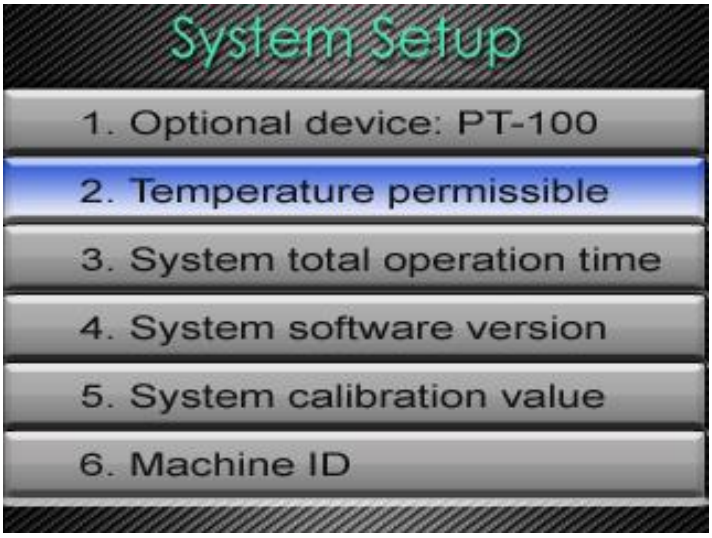


Select the first bar "Optional device: PT-100" and press to enter the page.

Use and to move from "Yes" and "No". Select "Yes" to switch the readings of external temperature probes.

Then user can press to exit the PT-100 setting page.

Temperature Permissible



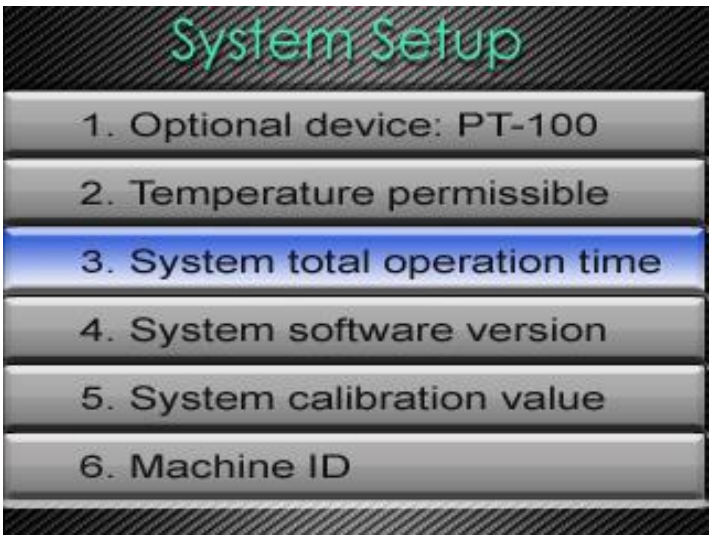
Press to enter the setting page of Temperature Permissible. This page allows user to adjust the temperature permissible range for heating detection.

Press again to edit the value. The permissible value ranges from 0℃ to 5℃, which the minimum unit is 0.1℃. Use and to increase or decrease the number.

The device will detect the incubator temperature according to the permissible value user set. Take the above picture for example, the permissible value is set at 0.5℃, which means if user set the operation temperature at 50℃, the system will recognize the temperature ranging from 49.5℃ to 50.5℃ as allowable. Once the temperature drops to 49.4℃ or rises to 50.6℃ (the variation of incubator temperature might result from the weather or lab environment), the system will pop up a warning sign to alert the user that the incubator temperature exceeds the set range.

Press to exit the temperature permissible setting page.

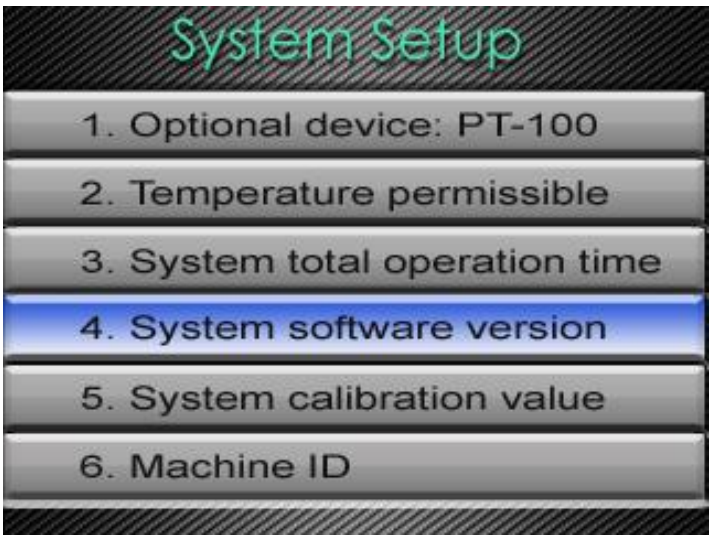
System Total Operation Time



This page will record and present the total operation time of user's shaking incubator from the first time user use. The timer counts up once the operation starts (either heating or shaking, or both). The minimum unit of the presented format is minute. The maximum value of days is 9999.

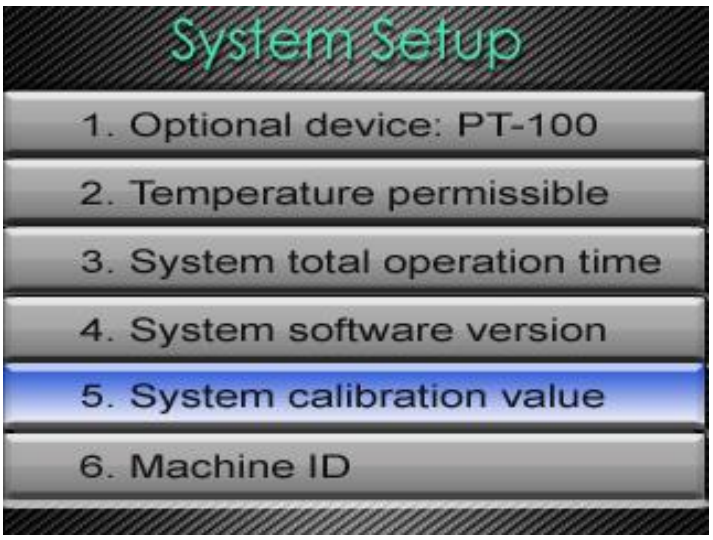
To exit the page, press .

System Software Version

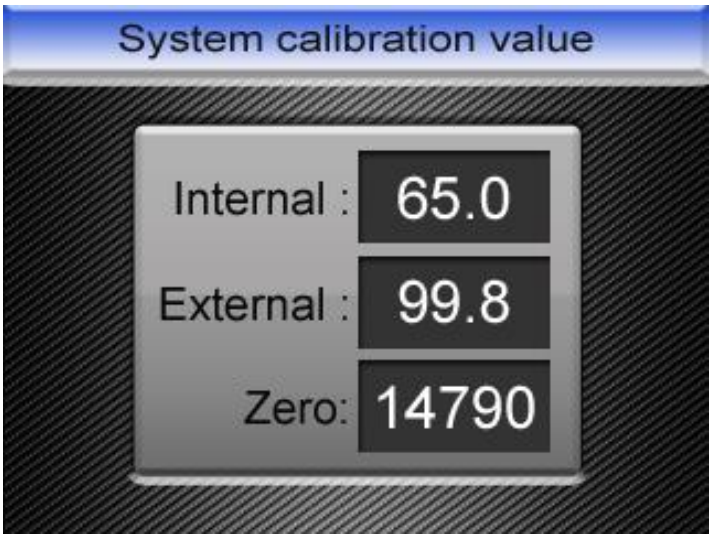


Press to go into the information page of system software version. This page shows the using software version of user's Winpact Shaking Incubator. Press to exit the page.

System Calibration Value

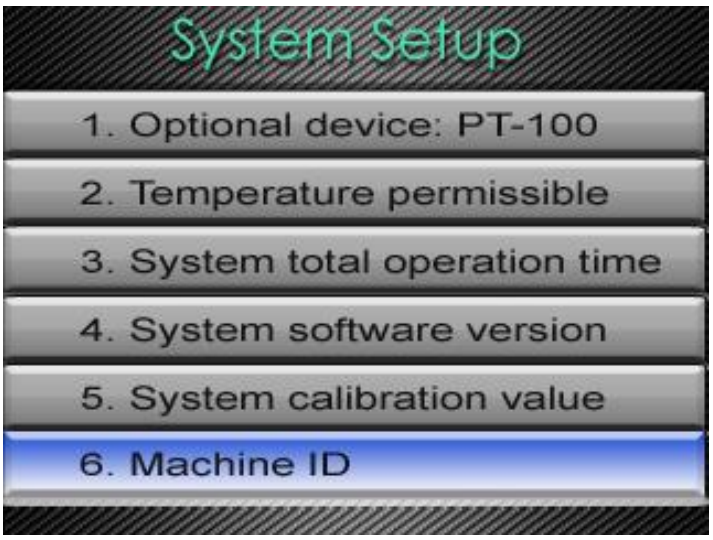


Press to enter the page of system calibration information. The page is for maintenance and factory detection use only. Users are not allowed to edit or adjust the values.



Press to exit the page.

Machine ID



Press to enter the page of machine ID for editing the device number. If user has more than one SI-200 to use, user can set up the machine ID to distinguish them when several devices are connected to user's personal computer. Press to edit or change the machine ID and use or to adjust the numbers*[9]. Press to confirm the adjustment. Then press to exit the page

Note (9):

The numbers range from 0 to 9. If there are 2 devices using the same number, the SI-200 software will pop up a warning to alert user the sameness.

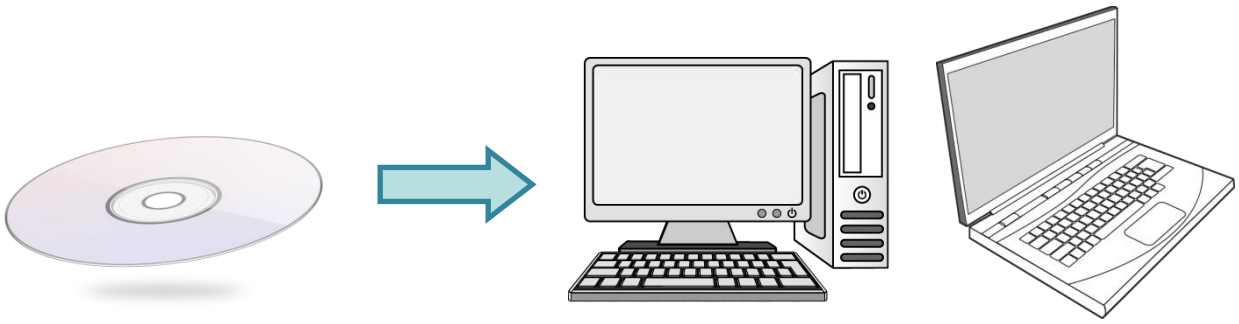
Remote Control Operation

Except operating and adjusting the device directly on the device, user can install the associated software of SI-200 on user's personal computer, and operate the device through the computer.

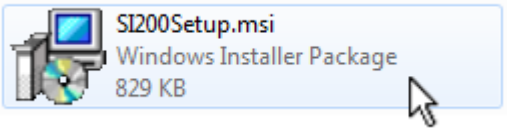
Installing SI-200 Software on User's Personal Computer

Follow the steps below to correctly install the software on the computer.

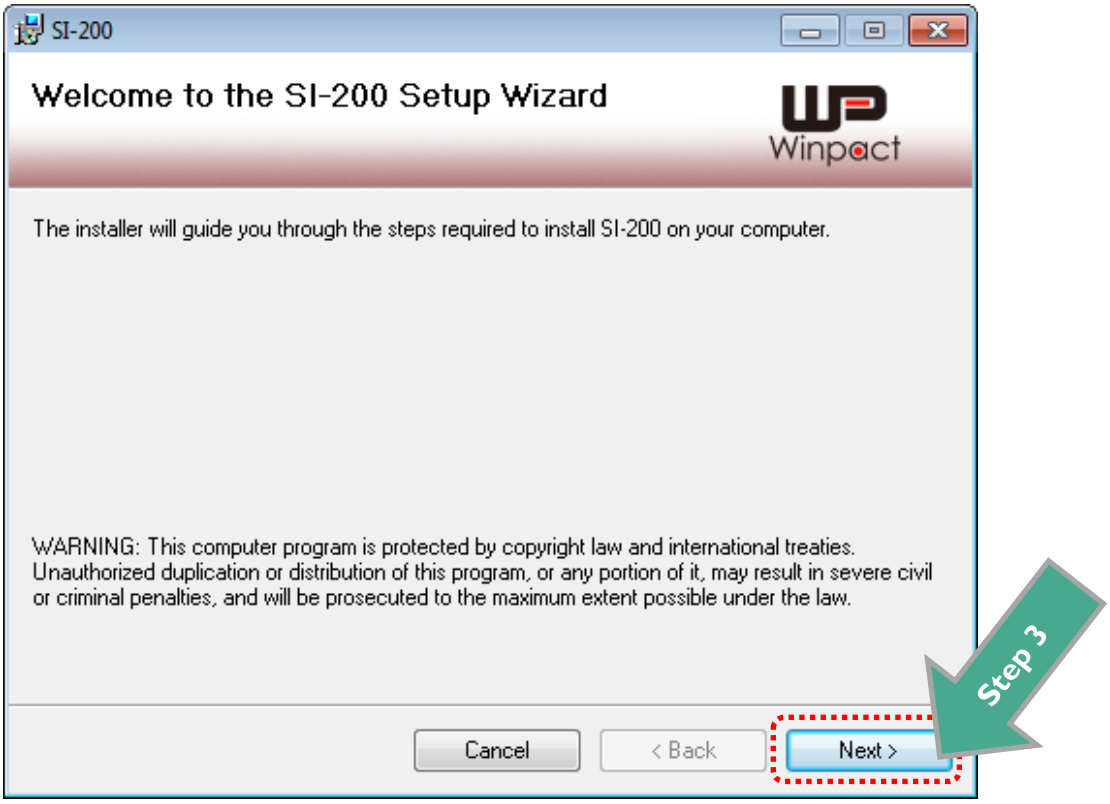
Step 1 *Insert the disk into the CD drive of user's computer or laptop.*



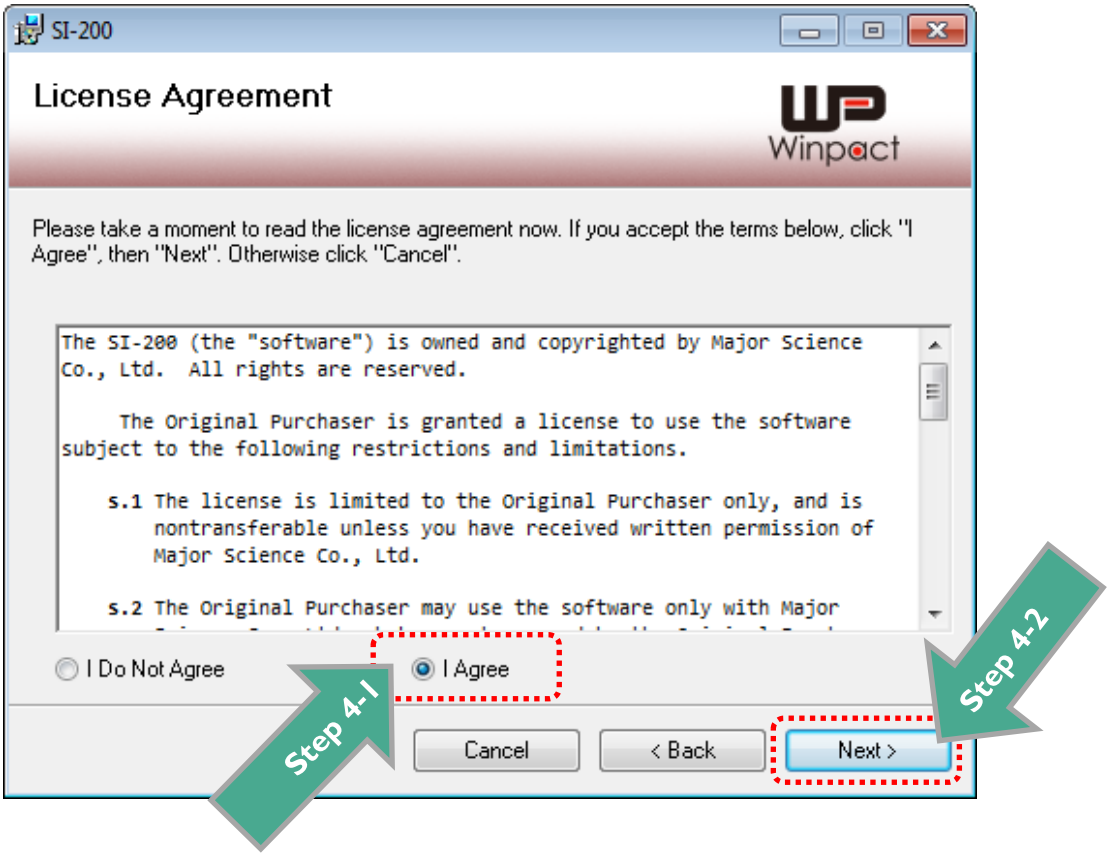
Step2 *Double-click the setup icon to install the program.*



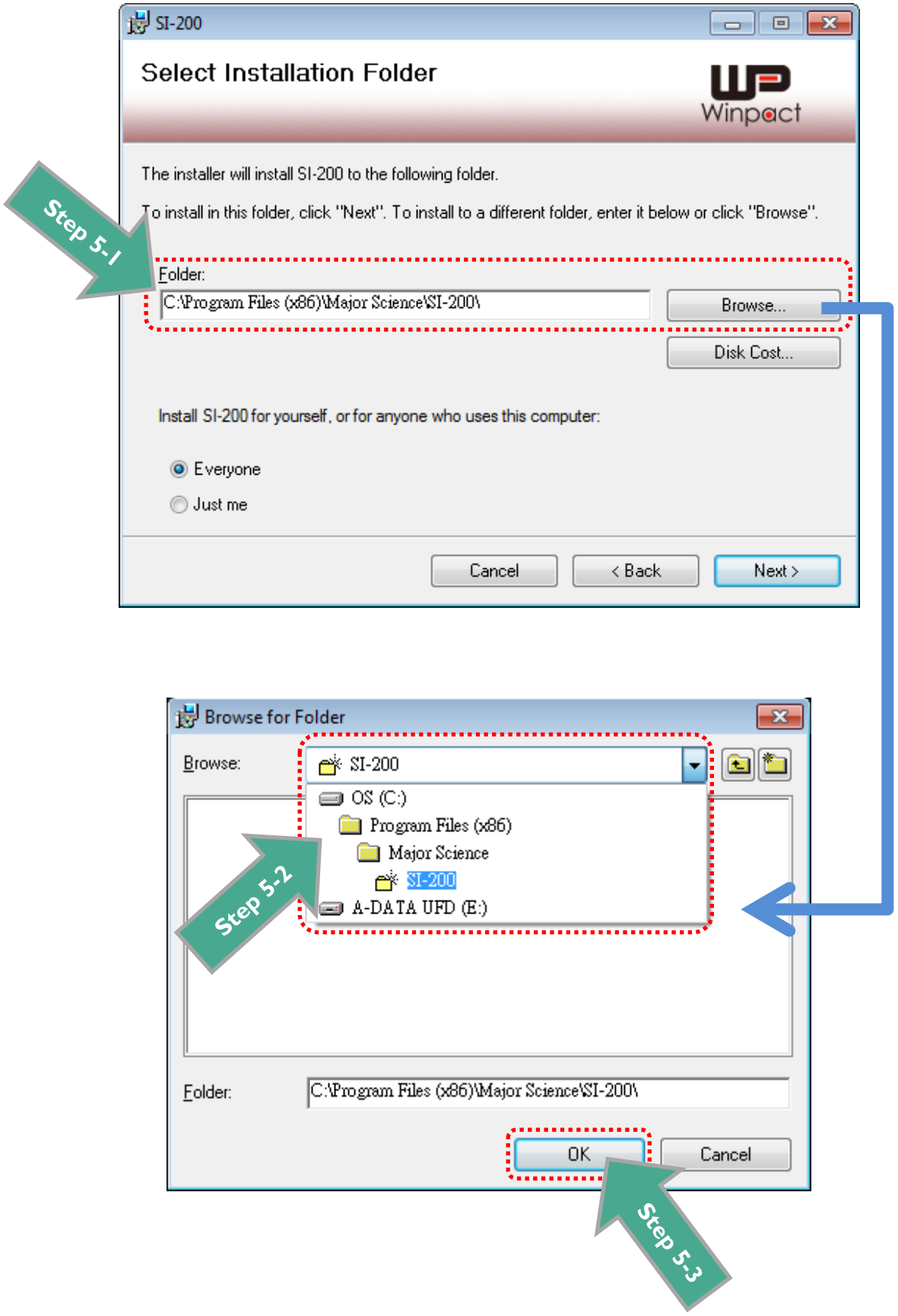
Step3 *The installation dialogue will pop up on the screen. Press "Next" to start installing.*



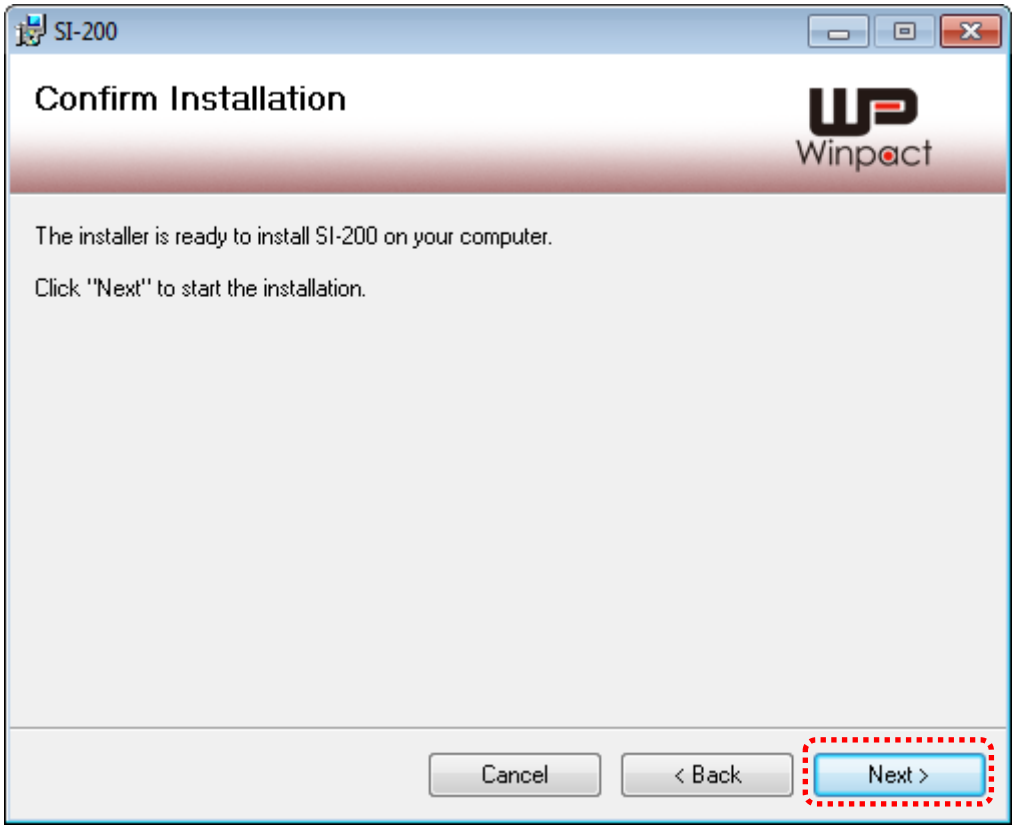
Step4 *Read the license agreement and check "I Agree" to accept the terms. Click "Next", continuing the installation. Or user can select "Cancel" to exit the installation dialogue.*



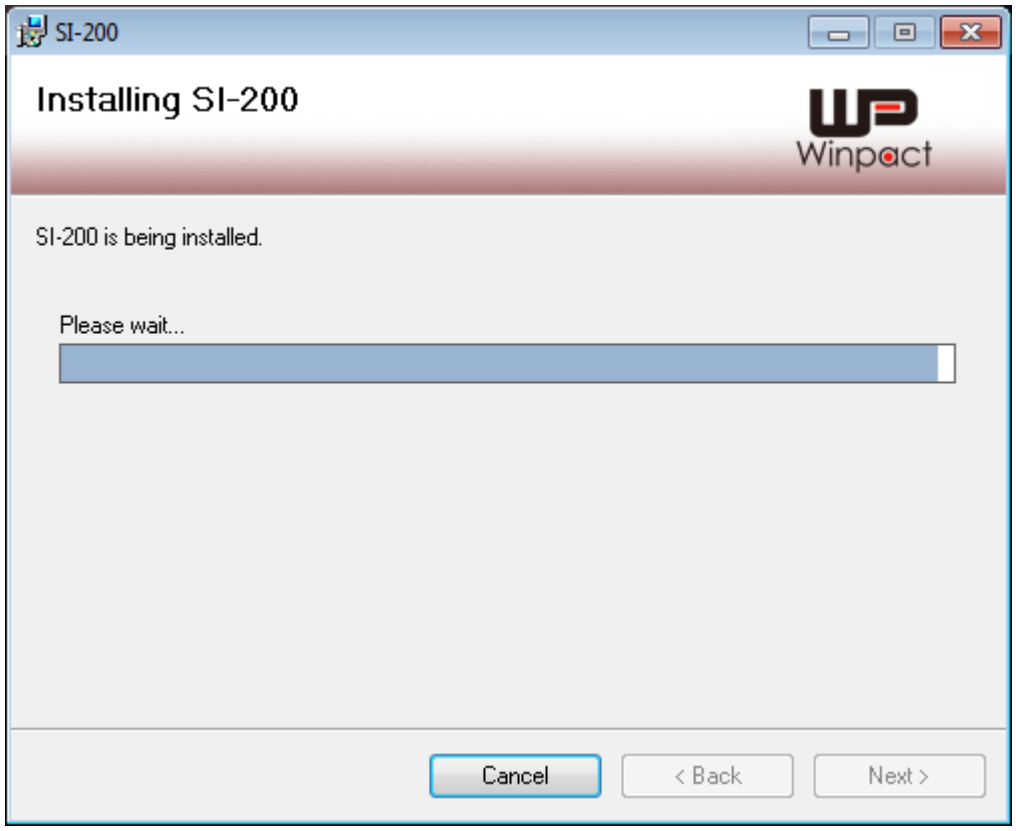
Step5 *Press "Browse" and select the folder to install the program.The default folder is set at "C:\Program Files (x86)\Major Science\SI-200\". Or user can skip this step, directly to Step6.*



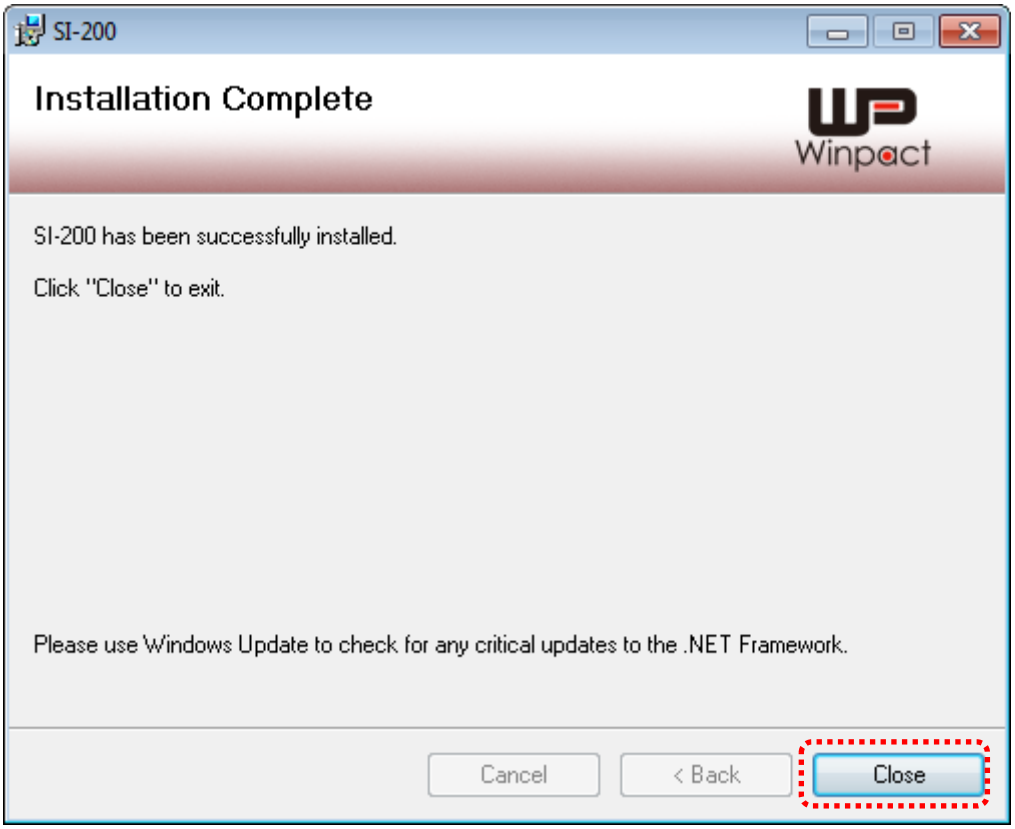
Step6 *Click "Next" to start the installation.*



Step7 *The dialogue will show the installation status. Just wait for the installation to complete.*



Step8 *When the installation complete, press "Close" to exit the installation dialogue.*

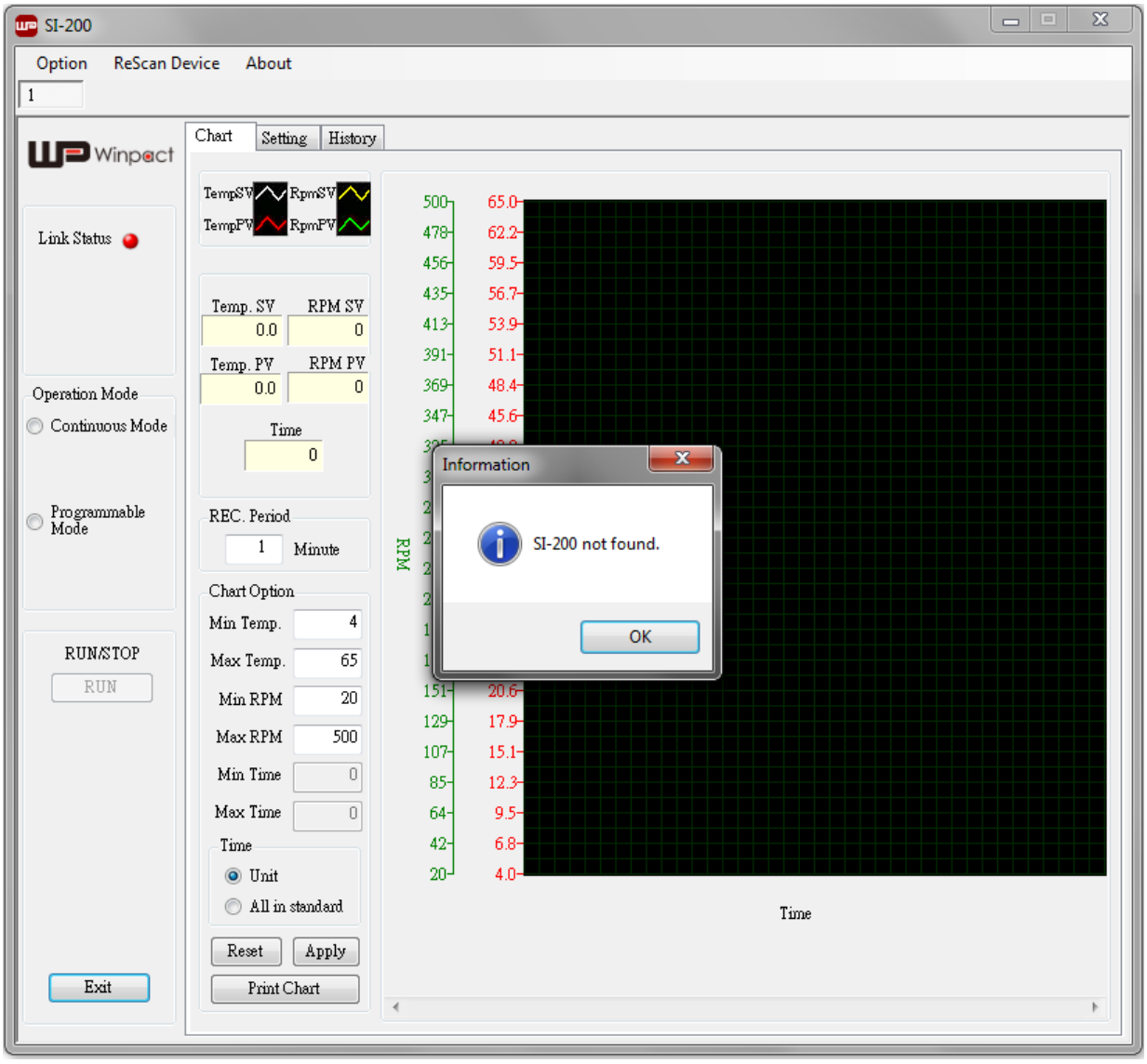


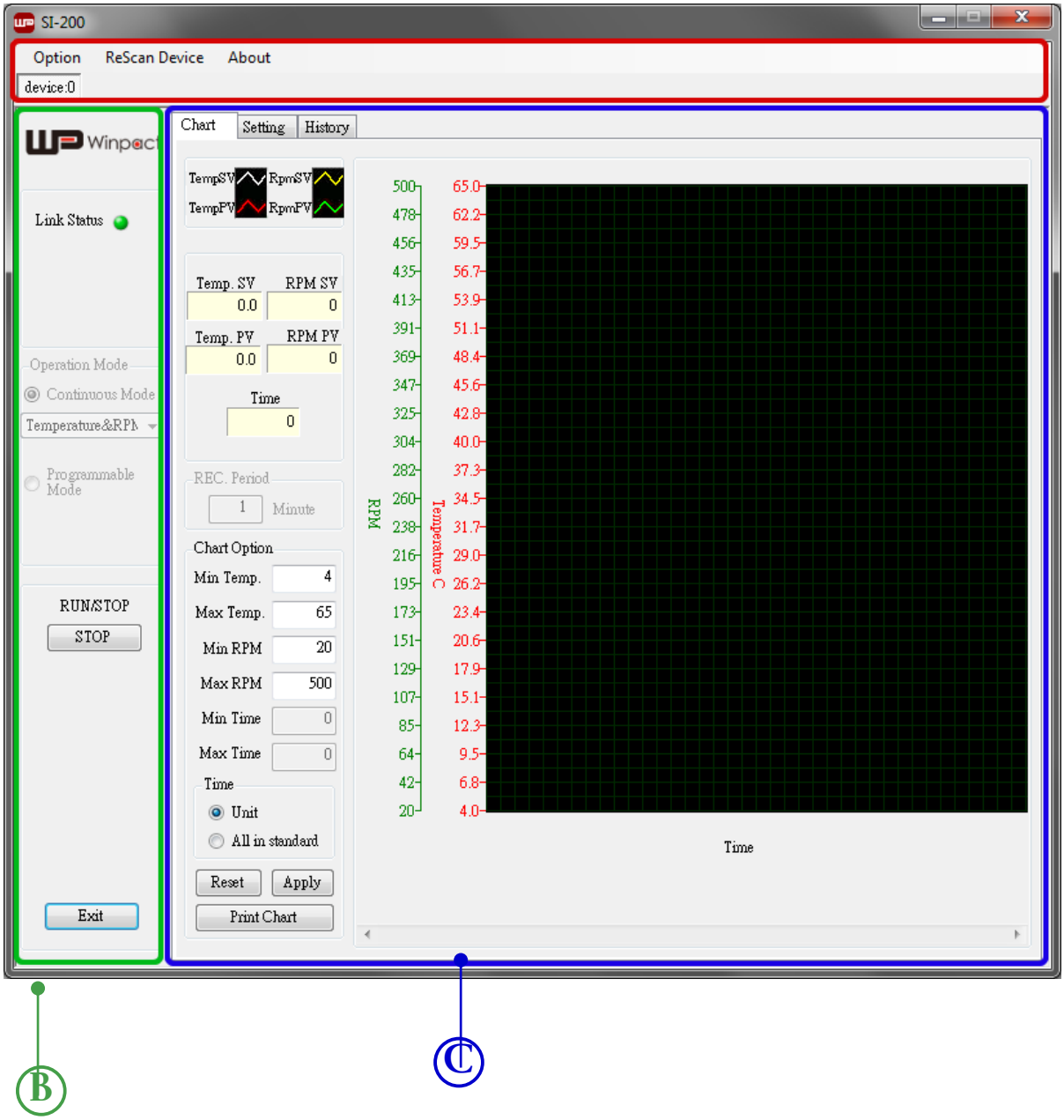
Using SI-200 Software to Operate the Device

After the installation completes, user can find a "WP" icon (as the image below) on user's desktop. Double-click the icon to start the remote control operation.

***Notice:**

User will need to use the USB cable to connect the device with user's computer before starting the remote control operation. If the device is not connected or connected wrongly, the SI-200 software will pop up a warning dialogue as the picture below. The dialogue will disappeared once the device is connected. Click "OK" to close the dialogue.





Ⓑ

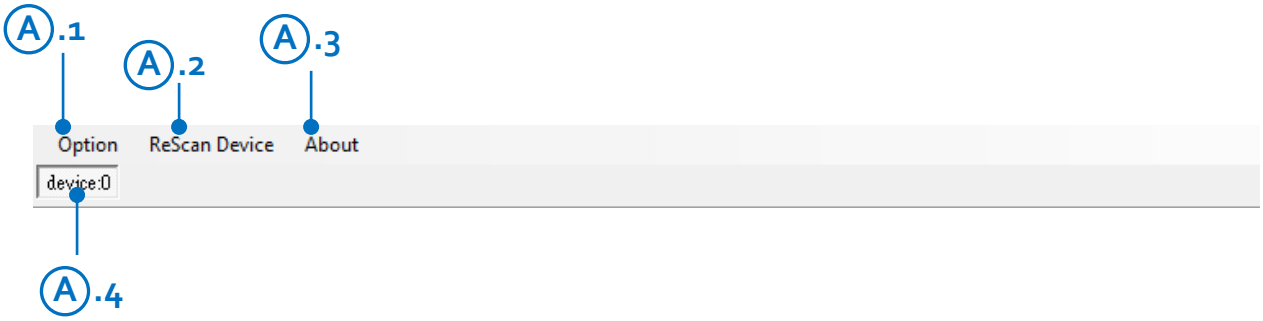
Ⓒ

Here we divide the SI-200 software interface into 3 parts, which function will be explained thoroughly in the following sections.

Ⓐ Top Bar	Contains file name settings, software information and the number of devices.
Ⓑ Status Column	Displays the connection status, the selection of modes and the operation buttons.
Ⓒ Setting & Record Column	Contains 3 tabs with different functions. “Chart” for viewing and recording the current operation condition; “Setting” for parameters setting; “History” for reviewing the recorded data.

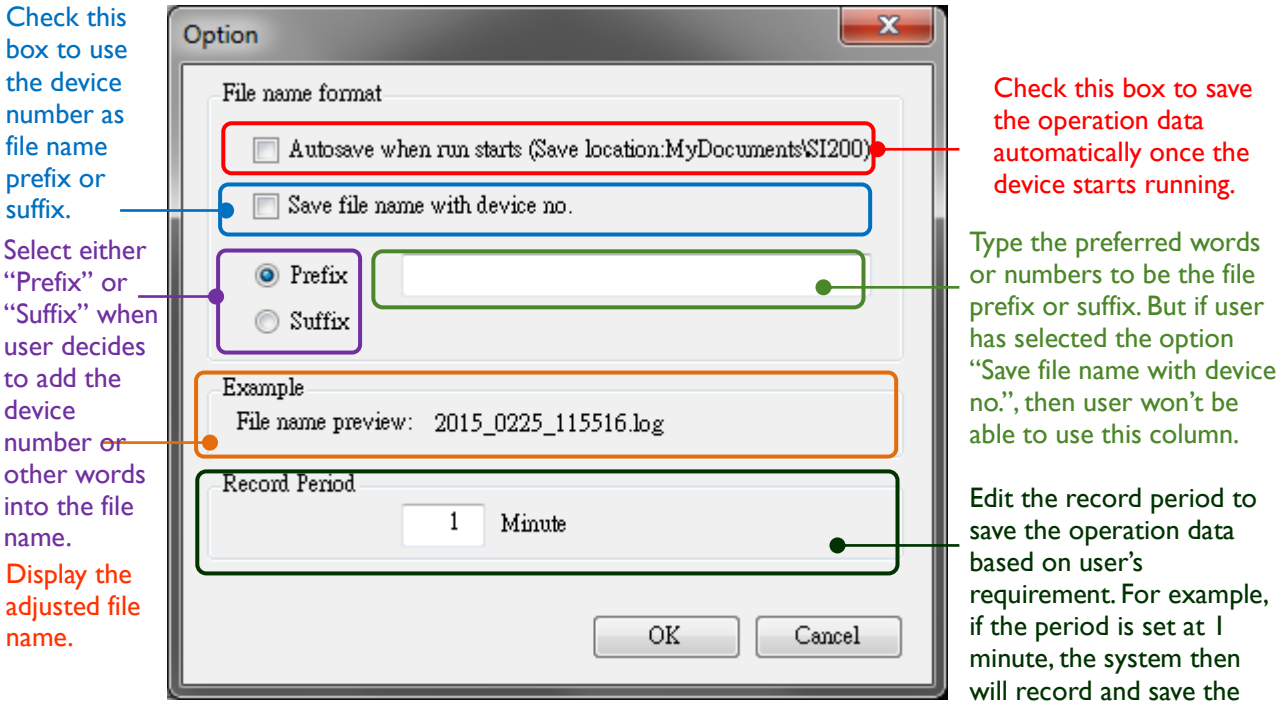
Remote Control Function Introduction

Ⓐ Top Bar



Ⓐ.1 File Name Settings Option

Press "Option" to set up the data file name format .An option dialogue will pop up, adjust the settings based on user's requirement.



Notice:

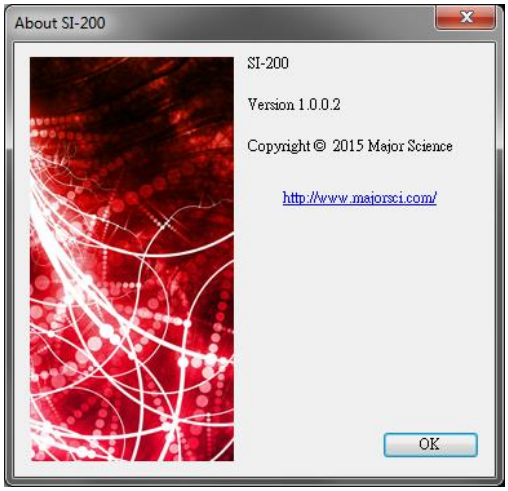
Remember to click "OK" to save every setting.

Ⓐ.2 ReScan the Device ReScan Device

If the device has once disconnected, press "ReScan Device" to help the software find the reconnected device.

Ⓐ.3 Software Information About

Click "About" to see user's SI-200 software version.

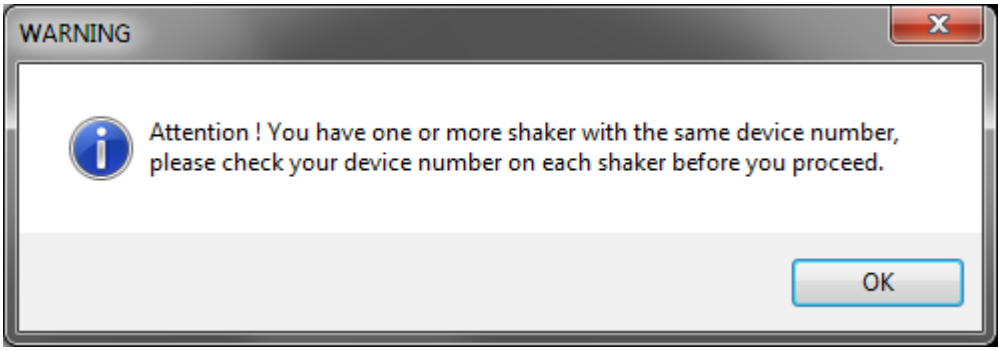


Ⓐ.4 Device Number device:0

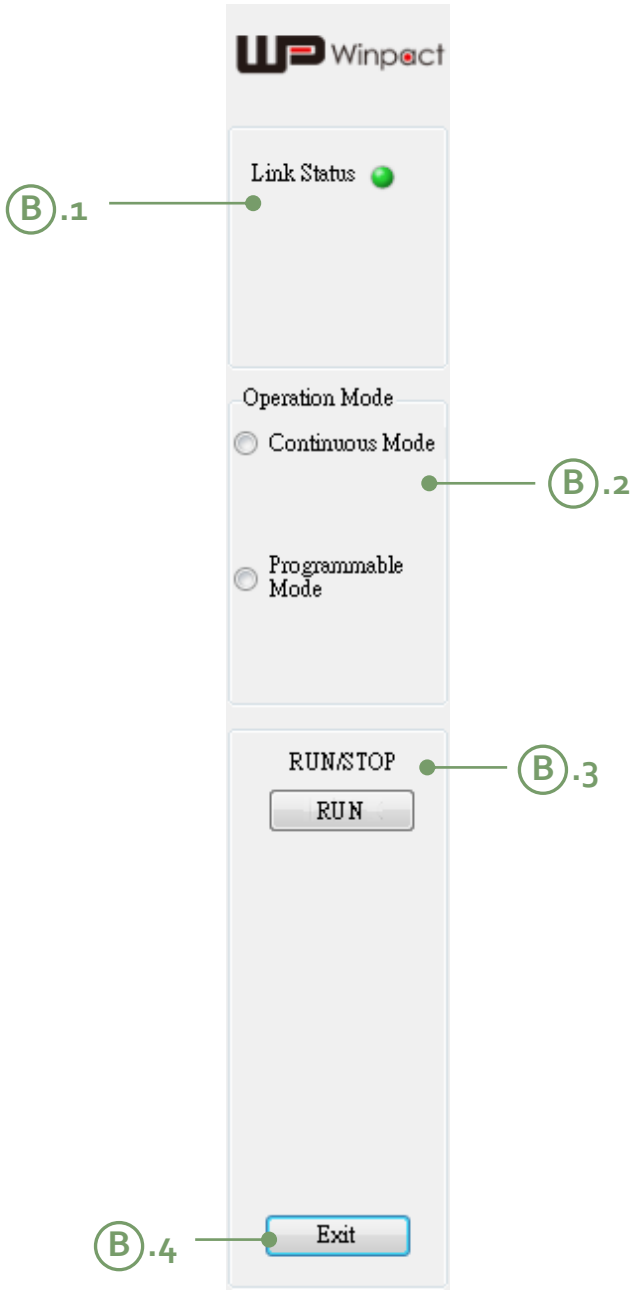
The displayed device number is based on the setting in "Machine ID" on device itself.

Notice:

If 2 or more devices are set to the same device number, the system will pop up an alert once user starts up the SI-200 software. Check all user's SI-200 devices for the device number, and reset them in System Setup page.



Ⓑ Status Column



Ⓑ.1 Connection Status

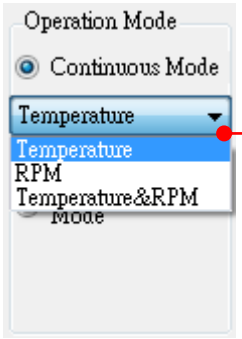
This area displays the connection status between SI-200 and user's personal computer. If the light appears in red, it means the device is not detected and the computer doesn't connect to it. If in green, it indicates the connection is successful.

Connected

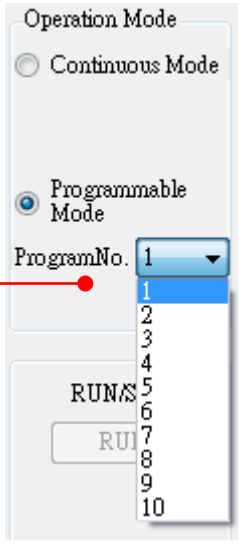
Disconnected

Ⓑ.2 Operation Mode Selection

Select either "Continuous Mode" or "Programmable Mode" to run the device.



Choose which parameter user wants to use.



Choose which program number user wants to use.

***Notice:**

The system will run the device based on the parameters and values set up in the "Setting" tab.

Ⓑ.3 RUN/STOP Button

When user finishes all the settings, click "RUN" button to start the operation. And press the same button to stop.

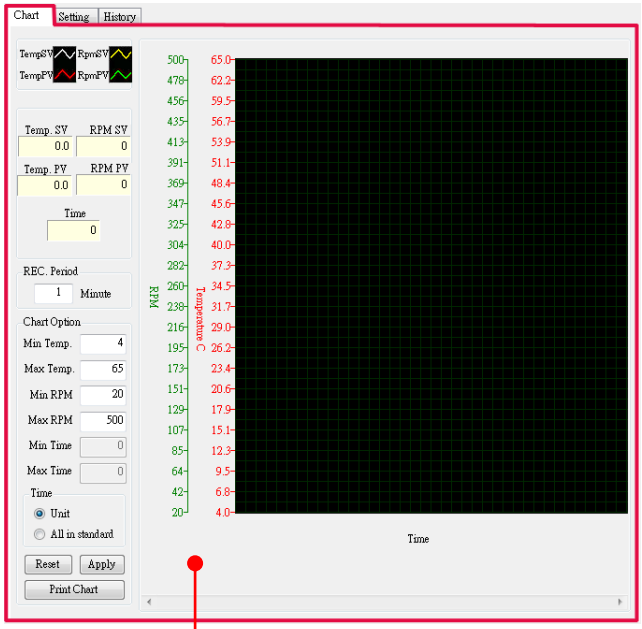
RUN	Click it to start running the device.
STOP	Click it to stop the operation.

Ⓑ.4 Exit Button [Exit]

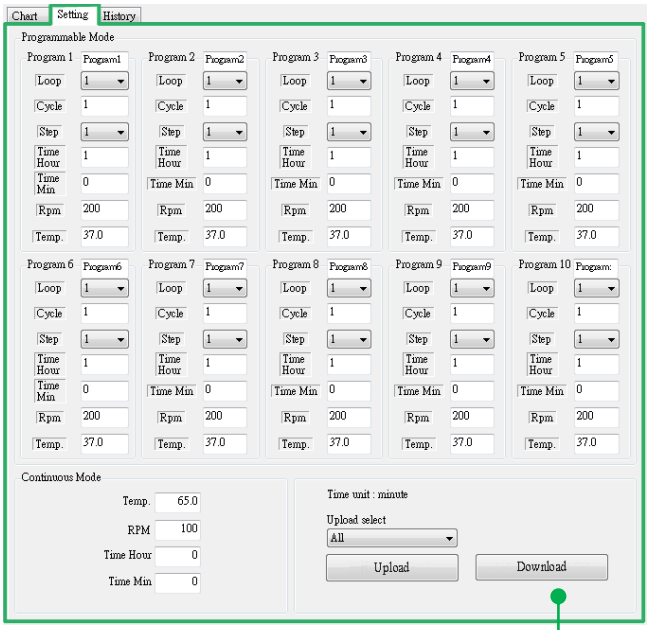
Click "Exit" to leave the remote control program.

Ⓒ Setting & Record Column

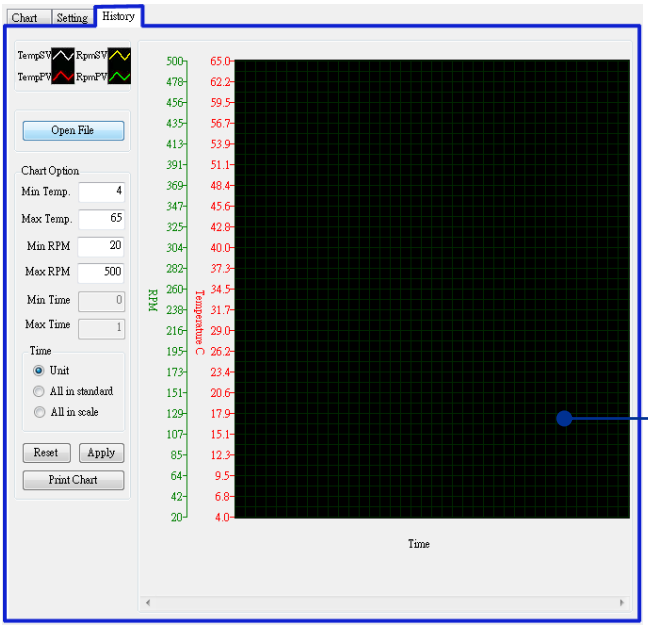
There are 3 different tabs in this column: *Chart* (Ⓒ.1), *Setting* (Ⓒ.2), and *History* (Ⓒ.3). We'll elaborate the function of each tab respectively in the paragraphs below.



Ⓒ.1



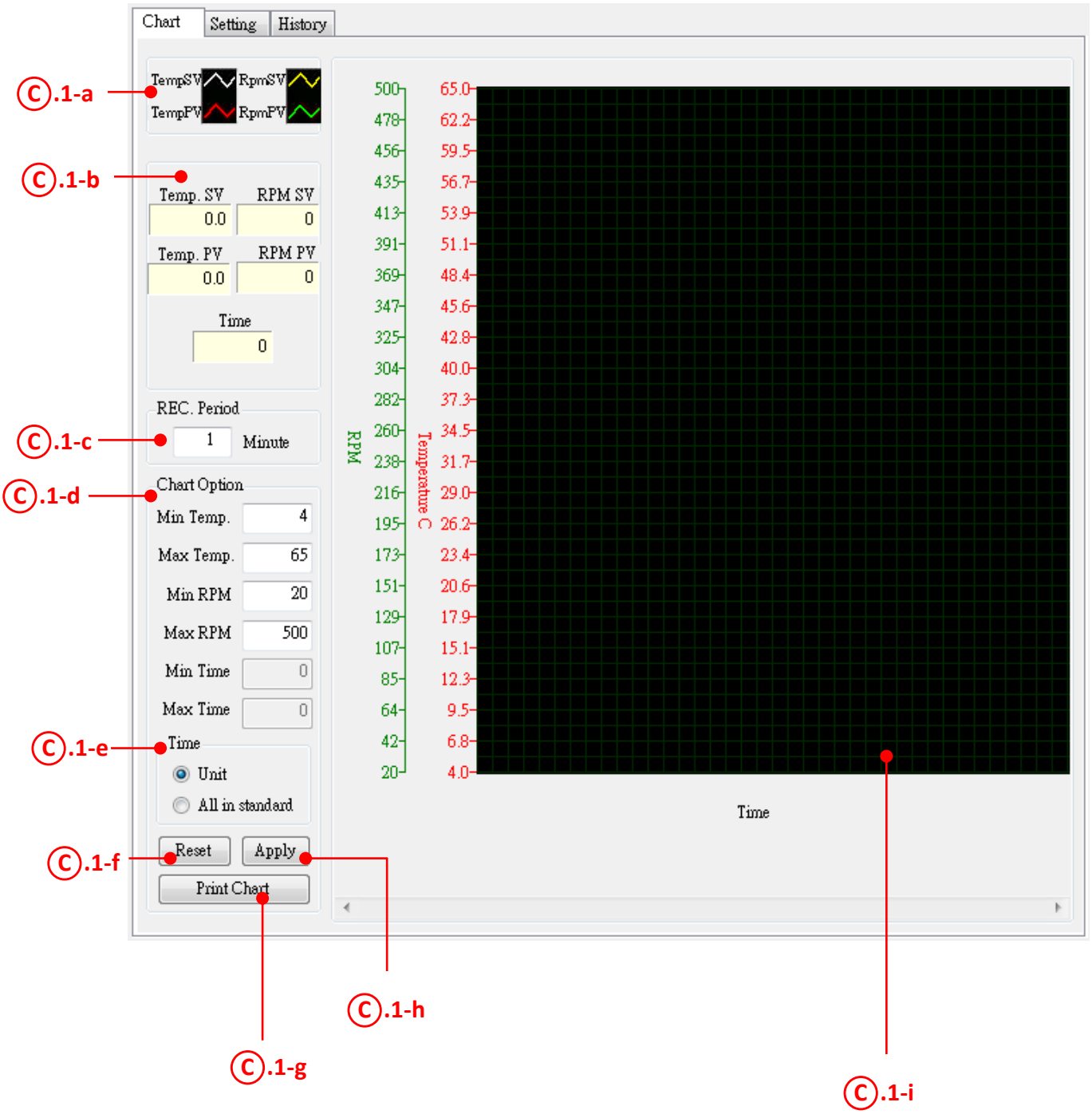
Ⓒ.2



Ⓒ.3

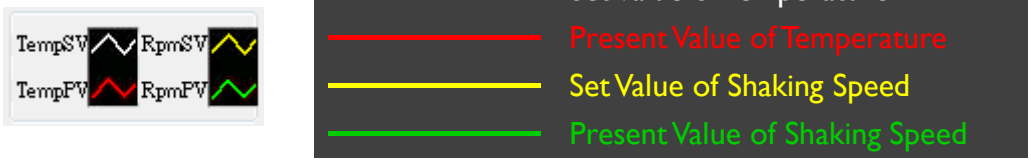
Ⓒ.1 Chart

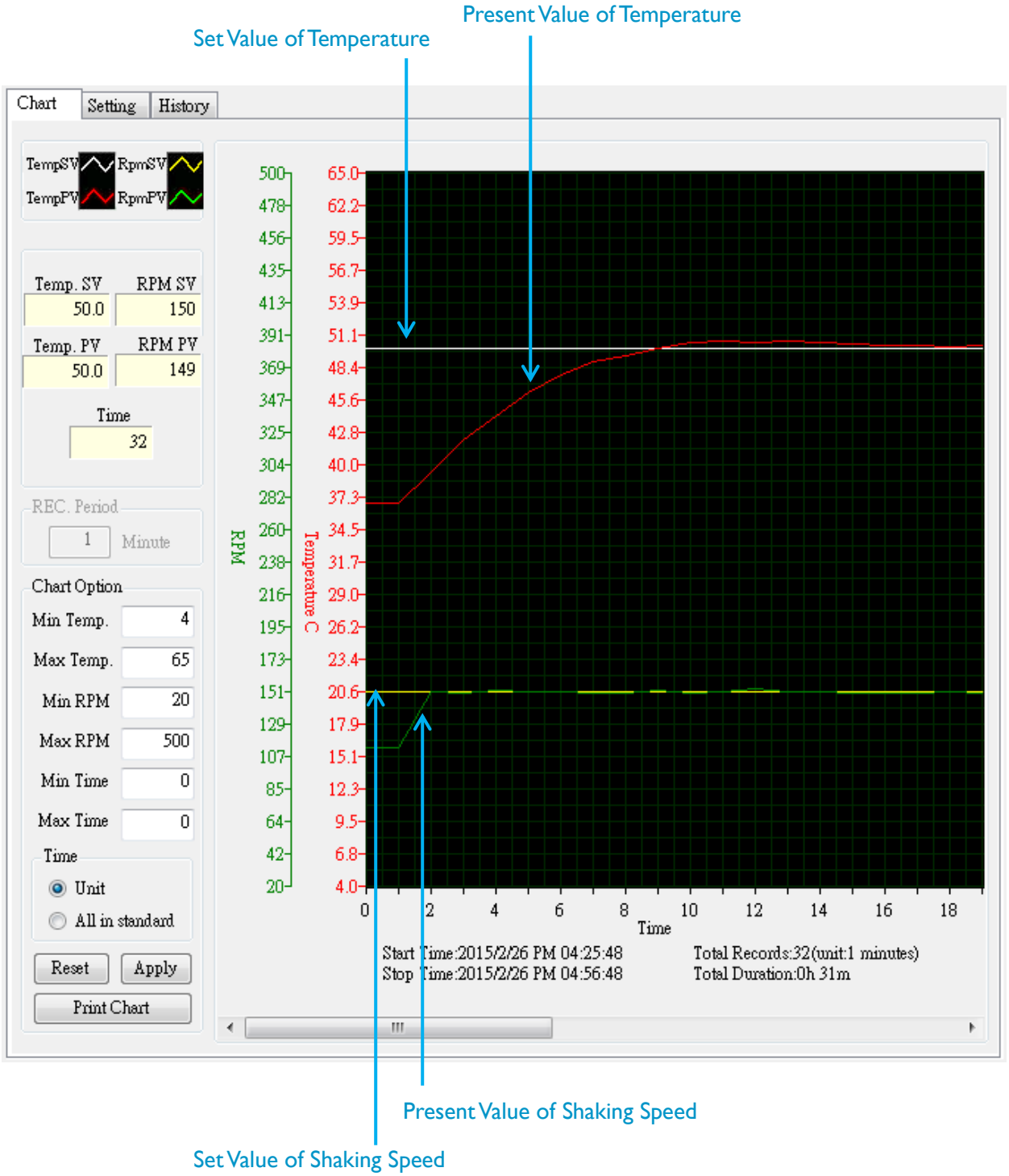
The function of Chart tab is mainly for viewing the running data and monitoring the current status of heating and shaking speed.



Ⓒ.1-a Curve Indication Column

This area helps user distinguish the curves of different parameters in the running chart.

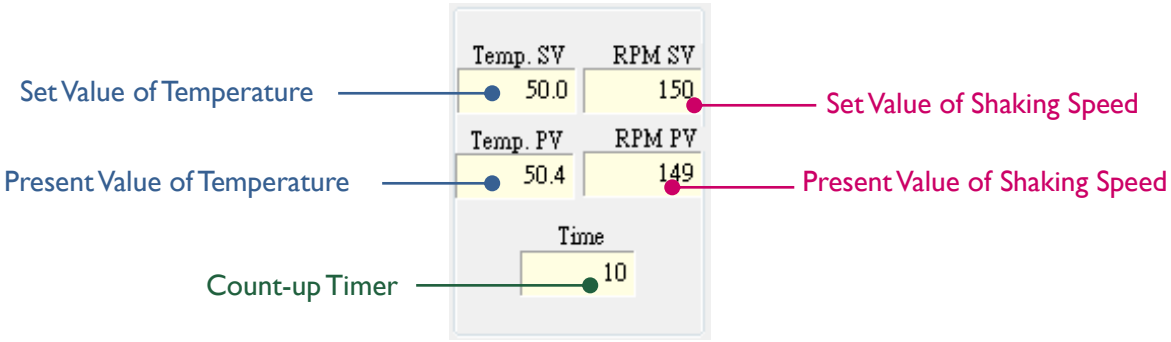


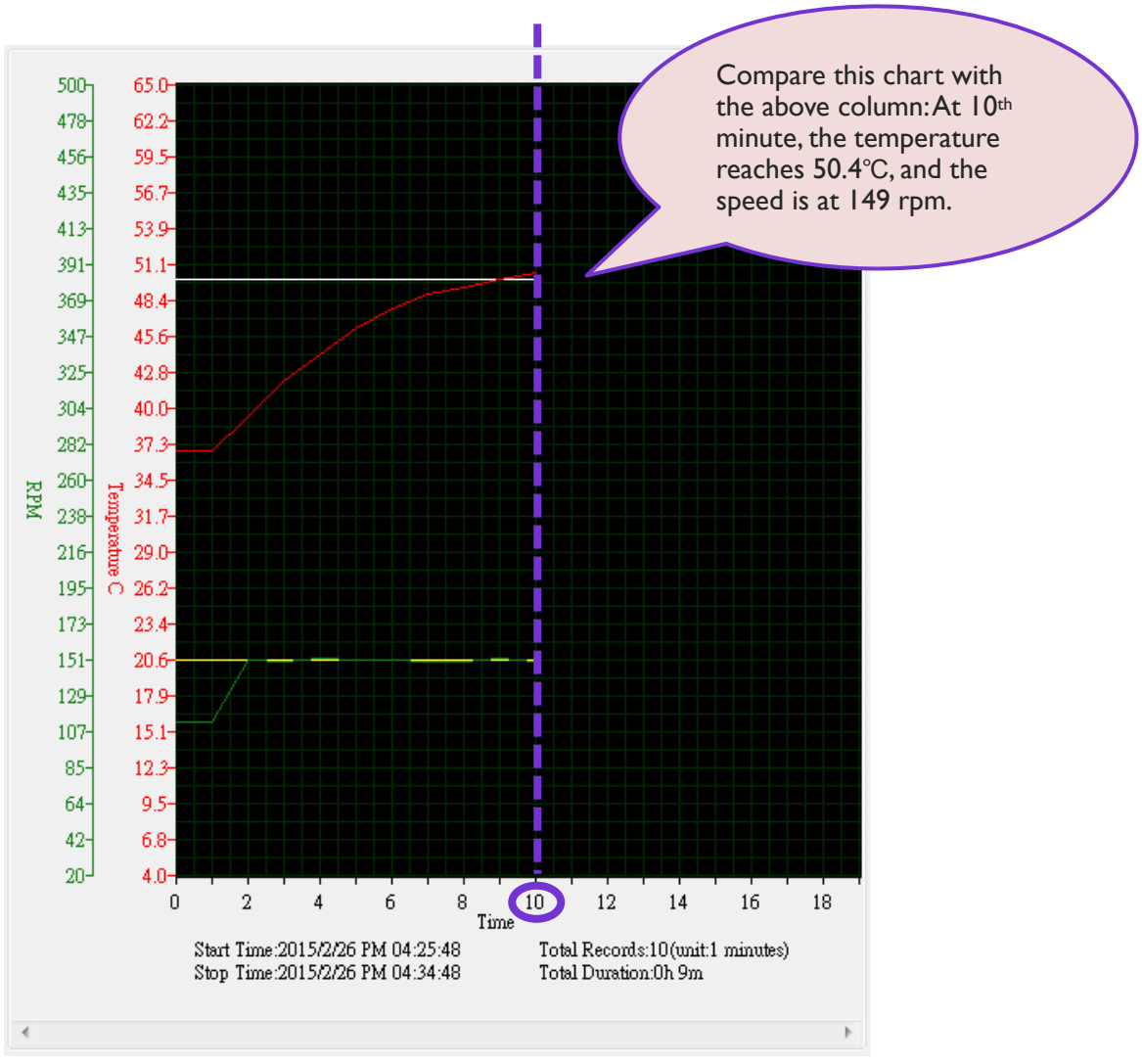


Ⓒ.1-b Value Indication Column

The program will display user's set values*[10] and the current condition in this section. User can compare the values with the curves in chart.

> ***Note (10):***
> In this column, all the values are unchangeable. If user attempts to adjust the set values, user has to stop the device and enter the setting tab to edit the parameters.





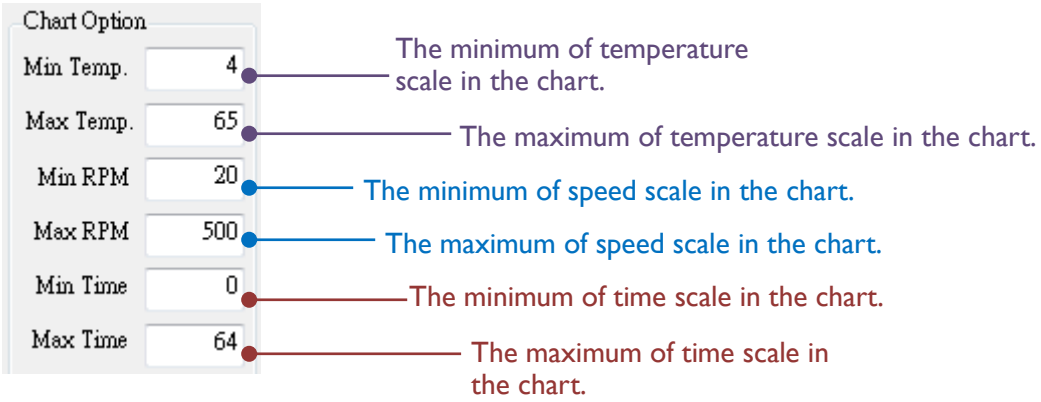
Ⓒ.1-c Record Period Column

User can only edit the record period when the device is idled. Once SI-200 starts running the operation, user won't be able to change the record period. User can edit the value of record period in the "Option" dialogue.

***Notice:** Remember to click "Apply" after changing the value.

Ⓒ.1-d Chart Option Column

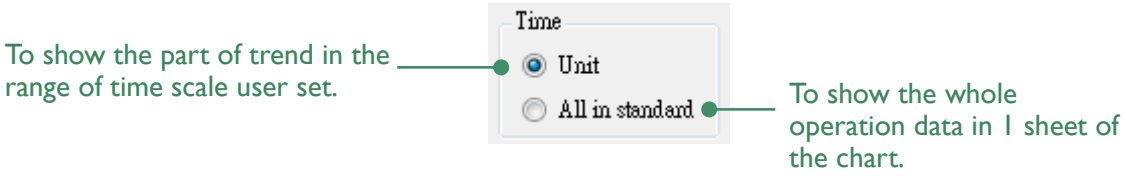
In "Chart Option" column, user is able to edit the scale of chart.



***Notice:** Remember to click "Apply" after changing the value.

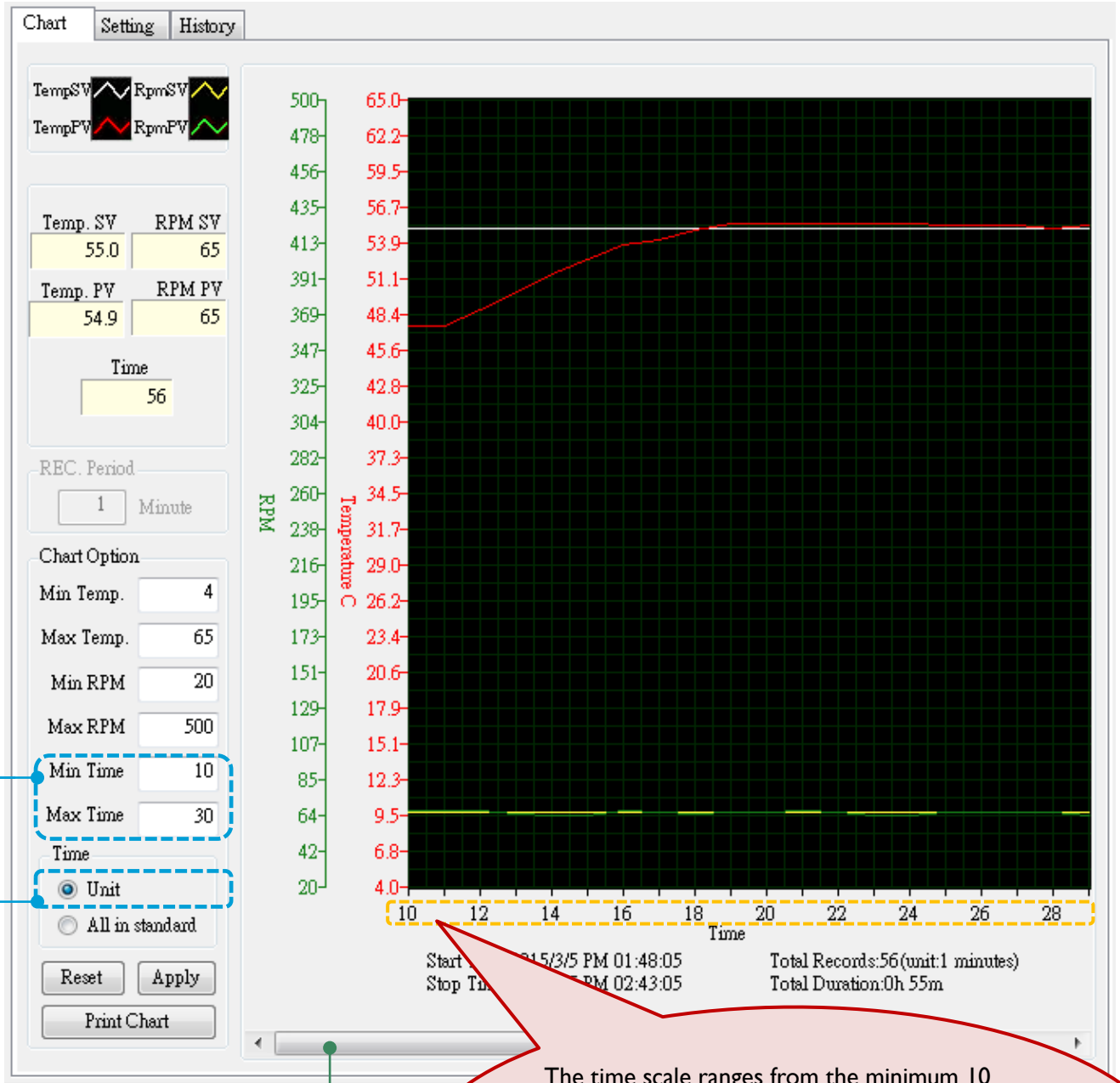
Ⓒ.1-e Time Scale Option Column

Select either "Unit" or "All in standard" option for the time scale of the chart.



***Notice:** Remember to click "Apply" after changing the option.

Image 1 *(Unit)*

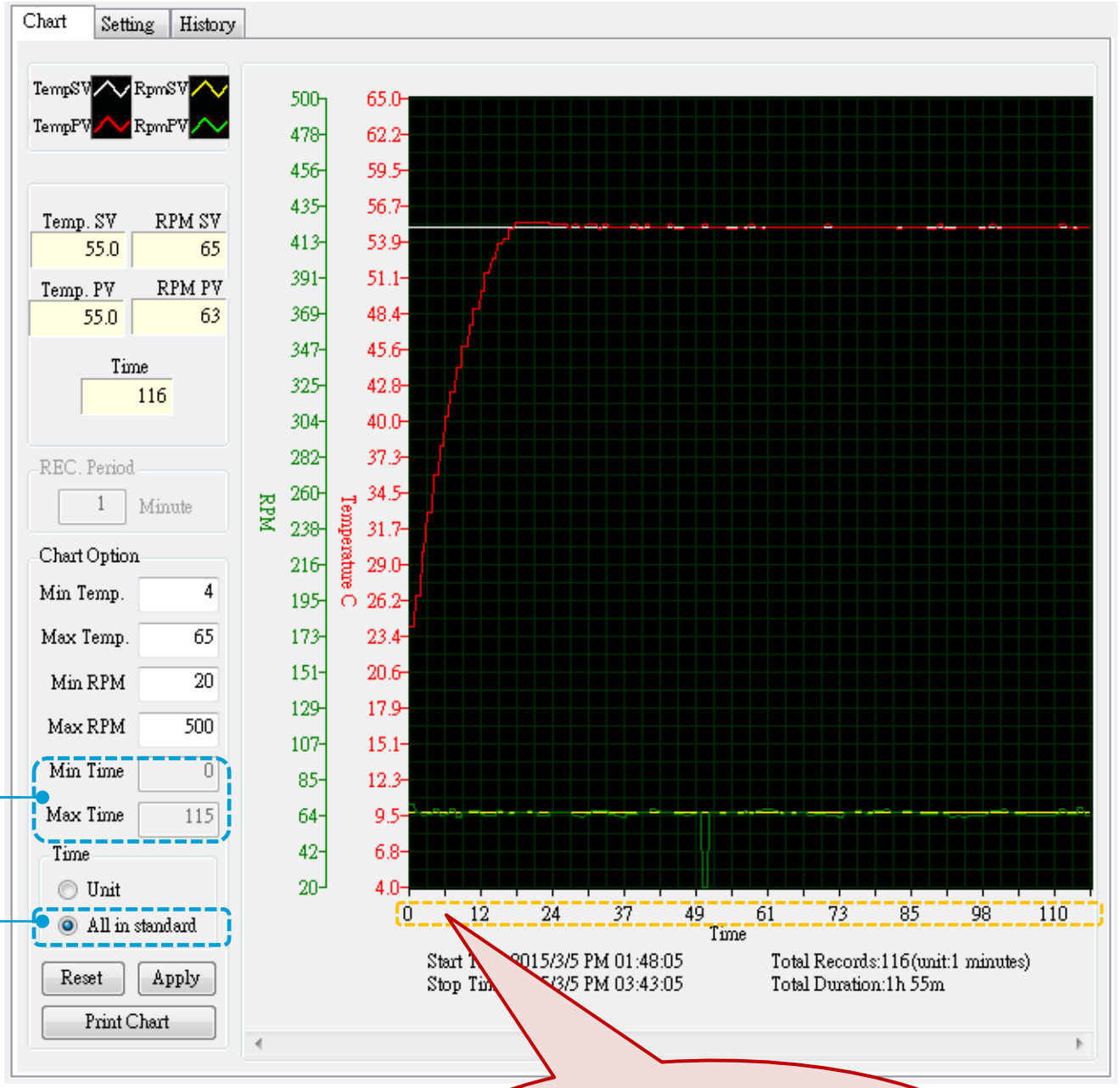


When the option of "Unit" is selected, the settings of time scale will influence the length of the curves.

The time scale ranges from the minimum 10 (minute) to maximum 30 (minutes; in this moment, the operation time is 56 minutes in total, so the maximum can only be set at 56 at most.) The chart will only show the part in the set range of recorded data (which in this case, is the data from the 10th minute to the 30th minute.).

Use scrollbar to view the rest of data.

Image 2 *(All in Standard)*



When the option of "All in standard" is selected, user won't be able to edit the time scale.

The recoded data will be concentrated in 1 sheet of the chart if user applies the time scale to "All in standard" option. And the time scale will increase along with the running time.

Ⓒ.1-f Reset Button

Press “Reset” to return to the default setting.

Ⓒ.1-g Apply Button

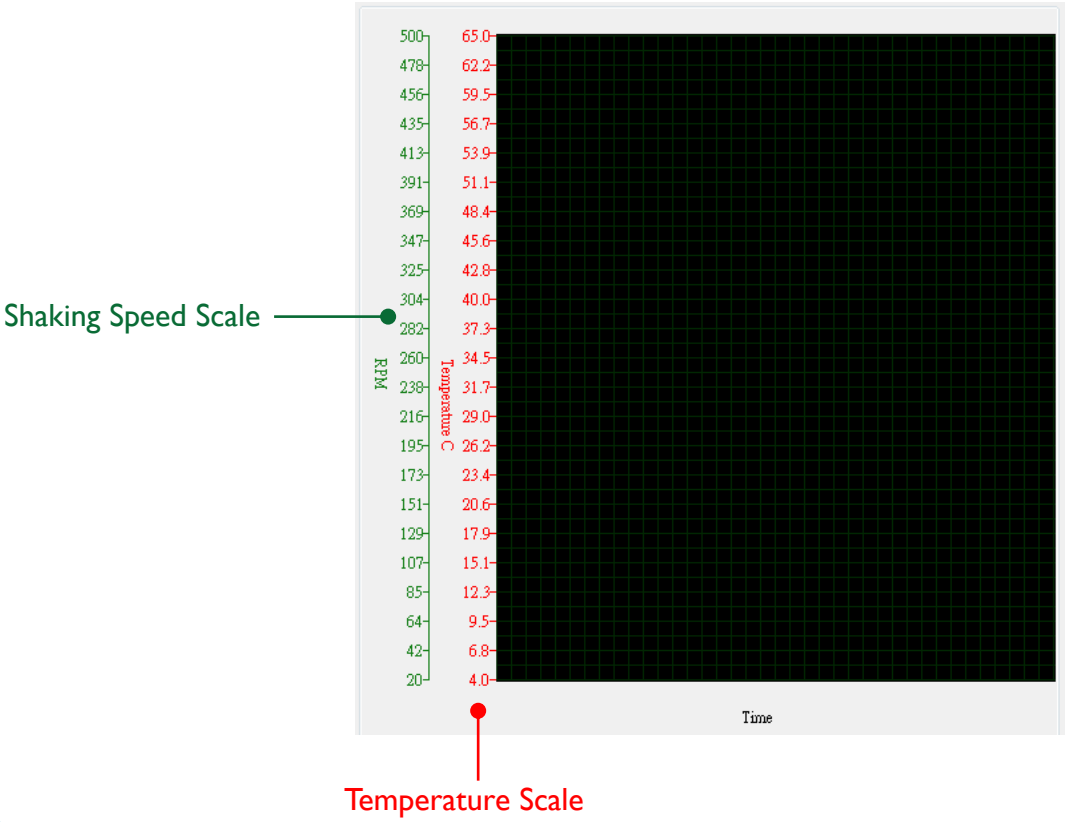
Press “Apply” to confirm the new settings.

Ⓒ.1-h Chart Printing Button

Press “Print Chart” to print the current-viewed chart.

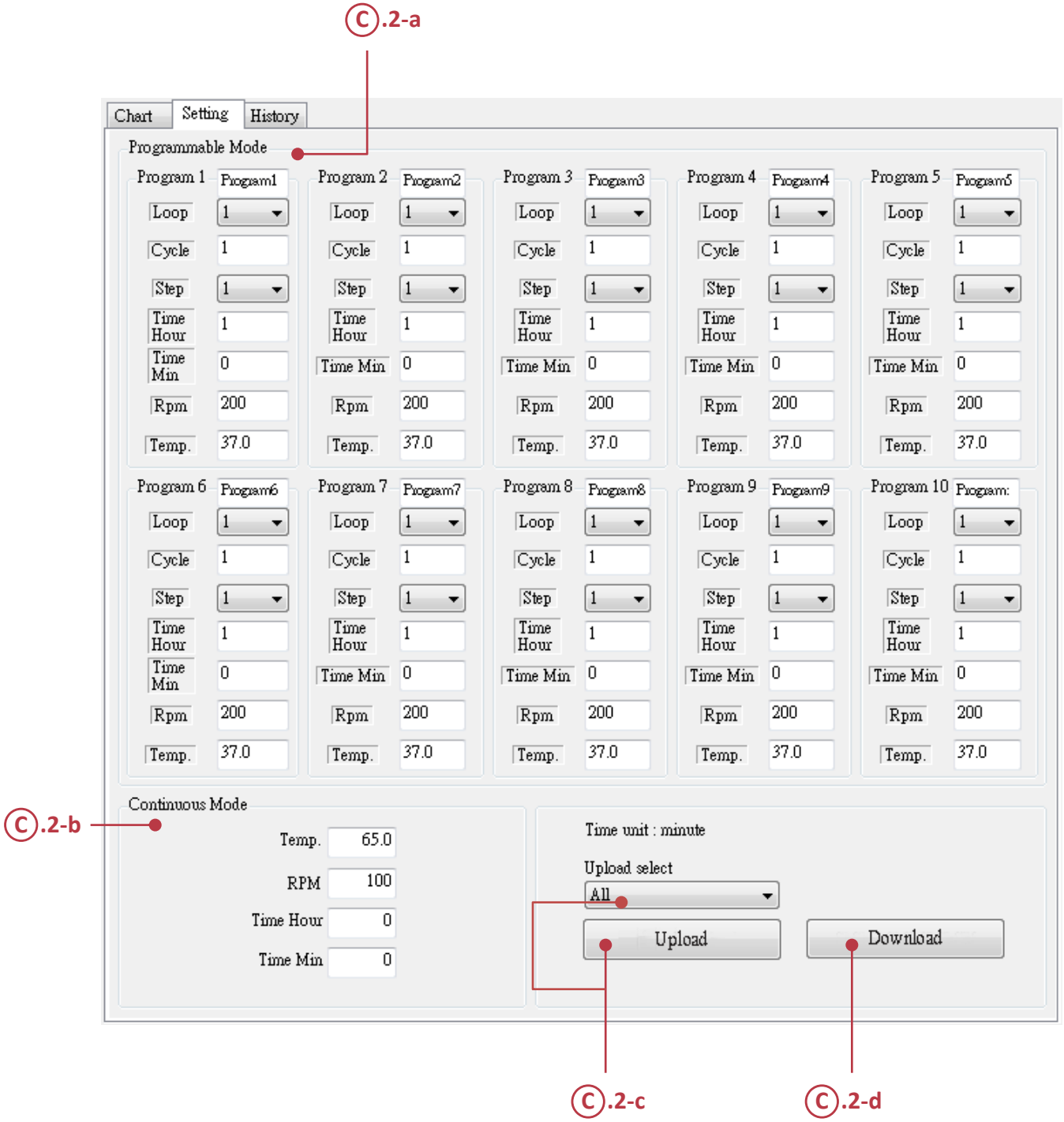
Ⓒ.1-i Chart Column

View the current trend of user’s operation in the chart column. The green scale at the left side of the chart indicates the shaking speed, and the red scale is for temperature.



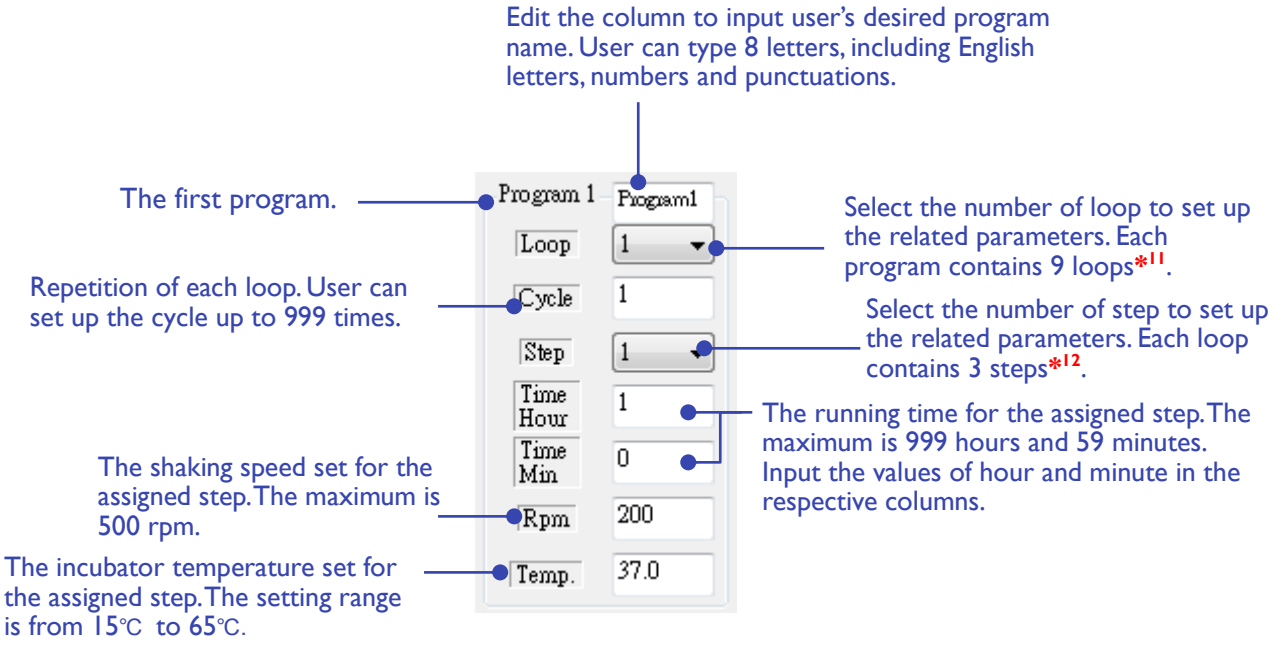
Ⓒ.2 Setting

Switch to "Setting" tab to edit or change the parameters of different modes.



Ⓒ.2-a Programmable Mode Setting

User can set up the parameters of up to 10 programs in Programmable Mode. The setting concept of each program is consistent with the setting on the device.



Note (11):

If user doesn't need all the loops in the program, set the cycle at 0 in the next loop. For example, only 3 loops are needed in the program; then just set 0 in the column of cycle in Loop4, the system will automatically ignore the rest settings of loops. But each program should contain at least 1 loop. In that, the cycle of ***the first loop*** in every program is restricted to the range from 1 to 999 times. And the cycle of the rest loops is from 0 to 999.

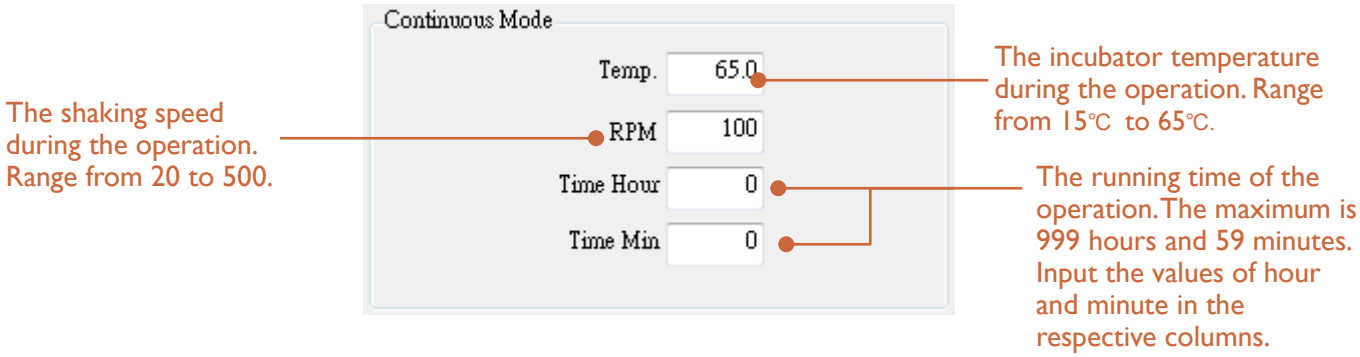
Note (12):

If user only needs 1 step or 2 steps in a loop, set 0 at both of the time columns (hour and minute). The system will ignore the rest of steps in the same loop. For instance, the time columns are both set at 0 in Loop1, Step2; and then the program will run Loop1, Step1, and skip the rest steps in Loop1, directly proceed to Loop2.

Notice: Remember to click ***"Upload"*** every time user finishes setting up or changing the parameters. If user misses out this step, the settings will remain in the previous.

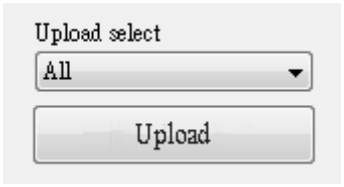
Ⓒ.2-b Continuous Mode Setting

The setting method is same as the method user use on device.

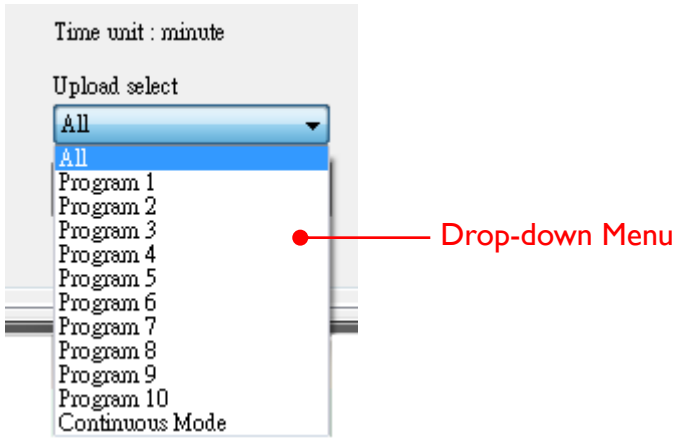


Ⓒ.2-c Upload Button and Upload Drop-down Menu

Every time user edit or change the settings, remember to click "Upload" to send user's new settings to the device.



Or user can upload only a specific part of the settings by selecting the drop-down menu.

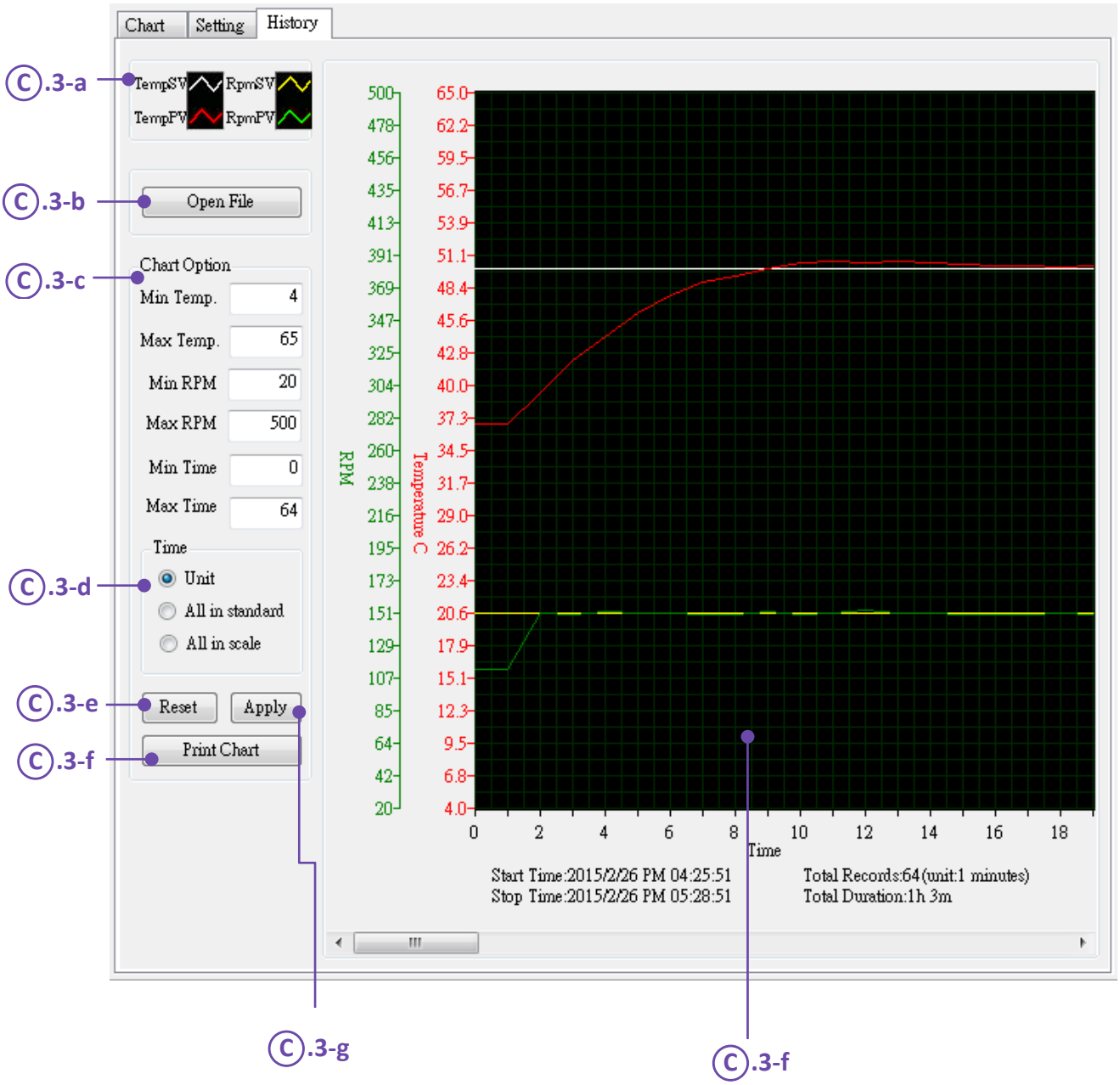


***Notice:** User has to click "Upload" before user try to run the operation with new settings. Or the device will run under the previous settings.

Ⓒ.2-d Download Button

Press “Download” if user have changed or edited the settings of the 2 modes on device; the system will deliver the new settings to the SI-200 software on user’s computer.

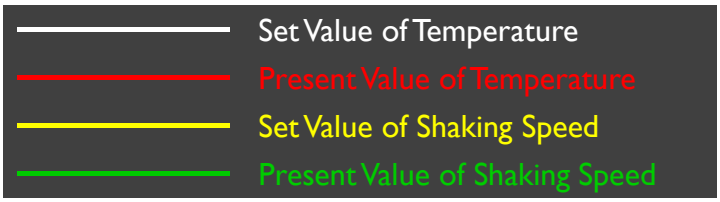
Ⓒ.3 History

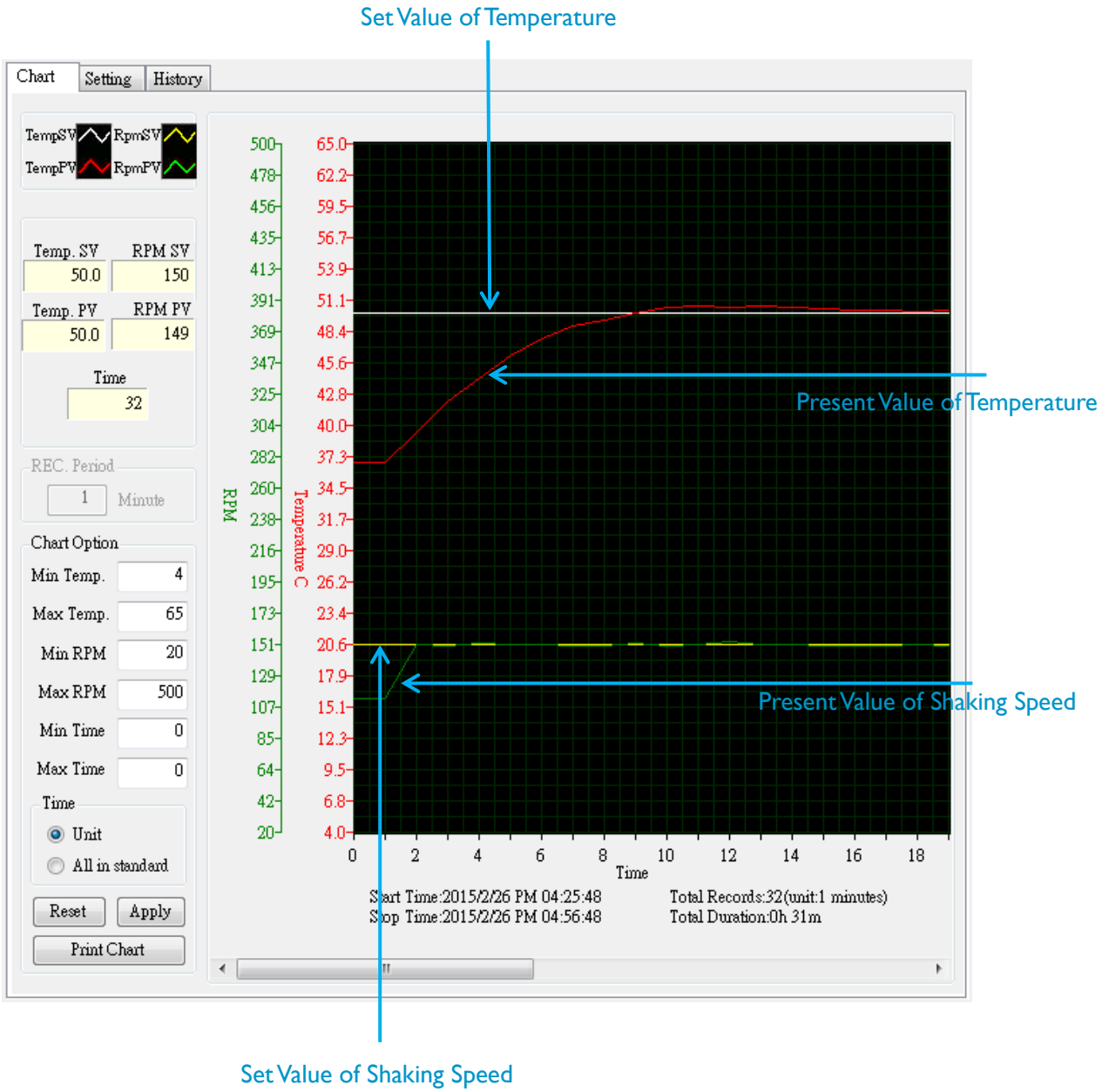


"History" tab is very similar to "Chart" tab. "History" tab allows user to review user's recorded data on the computer.

Ⓒ.3-a Curve Indication Column

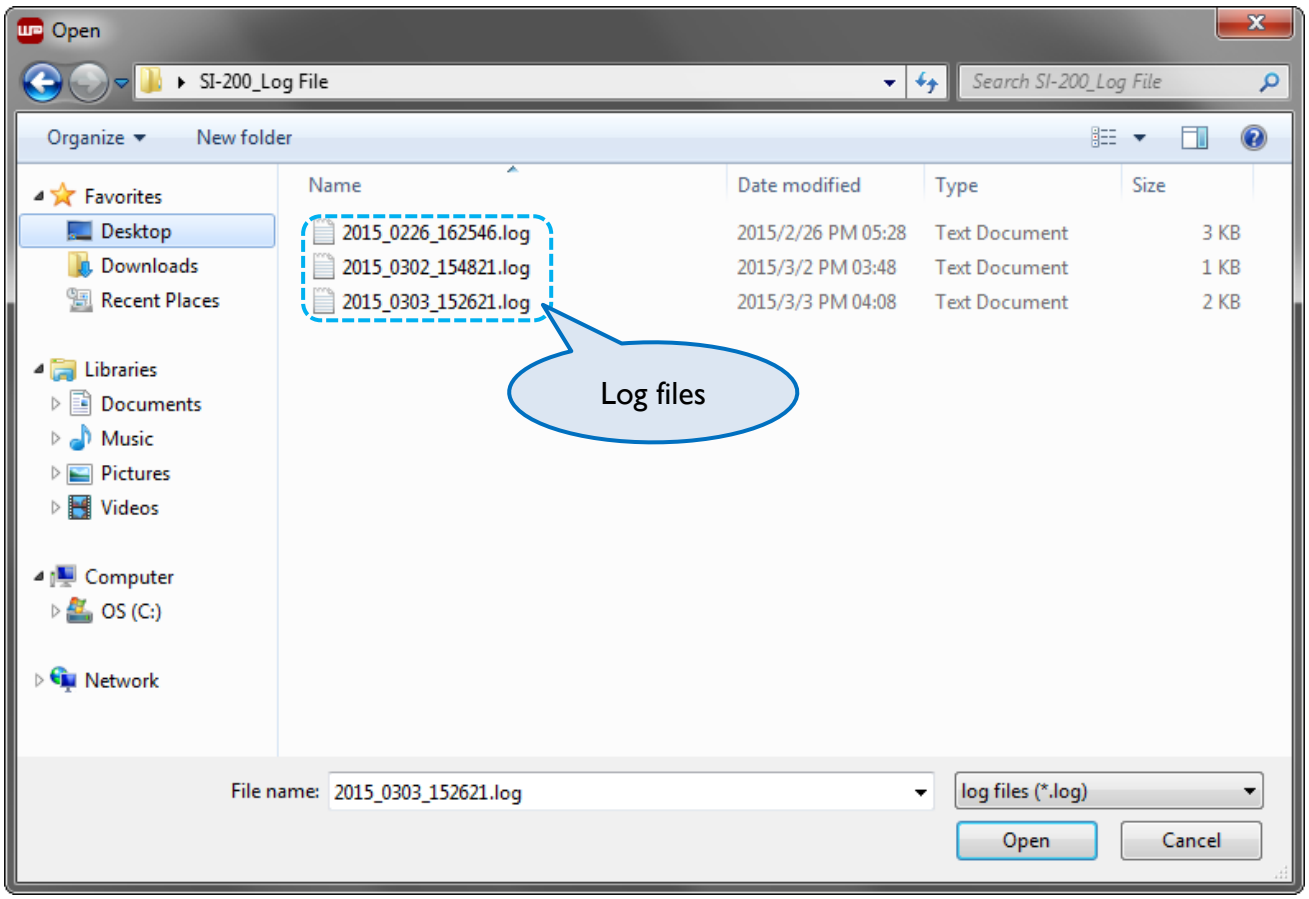
This area helps user distinguish the curves of different parameters in the running chart.





Ⓒ.3-b Open File Button

Click "Open File" to choose the data*[13] that user would like to review on the computer.

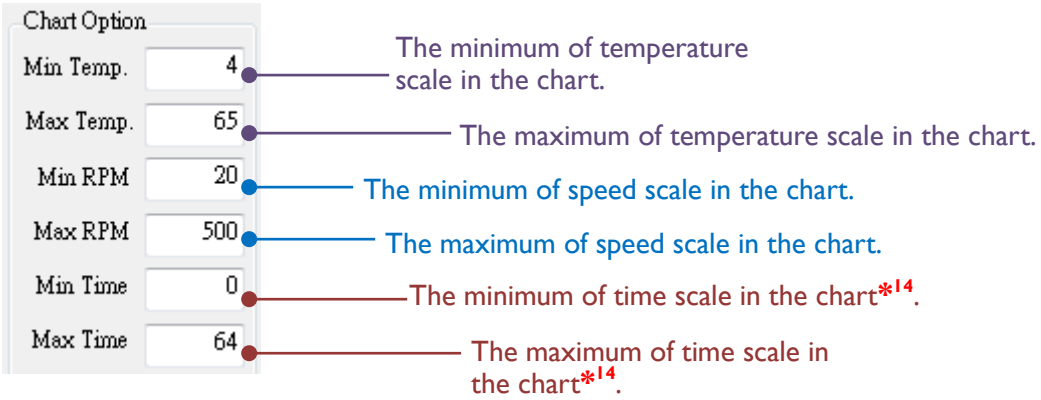


Note (13): Only log files can be viewed on the chart.

Notice: When user has chosen the desired file, click "Open" to load the file onto the chart.

Ⓒ.3-c Chart Option Column

In "Chart Option" column, user is able to edit the scales of chart.



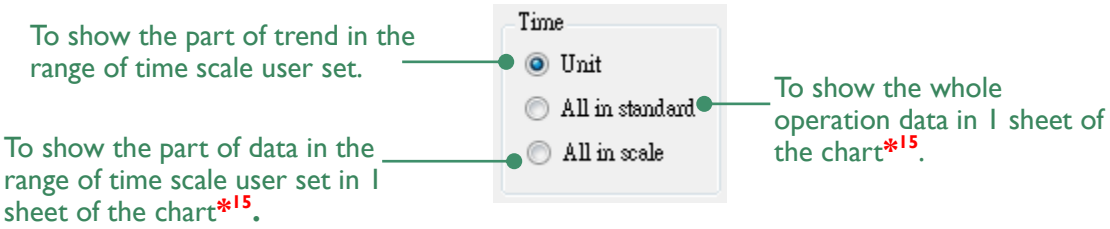
***Note (14)**:

The distance between the minimum and the maximum of time scale should be 20 minutes at least; or the resolution of the curves will be compromised.

***Notice:** Remember to click "Apply" after changing the value.

Ⓒ.3-d Time Scale Option Column

Select one from the three options to view the curve with different time scale.



Compare the images in the following pages to know more about the function. The demonstrated data is recorded from a 64-minute operation in continuous mode.

***Note (15):**

If the recorded operation takes less than 20 minutes, the options of "All in standard" and "All in scale" will be no use; the system will locks these 2 options.

***Notice:** Remember to click "Apply" after changing the option.

Image 1 *(Unit)*

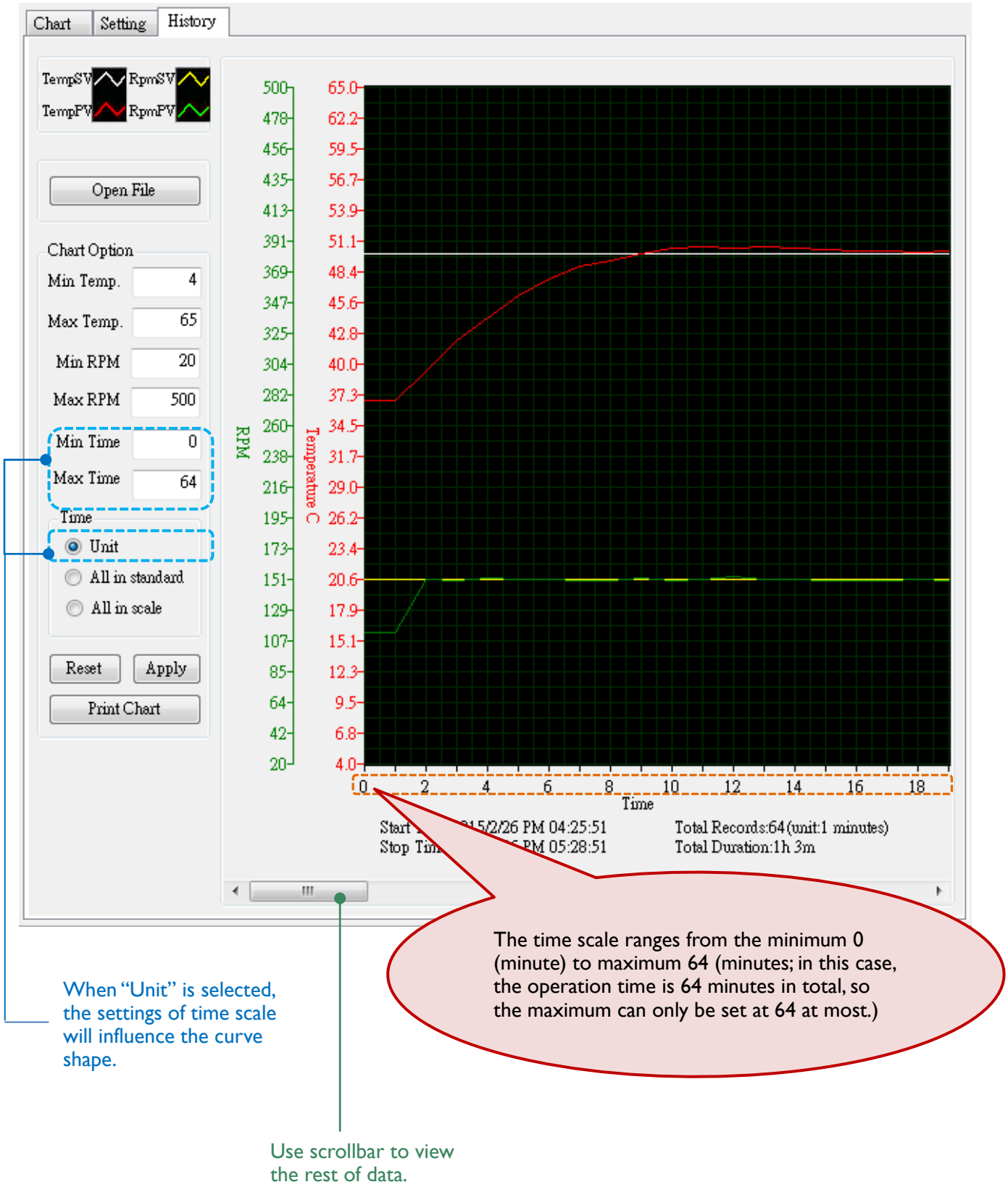
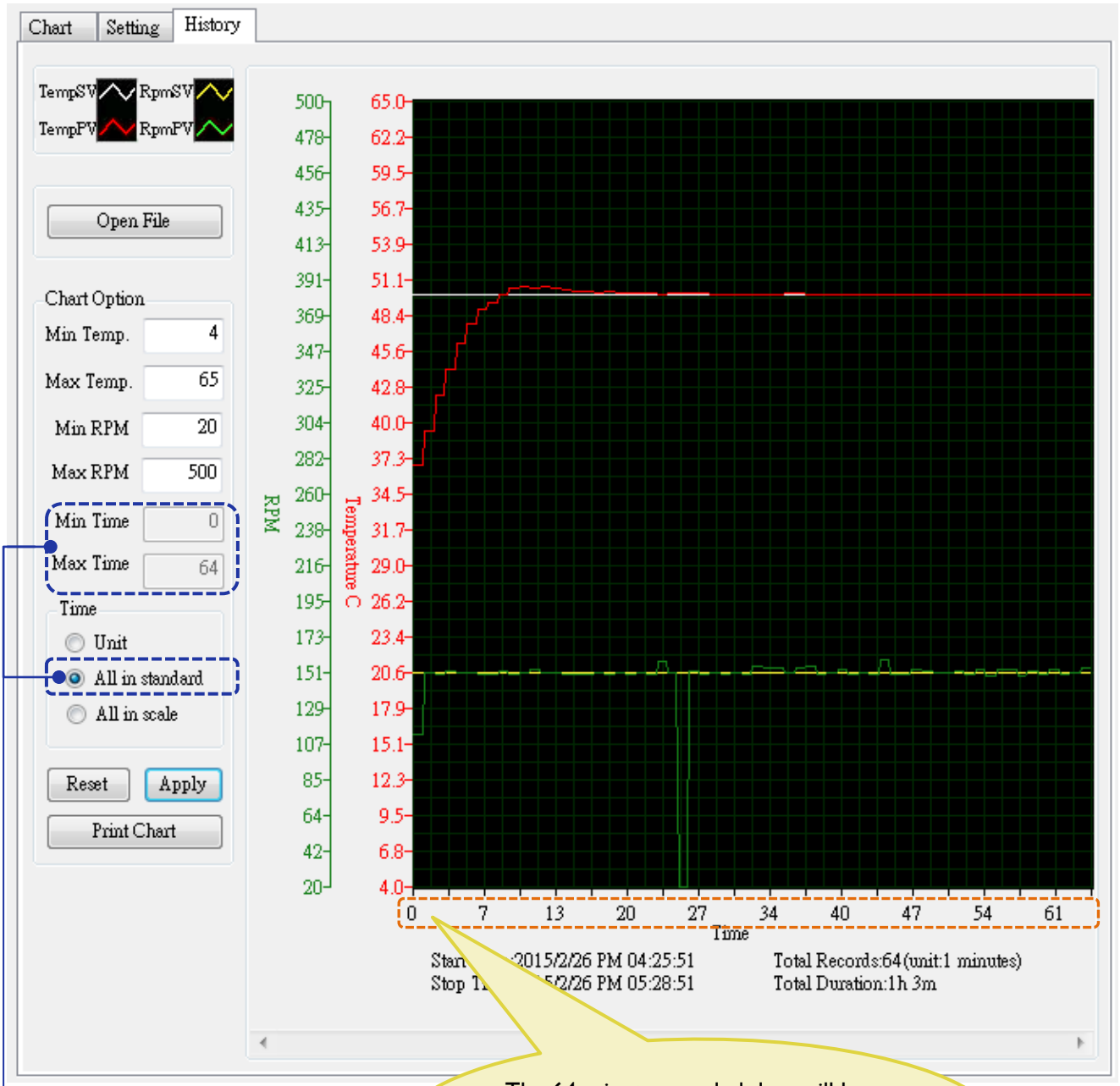


Chart
Setting
History
TempSV
RpmSV
TempPV
RpmPV
Open File
Chart Option
Min Temp. 4
Max Temp. 65
Min RPM 20
Max RPM 500
Min Time 0
Max Time 64
Time
Unit
All in standard
All in scale
Reset
Apply
Print Chart
RPM
Temperature C
Time
Total Records:64(unit:1 minutes)
Total Duration:1h 3m
When "Unit" is selected, the settings of time scale will influence the curve shape.
The time scale ranges from the minimum 0 (minute) to maximum 64 (minutes; in this case, the operation time is 64 minutes in total, so the maximum can only be set at 64 at most.)
Use scrollbar to view the rest of data.

Image 2 *(Unit)*

Chart
Setting
History
TempSV
RpmSV
TempPV
RpmPV
Open File
Chart Option
Min Temp. 4
Max Temp. 65
Min RPM 20
Max RPM 500
Min Time 30
Max Time 50
Time
Unit
All in standard
All in scale
Reset
Apply
Print Chart
RPM
Temperature C
Time
Total Records:64(unit:1 minutes)
Total Duration:1h 3m
When "Unit" is selected, the settings of time scale will influence the curve shape.
The time scale is set at the range from the minimum 30 (minute) to maximum 50(minutes; in this case, the operation time is 64 minutes in total, so the maximum can be set at 64 at most.) The chart will only show the part in the set range of recorded data.
Use scrollbar to view the rest of data.

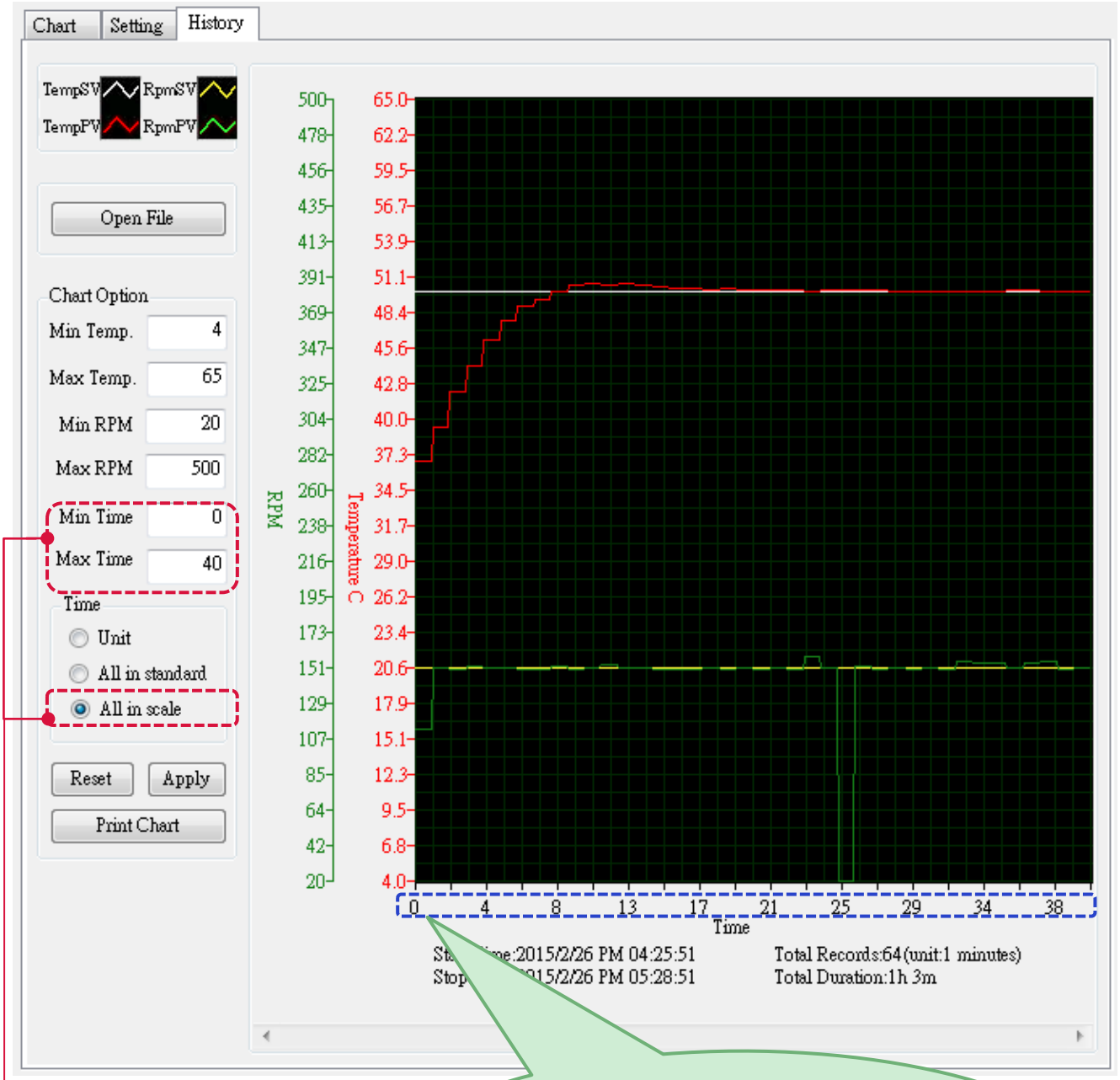
Image 3 *(All in Standard)*



When "All in standard" is selected, user won't be able to edit the range of time scale.

The 64-minute recoded data will be concentrated in 1 sheet of the chart if user applies the time scale to "All in standard" option.

Image 4 *(All in Scale)*



When "All in scale" is selected, the settings of time scale will influence the curve shape.

The time scale is set at the range from the minimum 0 (minute) to 40 (minutes; in this case, the operation time is 64 minutes in total, so the maximum can be set at 64 at most.) The data in the range user set will display in 1 sheet of the chart.

Ⓒ.1-e Reset Button

Press "Reset" to return to the default setting.

Ⓒ.1-f Chart Printing Button

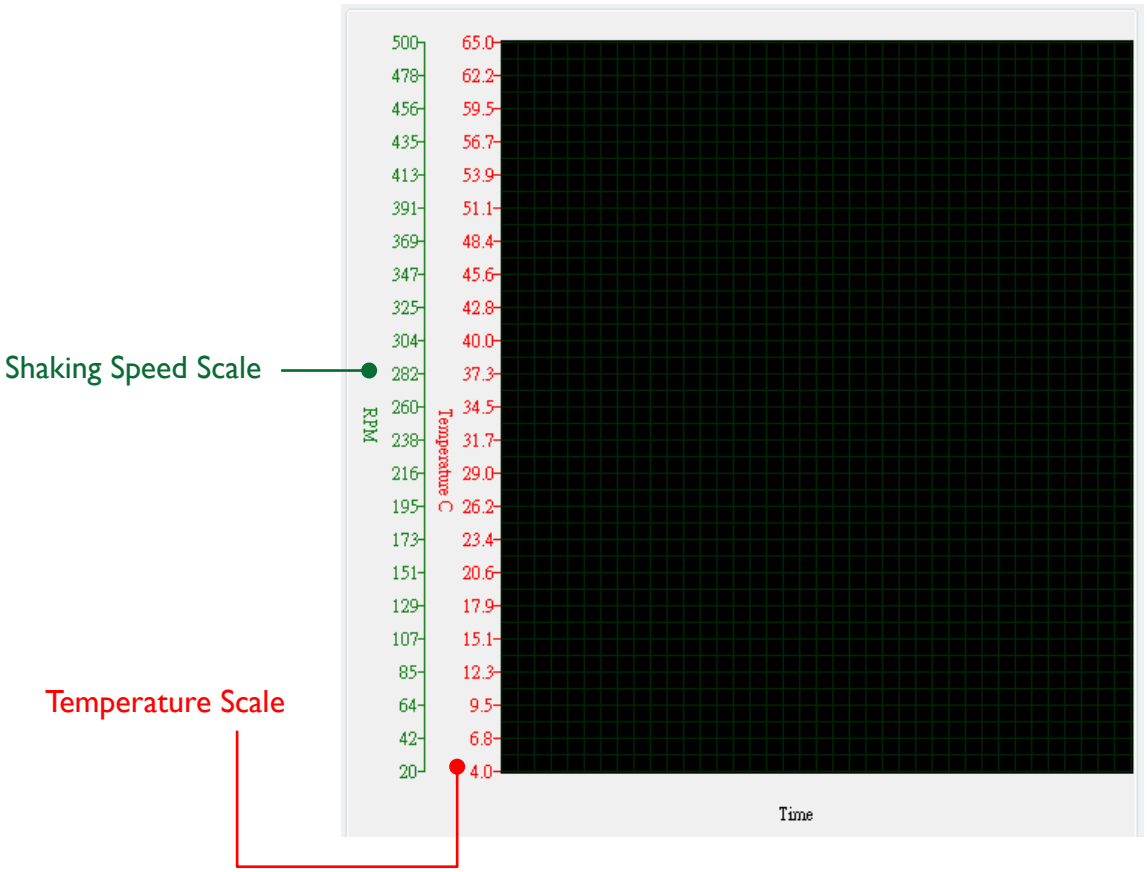
Press "Print Chart" to print the current-viewed chart.

Ⓒ.1-g Apply Button

Press "Apply" to confirm the new settings.

Ⓒ.1-h Chart Column

View the current trend of user's operation in the chart column. The green scale at the left side of the chart indicates the shaking speed, and the red scale is for temperature.



VI. Troubleshooting

Common problems user might encounter are listed in the below. Users might have the problem solved by following the troubleshooting guide and the replacement instruction below.

If the instructions cannot help user solve the problems, please contact the local representative or distributer for further assistance.

Troubleshooting Guide

Read the table below to see if user has the same situation. And follow the possible causes to find the solution to user's problem. If the problem remains, please contact our service department for further assistance.

Problems	Possible Causes
▶ Why I cannot start up the operation?	- User did not install the power cord correctly. - User did not turn on the power switch. - User did not close the shield.
▶ Why the incubator doesn't shake?	- User did not start up the shaking operation. - The system is set up wrongly. - User did not close the shield.
▶ Why the heating function doesn't work?	- User did not start up the heating operation. - User set up the system wrongly. - User did not close the shield.

Error Detection

When the system detects the abnormality of device, the screen will show up the related warning to alert the user. The following table provides user the information of each warning and the corresponding solution. Should this table not solve user's problem, please contact the service department of Major Science for further assistance. DO NOT disassemble the product by themselves in case of any injury or damage.

Alert Information	Description	Performance	Solution
PLC communication error	The internal communication mechanism is not connected. The system crashes.	Warning pops up. System shut off automatically. Restart automatically after the problem is fixed.	Wait for the communication reconnecting. Or directly reboot the device.
Hall sensor error	The platform is not working due to the motor malfunctioning.	Warning pops up. System shut off automatically. Press enter to turn off the warning.	Contact the service department of Major Science for repair.
Over temperature: 70 °C	The temperature is over 70℃. The device is working abnormally.	Warning pops up. System shut off automatically. Press enter to turn off the warning.	Stop the operation for a while. Then restart it. If the problem remains, contact the service department of Major Science for further assistance.
Temp. permissible error	The operating temperature is exceeding the permissible value.	Waring pops up. Turn off the warning by pressing enter.	The problem might be caused by the unstable environment (cold weather, air conditioning…etc.). Press to remove the alert sign.
temperature sensor error	The temperature sensor (internal) is abnormal.	Waring pops up. Turn off the warning by pressing any key.	Contact the service department of Major Science for maintenance.

Fan error	The recirculating fan is not working during the operation.	Warning pops up. System shut off automatically. Press enter to turn off the warning.	Contact the service department of Major Science for maintenance.
Belt error	The platform is not working due to the belt malfunctioning.	Warning pops up. System shut off automatically. Press enter to turn off the warning.	Contact the service department of Major Science for repair.
Door Open	The transparent shield is not closed while operating.	Warning pops up in "program" mode. System shut off automatically. Press enter to turn off the warning/Restart automatically after door is closed.	Close the shield to start up the operation again.
	The device is under dangerous condition due to over shaking.	Icon turns red. System **slows down** the shaking speed automatically to the range which is indicated safe by g-sensor.	Adjust the shaking speed to lower point/ Adjust the foot stands to make sure the device is placed stably/ Contact your local distributor to adjust the sensitivity of g-sensor if needed.
Power Recovery	The power was cut off during the operation.	The full-screen alert will show up along with 5-second beeps when user restart the device, and the system will automatically start the operation from the time point that the device was shut down.	Press during the beeps to cancel the operation and start a new one. Or press after the beeps to remove the sign and continue the original operation.

VII. Calibration & Maintenance

This chapter provides simple instructions on the temperature calibration and daily maintenance. Check the following sections for detailed information.

Temperature Calibration

Winpact Shaking Incubator offers users an easy way to calibrate the temperature sensor on their own. Follow the instruction below to finish the temperature calibration.

Step 1. Turn the incubator off first. Press and hold ; then turn on the power at the same time. User can see a number counting at the upper-left corner of the startup screen.

Hold the enter key until the number counts to the range of **500 to 1000**.

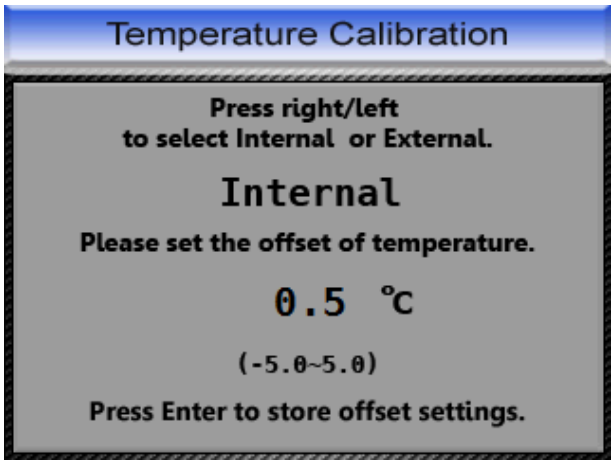
(Pressing and hold at the same time to fast forward to the favorable number)

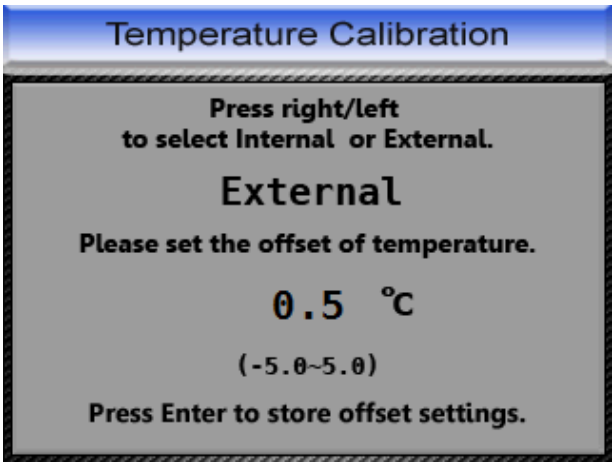
Release the button when the number goes between 500 and 1000

Step 2. After user releases the button, the screen will enter to the temperature calibration page.

Step 3. Use < and > to choose which temperature sensor user wants to calibrate.

Internal	To calibrate the internal built-in temperature sensor of Winpact Shaking Incubator.
External	To calibrate the external device (PT-100).





Step 4. Press ↵ to edit the adjustment value that user would like to calibrate the temperature probe. Use ∧ and ∨ to increase or decrease the value.

Step 5. Press ↵ to store the value of offset temperature. The adjustment user entered will be applied onto measured temperature at any time point system detects. For example, if the set value is 0.5, system will add 0.5 to the value of temperature each time system detects, if the temperature system detects is 50, system will display 50.5 after this temperature calibration.

Maintenance

User can use wet towel to wipe the surface of device clean for daily maintenance. DO NOT use any corrosive solution to clean the device. Air dry is preferable after cleaning.

Allowance of Shaking/ Vibrating Settings

To prevent system over-shaking due to unexpected hardware malfunction, the manufacturer has implemented a preventive mechanism defined in the six parameters to detect the abnormality and respond immediately by shutting down the system. For example, if the device is working on an uneven surface, the warning of over shaking can remind users and encourage users to arrange a proper working environment for the device.

It is highly recommended that user conduct step 1 before step 2 for balance calibration after the first-installation of device.

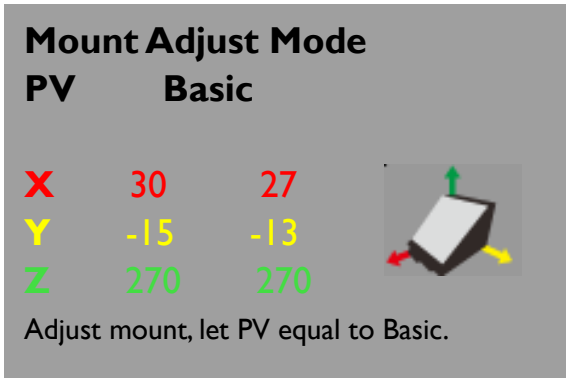
Step1

Hold the enter key until the number counts to the range of **1000 to 1500**.

(Pressing < and hold at the same time to fast forward to the favorable number)

Release the button when the number goes between 1000 and 1500

Move device meanwhile checking the PV value to be as close as BASIC value. After the adjustment, user can proceed to step 2 "Allowance of Shaking/ Vibrating Settings".



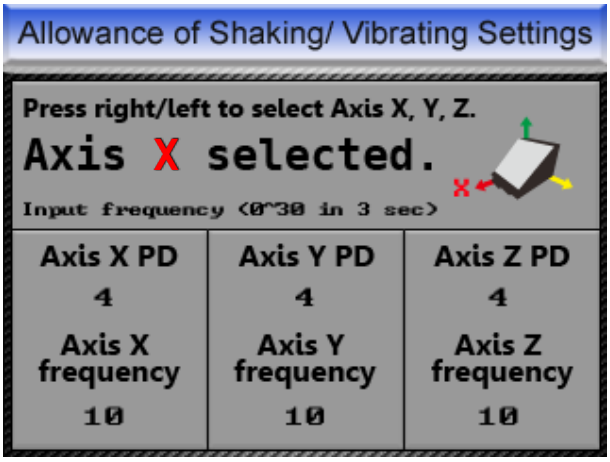
Step2

Hold the enter key until the number counts to the range of **100 to 500**.

(Pressing and hold at the same time to fast forward to the favorable number)

Release the button when the number goes between 100 and 500

In this page, there are six parameters: PD and frequencies of Axis X, Y, and Z.



It is **NOT** suggested that user adjusts the parameters since the parameters have been tested and proven by manufacturer, if any further assistance is needed, please consult local distributers.

"Axis X/Y/Z PD" represents the scale of the deviation of axis X, Y, and Z, the default parameter values is 4 for Axis X/Y/Z PD; 10 for Axis X/Y/Z frequency. Thus if user would like to level up the sensitivity; it is suggested to set the value of Axis X/Y/Z PD below 4 (the range of Axis X/Y/X PD is 0-6).

"Axis X/Y/Z frequency" represents the number of time which system detects the degree of shaking in 3 seconds, for example, if the value of Axis X/Y/Z PD is set at 4 and Axis X/Y/Z frequency is set at 10, system would activate warning when the axis X/Y/Z deviation reaches 4 for approx. 3.3 times in one second. The range of Axis X/Y/Z frequency is 0-30. Vice versa, if user would like to level down the sensitivity, it is suggested to set the value of Axis X/Y/Z PD above 4.

NOTE:Value of axis X/Y/Z PD is corresponding with the values of axis X/Y/Z frequency respectively.

Use and to switch to the parameters and press to enter the corresponding values. Use and to increase or decrease the value. Press to store the settings.

VIII. Ordering Information

Models	
Catalogue No.	Description
SI-200	Winpact Shaking Incubator

Accessories	
Catalogue No.	Description
SI-200-01	Universal Platform
SI-200-02	Adjustable Angle Tube Rack (33 × 15ml)
SI-200-03	Adjustable Angle Tube Rack (16 × 50ml)
SI-200-04	Universal Spring Rack
SI-200-05	Sticky Pad Platform
SI-200-06	Universal Cushioned Crossbar
SI-200-07	Microplate Holder
SI-200-08	Flask Holder, 50ml
SI-200-09	Flask Holder, 125ml
SI-200-10	Flask Holder, 250ml
SI-200-11	Flask Holder, 500ml
SI-200-12	Flask Holder, 1000ml
SI-200-13	Flask Holder, 2000ml
SI-200-14	PT-100 Sensor
PPL-04-SI-SI-200-3	Sticky Pad(20x20 cm)

Warranty

Major Science warrants apparatus of its manufacture against defects in materials and workmanship, under normal service, for ***one year from the shipping date to purchaser***. This warranty excludes damages resulting from shipping, misuse, carelessness, or neglect. Major Science's liability under the warranty is limited to the receipt of reasonable proof by the customer that the defect is embraced within the terms of the warranty. All claims made under this warranty must be presented to Major Science within one year following the date of delivery of the product to the customer.

Manufacturer
Major Science Co., Ltd.
Address:
No. 37, Wuquan 5th Rd.,
Wugu Dist., New Taipei City 24888
Taiwan

T/ 886-2-2298-1055
F/ 886-2-2299-7871

Contact Information
Address:
19959 Sea Gull Way
Saratoga, CA 95070,
U.S.A

T/ 1-408-366-9866
F/ 1-408-446-1107