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AIHS 620 (Version: AMOSAIHS620OP20150630 Ver 02)
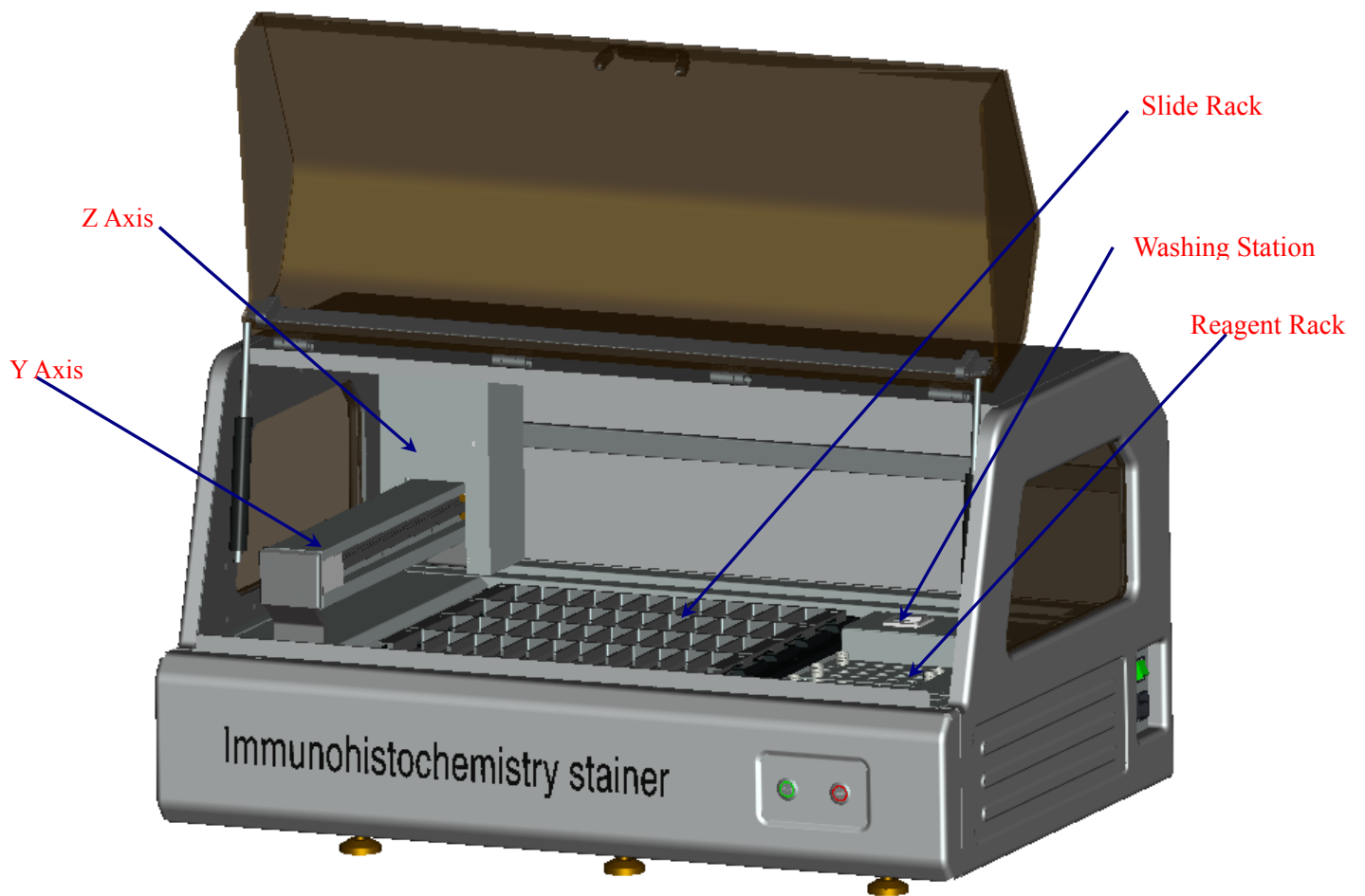
Immunohistochemistry Stainer

Operation Manual

AMOS SCIENTIFIC PTY.LTD. ABN37 159 778 140

www.amos-scientific.com

Z Axis

Y Axis

Slide Rack

Washing Station

Reagent Rack

Immunohistochemistry stainer

       This Operation manual introduces the instrument components, key features and using notes. Be sure to read these instructions before using the instrument.

Foreword:

Thanks for purchasing AIHS 620 Immunohistochemistry Stainer (hereafter Stainer for short). This Operation Manual offers important information about the stainer, including its functions, operation instructions and matters needing attention concerning safety. Please read this manual carefully before operating the instrument so that you can get a better understanding about the equipment. Please contact us in case of any questions, we will provide satisfactory solutions to you at any time.

Please keep this manual appropriately for later consultation.

Contents

1．Safety Matters

1.1 Overview

The Instruction Manual contains important safety instructions and information. The operation manual is an important part of the instrument, which the operator must be read carefully prior to startup and use in order to run safely. It will ensure personal safety and avoid instrument damageat a critical moment. Please keep the Manual near the instrument for easy reading.

This instrument was built and test in accordance with the safety regulations as specified below:

GB4793.1-2007   Medical Electrical Equipment   First Part: Current Requirements for safety.

▲ **Notes**：The safety marks and protective device on both instrument and accessories may neither be removed nor modified, so as nottoinjure body or instrument.

1.2 Safety Warning

The following safety notes relating to transport, installation, calibration, operation, maintenance, cleaning and all aspects of the instrument. Every principal person must read carefully and carry out the mentioned strictly.

1.2.1 Warnings-Transport and Installation

● The instrument may only be transported or moved in an upright position always, the tilt angle should not exceed 45 degree!

● After installation, please remove the slides and reagent bottles before transporting or movement!

● The input voltage has been preset at the factory, please check this setting complies with your local power requirement before connecting the instrument to the mains power!

● Please use the power cord provided. If power cord need change, ensure the power cord is with earth wire!

● Don't operate in rooms with explosion hazard !

● The protective devices on both instrument and accessories must neither be removed nor modified, in order to avoid injury to instrument or human body !

● In order to ensure the normal operation , the instrument shall be placed on a stable table to keep it balanced.

● Do not place any obstructions near the instrument to prevent the sight of the operator from being impacted .

● Make sure the ambient temperature and humidity meet the technical parameters of the regulations.

● This instrument is heavy . If the user needs to carry the equipment to elsewhere , firstly turn off the power switch, remove the communication cable , and then four people carry by holding four corners of instrument . (Take care to avoid crush and fall, pay attention to

protect two buttons on the front panel)

1.2.2 Warnings-Operation

● Since the X, Y, Z axis of the instrument will do linear motion , any part of the operator can not touch it to avoid danger.

● Since slide the blade is extremely sharp, improper operation leads to getting hurt when put slides onto the slide rack .

● In the case of turning on the instrument , axiscan not be forced to move, or it would damage the instrument severely.

● End / Reset: (red button on front of the instrument)

When the program is finished and the waste is discharged , it will beep in 5 seconds continuously to remind the user of taking out the slide . Then press red button to end the program and the instrument will be back to zero position (X,Y two axis are back to the top left corner of the instrument).

● When the instrument fails or debugs, press the button twice in a row to reset program , the instrument will be back to zero position immediately to avoid any damage.

●Running key : (green button on front of the instrument)

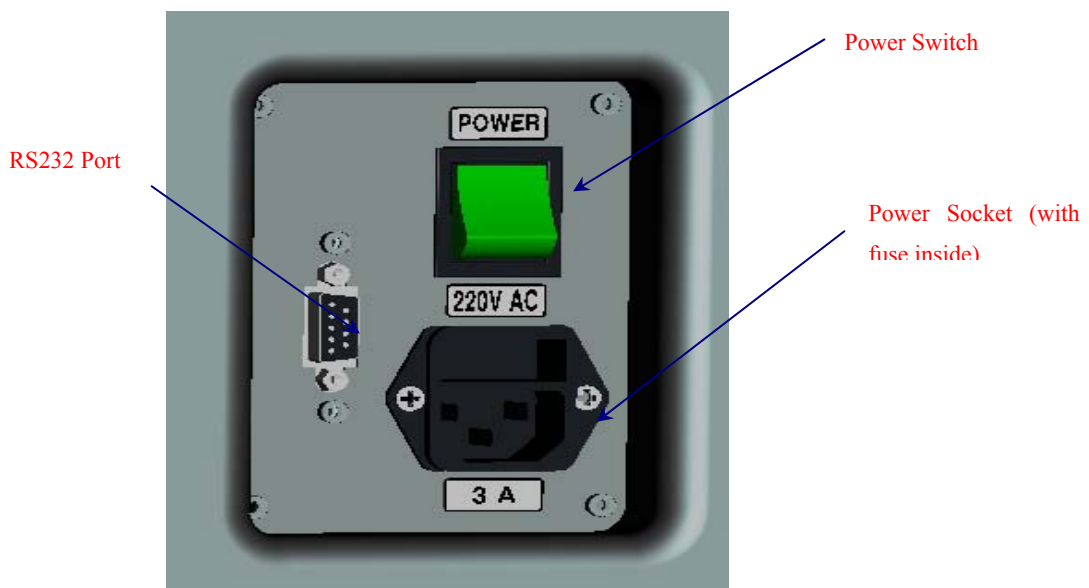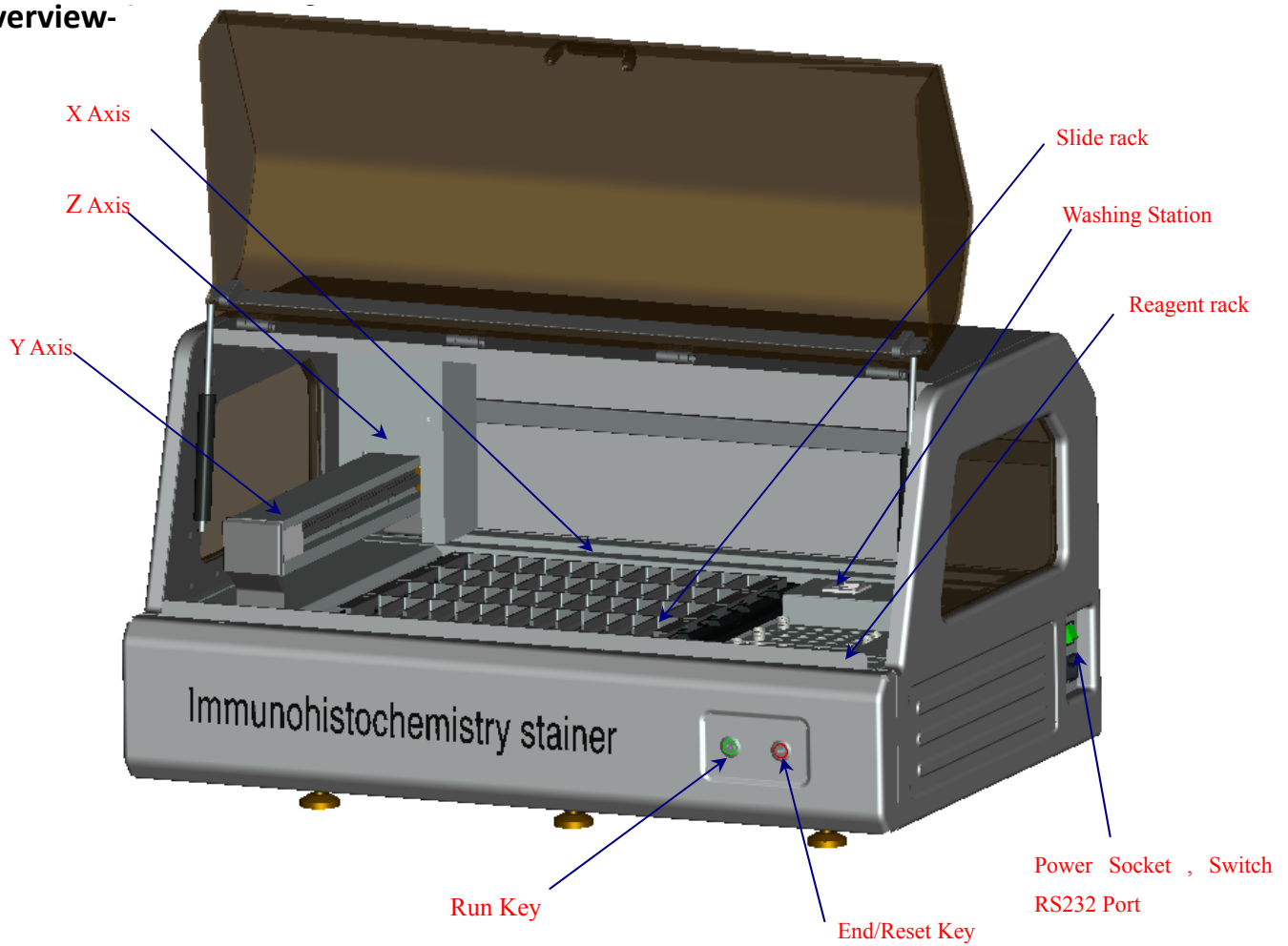Press this button and the instrument will run the last program.

1.2.3 Warning- Maintenance and Cleaning

● Only authorized person may do the service and repair!

● Before cleaning, always switch off the instrument, disconnect the power plug, remove the knife holder completely and clean it separately. Remove the blade before cleaning the knife holder!

● Don't use any solvents containing acetone for cleaning!

● Don't turn on the instrument before it is completely dry!

● Turn offthe instrument with the mains switch and pull the mains plug before replacing the fuses! Only use fuses of the same specification and operation in this manual.

● Transmission parts are with high precision . when any fault occurs, the user should notify the manufacturer in time, who will arrange professional service personnel to repair   (the primary fault is noise increases during unstable running, which is caused by some parts wears and tears due to precision decrease .)

2. **Performance & Parameters**.

2.1 Overview-

X Axis
Z Axis
Y Axis
Slide rack
Washing Station
Reagent rack

Immunohistochemistry stainer

Run Key
End/Reset Key
Power Socket , Switch RS232 Port

RS232 Port
Power Switch
Power Socket (with fuse inside)

POWER
220V AC
3 A

Power Socket , Power Switch , RS232 Port

2.2 Performance Index

AIHS620 Immunohistochemistry Stainer (hereafter brief called "Stainer") is an automatic instrument used for immunohistochemically processing the tissues of animal, plant and human body. It is the best choice for clinical pathological analysis and research due to its outstanding working capability. This instrument functions automatically, and performs reliably, stably and accurately by adopting Microcomputer control system and by making full use of the design principle of mechanical and electrical integration. Operated easily, it improves the working efficiency, protects the health of operators and meets more requirements of environmental protection.

● Great programming capacity: The stainer can program and run different protocols needed for 48 slides one time ; it can store 50 different programs .

● Emergency Stop: When any operation breakdown occurs, fast press the red button on the display panel twice, then the equipment will stop working and restore to zero state.

● Automatic reminding of reagent shortage: the equipment can estimate automatically whether the volume of the rest reagent is enough for current procedure. Ifnot , the system will remind operator by dialogue box.

● Automatic probe cleaning: The system will automatically clean probe' innerwall and outerwall each time after dropping reagent to avoid cross pollution.

2.3 Technical Data

● Surroundings requirements:

Working temperature：+10℃—40℃

Working humidity: <80%，defrosting

Working pressure:（86～106）KPa；

● Power supply：100-240 V AC±10 %

● Frequency：50╱60 Hz

● Power： ≤350W

● Maximal sections done at one time: 48

● Reagent types: 64

- Drop amount: 50μl , 75μl , 100μl , 150μl, 200μl , 250μl .

- Outside Dimensions(WxDxH): 1015mm×665mm×520mm

- Weight : about 116 kgs

3. Preparation before using

3.1 Installation Site Requirement

● Put the instrument on a steady table to ensure the instrument base is in horizon when the instrument is running.

● Ensure more than 20cm space around the equipment and 60cm above the equipment for enough to open the door .

● Ensure that no other goods around the instrument to avoid the shelter to affect the instrument operation.

● The working temperature and humidity must be in accord with the data in the manual.

▲**Attention**：Do not operate in rooms with explosion hazard.

3.2 Installation

3.2.1 Pipe installation(Pic e)
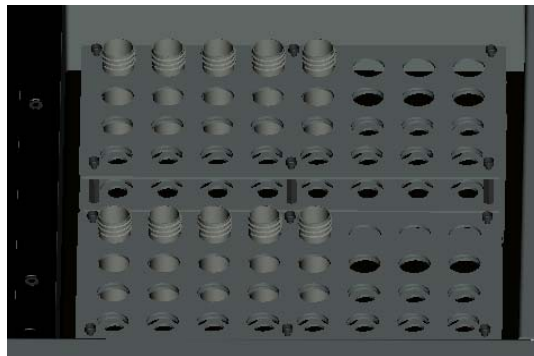

● Install three soft pipes according to label .

3.2.2 Label Pinter Installation

● Label printer installation refer to the label printer user manual .

3.2.3 Reagent Tube

●It equips 500 pcs of reagent tubes with the machine . Please label required antibody name on outer wall of the reagent bottles and lids .

### 3.2.4 Reagent Rack Installation (Pic h)

Pic h

●Pay attention to the direction , and keep the bottom of reagent rack contact neatly with the below board .

3.2.5 Installation of USB-RS232 serial communication cable and checking of communications port number

● After installing the cable driver, put the communication cable into the computer's USB port.

●checking of communications port number : Click on the desktop "My Computer," right-click to view its properties, find the hardware catalog in the menu , click on "Device Manager", then click this port directory, you can see the port situation (for example ,COM1).

● When using a desktop computer , adopt the RS232-RS232 cable without installing the cable driver.

3.3 Electrical Connection

● The voltage has been preset at the factory. Before connecting the instrument to the power, please check that this setting complies with the local power requirements of your laboratory.

● Connect the instrument to a grounded power socket, to avoid accident.

● It is better to use the power cable provided or use an extension cord with a ground wire
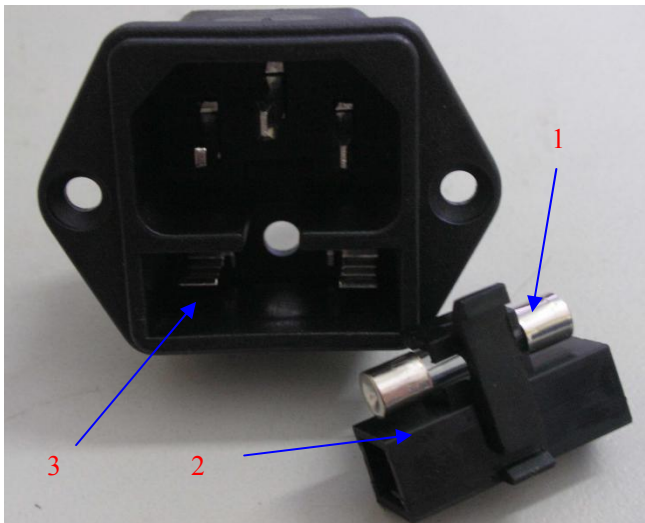
● Insert the fuse(1) into the fuse socket (2) as it is showed in the Fig and insert the whole fuse socket into the socket (3).

●**Attention**: Cut off the power supply and then pull the plug before changing the fuse. To ensure trouble-free operation of the instrument, make sure to comply with the instruction in the operation manual.
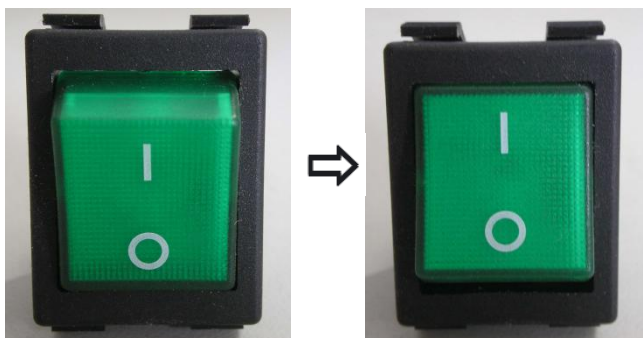

●Power off as the left fig shows and Power on as right fig shows

4. **Operation steps**

1. Place the slides : Place the slides on the slide rack.

2. Place reagent: Place associated reagent intoreagent tube rack.

3. Turn on the instrument: connect the machine to power and serial communication cable to computer, turn on the machine after checking the wiring.

4. Run the software

    a. User Login

    b. Set the serial port

    c. Check in basic slides information .

    d. Edit or select protocol templates. Standard operation is as follows:

        ● Cleaning: Resin water or buffer.

        ● Dispensing first antibody.

        ● Cleaning: Resin water or buffer.

        ● Dispensing second antibody.

        ● Cleaning: Resin water or buffer.

        ● Drop color reagent (DAB): 3-5 min

        ● Cleaning: Resin water or buffer.

        ● Clean the machine automatically , drain waste .

    e. Select the slideslocation.

    f. Select reagents location.

    g. Download the programs to the machine.

5. Running and Monitoring : Press the green button to run and monitor the detailed executed steps on the computer. You can press the red button twice continuously to reset it during the running if any abnormal happens .

6. If the incubation time is over 30 minutes , it will beep to remind the user to take off the antibody into refrigerator for storage . Press green button , the beep stops .

6. Slides taken : It beeps to remind you to take the slides after the completion of all actions. Then press the red button on the front of the device twice continuously to reset the machine .
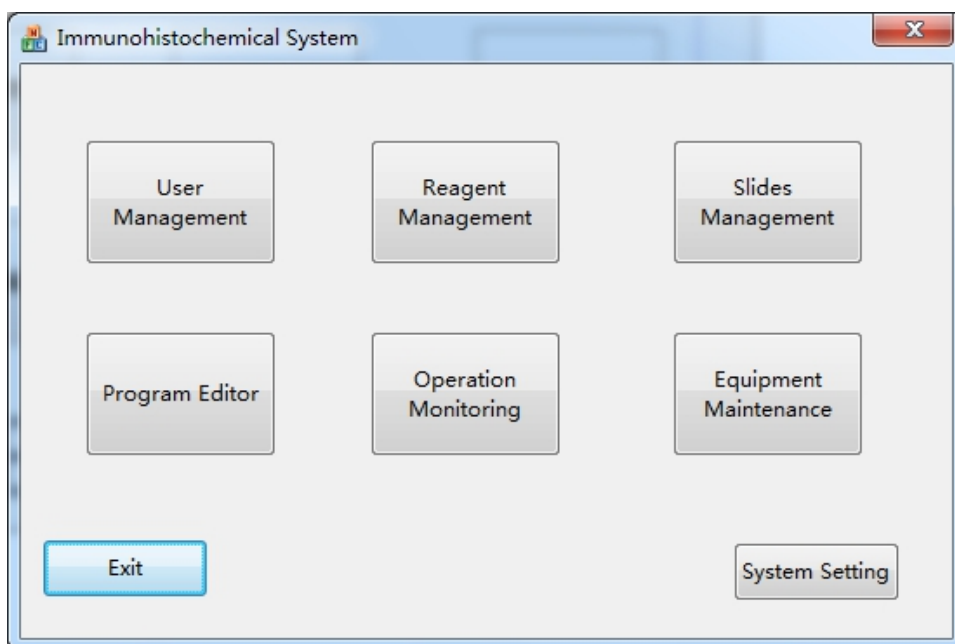
5.Software Instructions

5.1 Log-in .
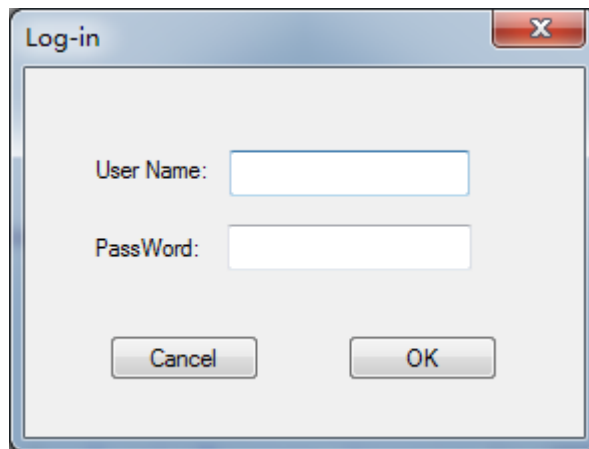
Pic 5-1

Enter your user name and password . For example : initial User's name : 1 , Password :1 . The main interface will pop up after logging into Immunohistochemical system as follows :
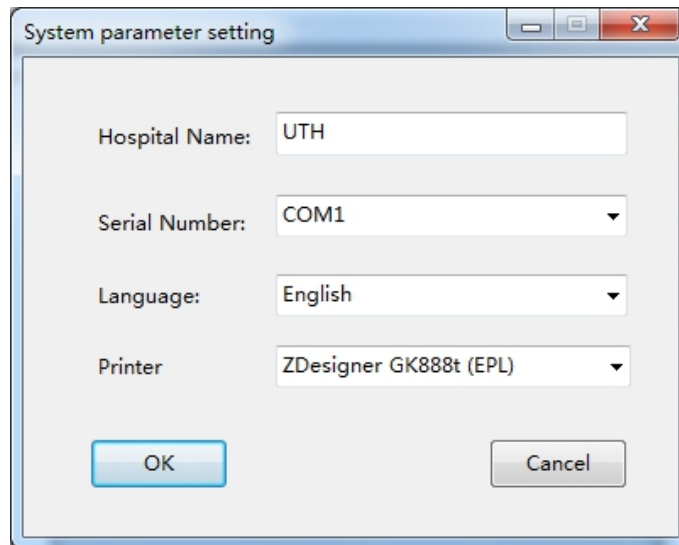

Pic 5-2

5.2 System setting

After entering into the system , set the communication port first to ensure the connection between computer and machine is normal . Then select your language and label printer , click
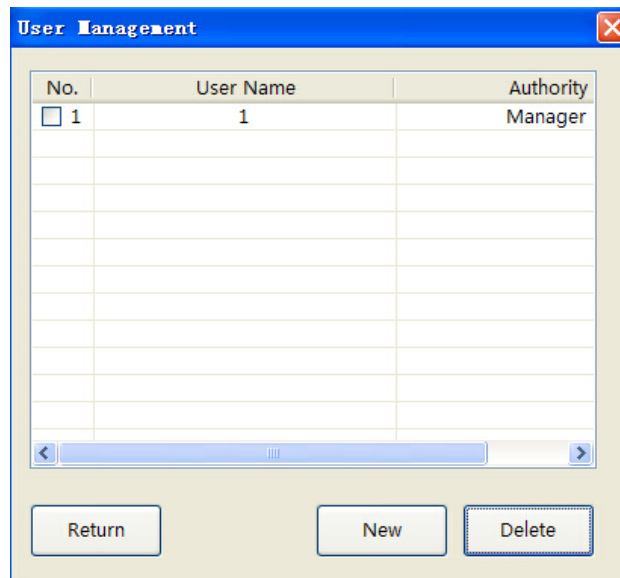
"OK" to save .

Pic 5-3

checking of communications port number : Click on the desktop "My Computer," right-click to view its properties, find the hardware catalog in the menu , click on "Device Manager", then click this port directory, you can see the port situation (for example ,COM1).

5.3   User Management

1. Click user management, it appears "User management" window . If you are an administrator, you cancheck all the users who have authority to operate this equipment . You can add or delete users, or modify user's authority.

2. If you need to delete a user, tick the front small box and click "Delete" to delete the user information (multiple choice is available).

3. If you need to modify user permissions, double-click the desired user, and select the user authority to be modified on the interface appears.

4. If you are a general user , you can only change your own passwords.
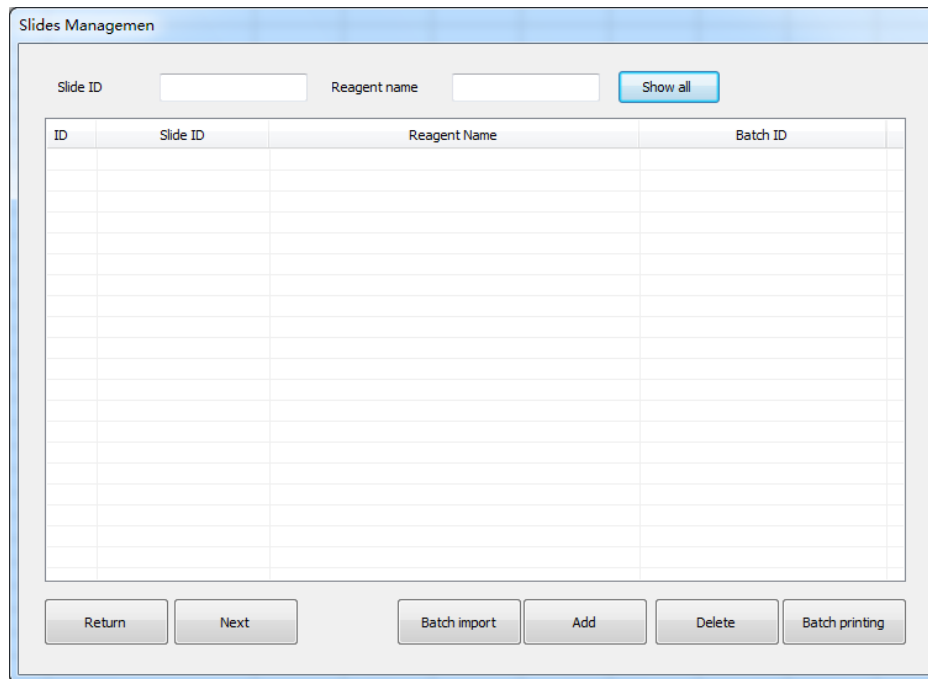
5.4 Reagent Management
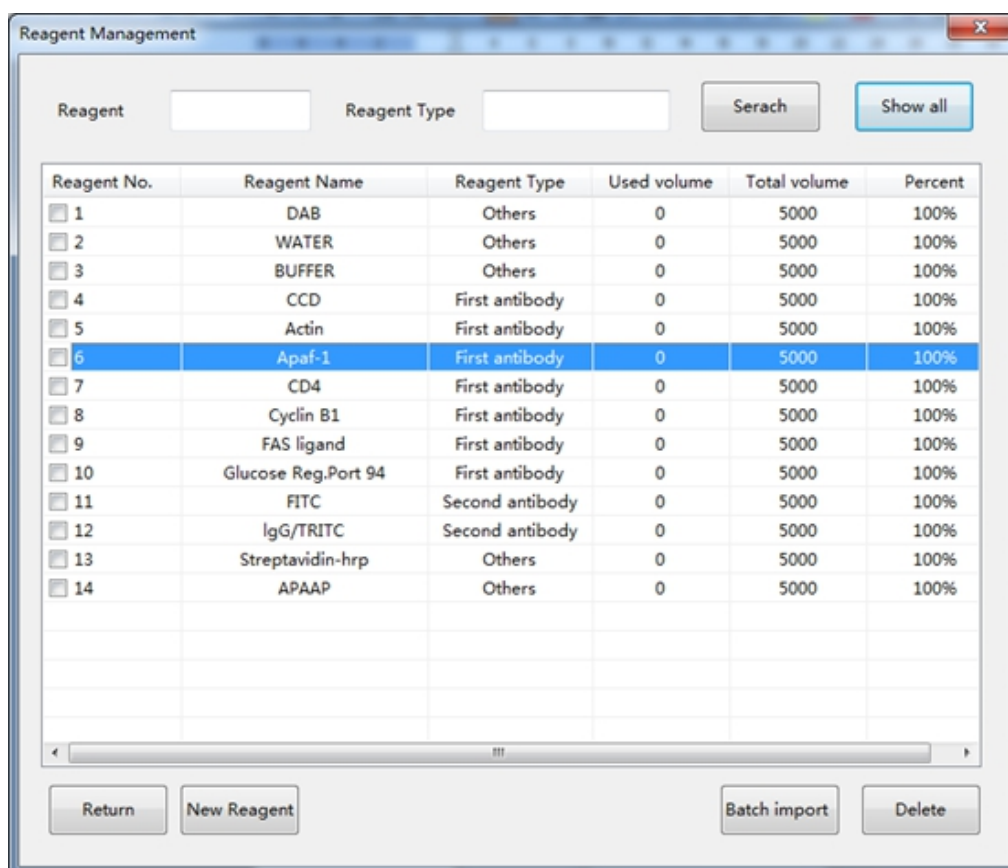
Pic 5-5

1. Click "Reagent management", reagent management windowappears. Reagents category default divided into several types: first antibody, second antibody, and others.

2. Click"New Reagent" , "Add Reagent" windowappears.You can add new reagent in accordance with the requirements. To modify the reagent information , double-click the desired reagent , then modify the information on the window pops up .

4. If you need to delete the reagent, tick the front small box and click Delete to delete this reagent information (multiple choice is available).

5. Enter the name in the box on the right of "Reagent" you want to find, you can search the reagent quickly .

6. Click "Batch import", you can import the data in EXCEL table. The premise is that you have made the Excel file (The template excel file named reagent is included in the folder). Please note : Type name can only be first antibody , second antibody and others .

5.5 Slide Management

Pic 5-6

1. Click "Slides management", slide management window popsup . Here you can check information of each batch such as slide number, antibodies name, batch number.

2. Click "Add" to check in a new slide information .

3. If you want to delete the slides, tick front small box and click "Delete" to delete this slide information (multiple choice is available).

4. Click "Batch import", you can import the data in EXCEL table.The premiseis that you have made the file (The template excel file named "Reagent" is included in the folder).

5. After checking inall slides information ,click "Next" to select protocol and slides placement .

6. Tick the front box of slide number needs to print label , click " Batch printing" to print the label .

5.6   Program Editing
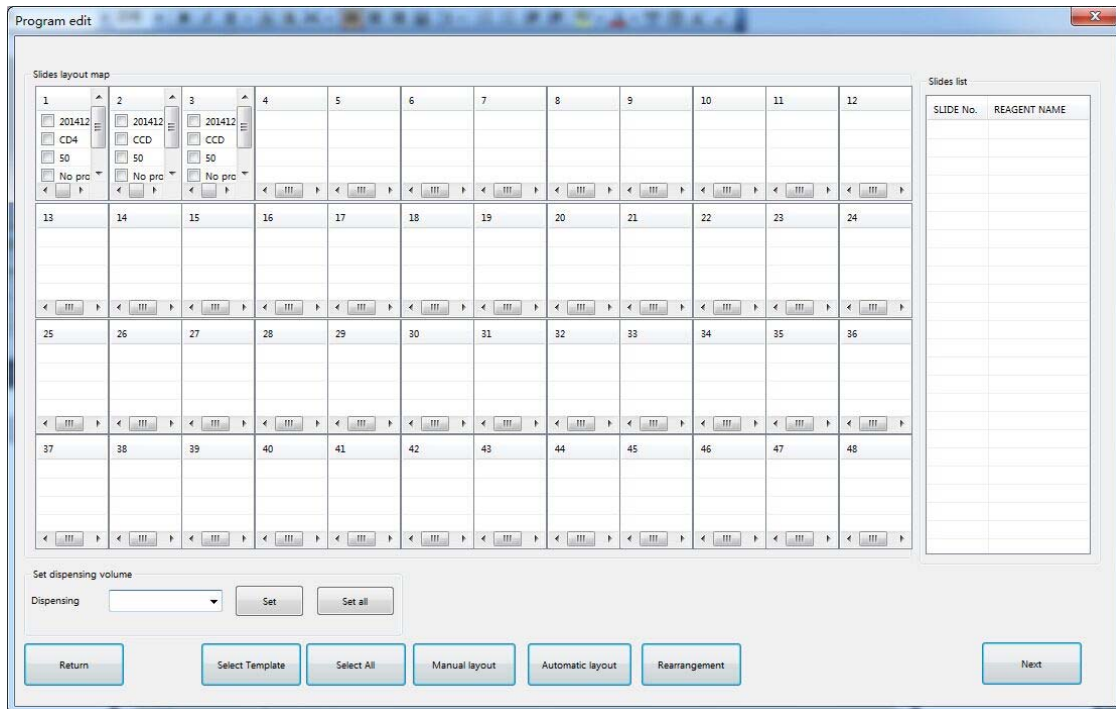
Pic 5-7

1. Select protocol template: If it is for single slide , firstly tick the box in the fourth row , and then click "select template" to select the template you want. If set all slides , click "Select All" , and then click "select template" to select the template you want.

2. Set dispensing volume: If it is for single slide , firstly tick the box in third row in the front of the slides need to change, and then select desired volume , click "Set". If to change the dispensingvolumeof all slides, click "Set all".

3. Please pay attention to whether the slide position in the program window is consistent with the actual position. If not, it needs to keep them corresponding. Firstly click the head of slides should be moved, while the selected slide will become highlighted, then click the head of destination position to finish this movement .

4. Select dropping zone : The three boxes in front of each slide represents three positions. Under normal circumstances, if it is a single tissue , it is recommended to place it in the middle;If two tissues , it's betterto place on the 1st and the 2nd position (Note: Concerning minimum dispensing volume is 50µl which is not enough to cover the entire slides , it is recommended to place the tissue in accordance with our requirements.)

5. Manual layout: You can arrange the placement manually . Click "Manual layout", then

double-click the slides to be placed from the right unarranged slide list , and double-click the right position on the layout map .

   6. Click "Next" after all settings

.

5.7 Template editing
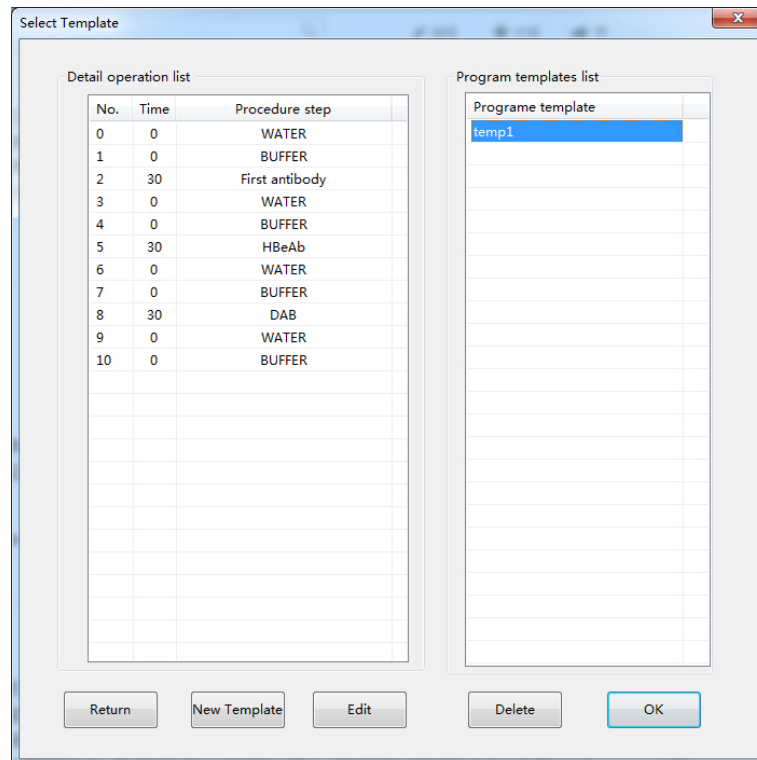
Pic 5-8

It is the template name on the right and operation list of each template on the left . Click template name in protocol template list , it shows the operation procedure list of this template . Click " New template " to add a new template . Click " Delete" to delete exist template . Click "Edit" to modify the template such as Pic 6-8 .

In the template editing window , double-click step no. to delete this step and double click second row to edit incubation time . Double-click the reagent under reagent list to add it into operation list , and click "OK" to complete the modification .
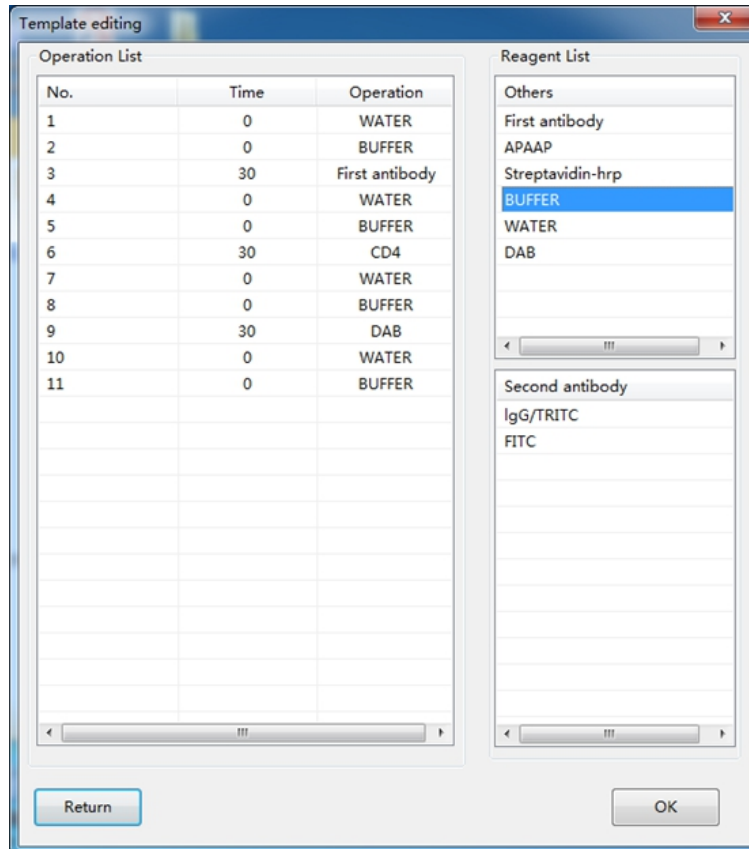
Pic 5-9

5.8 Reagent layout

There are total two reagent racks , each rack can load 32 pieces of 5ml tube . It is up to put 64 different kinds of reagent a time. The 64 tubes in first and second racks are in correspondence to the actual position in the machine . Please pay attention to whether the reagent position in the program window is consistent with the actual position. If no , it needs to keep them corresponding . Firstlydouble-click the head of reagent should be moved , then double-click the head of destination position to finish this movement . After confirming the location is correct , click "Next" to move on . If it appears " Reagent volume is inadequate , need xx ml " , please modify reagent parameters as following the prompts and add correspondingvolume . After confirmation , it can work normally .
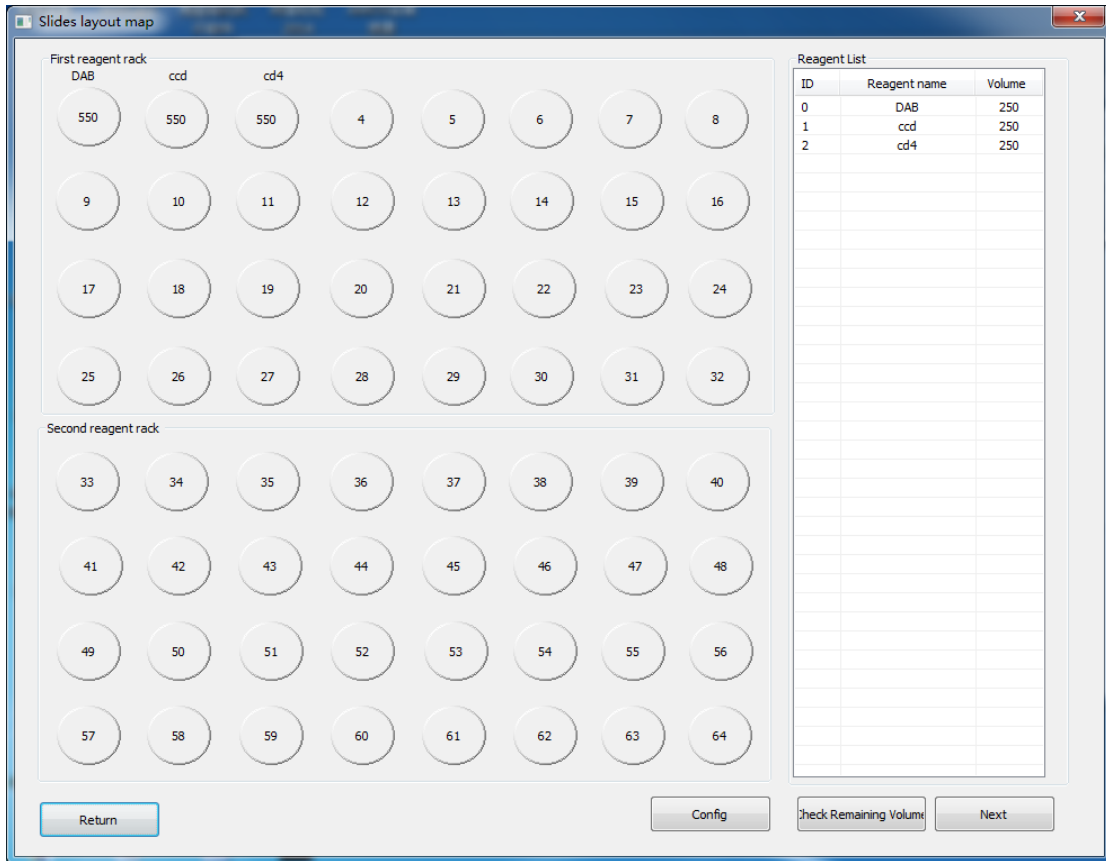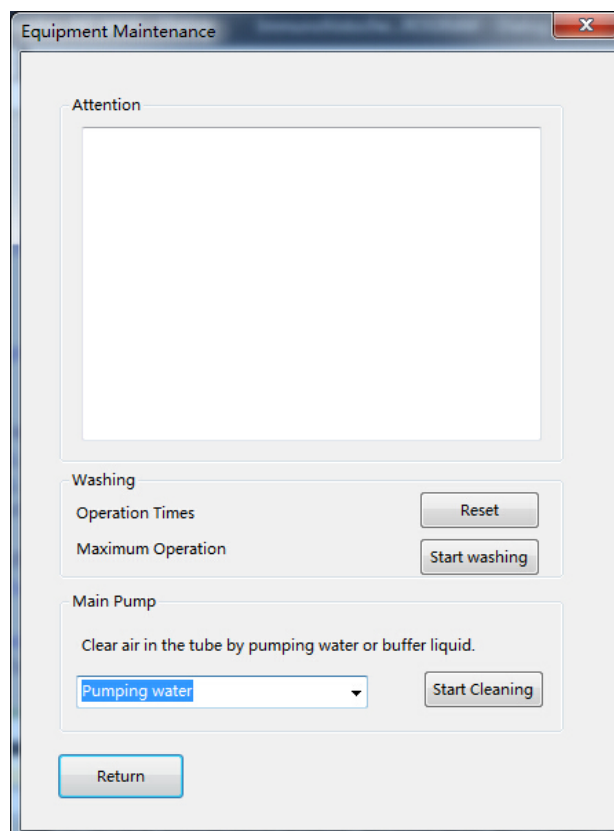
Pic 5-10

5.9 Program Monitoring
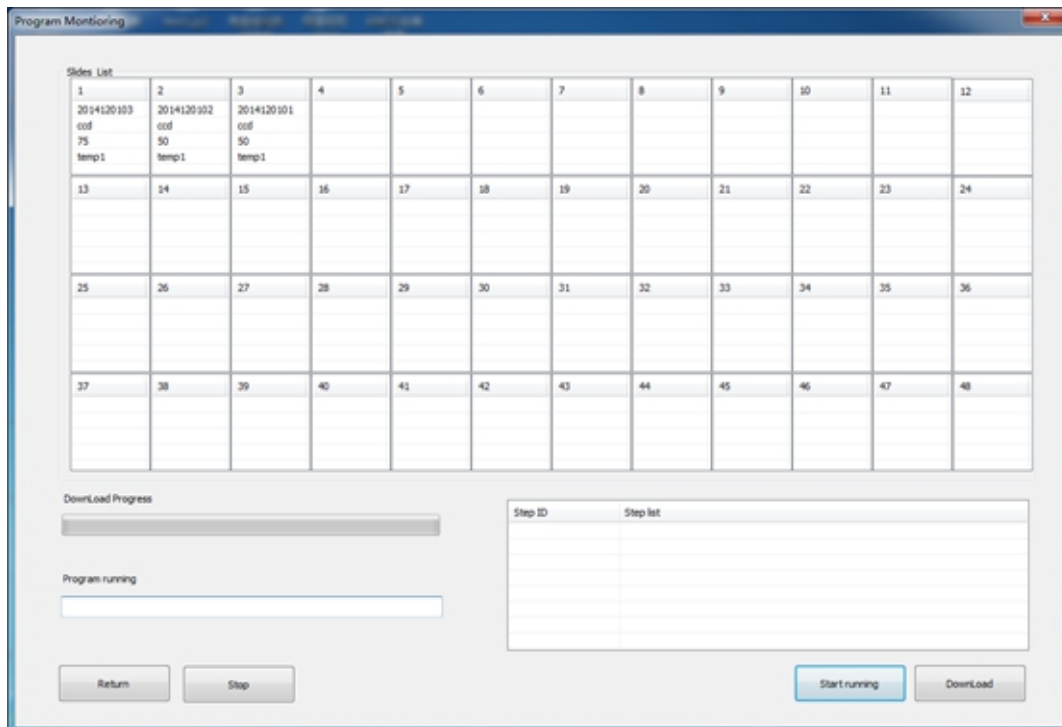
Pic 5-11

Click "Download" to download the protocol into the machine (Before downloading please check if the serial setting is well and the power is turned on). When download finishes ,it appears dialog window to prompt the download is complete, click "OK", then click "Start running", it will automatically run till the end of the protocol . Real-time monitoring window will show the running progress .

End / reset: (the red button in front of machine)

1. When the program is finished , the buzzer beeps 10 seconds continuously to remind the user to take slides .Then press the button to end the program, the probe returns to zero position (back to the upper left corner of the machine in X, Y two directions) .

2. When equipment fails or does debugging ,press the button twice continuously to reset the machine , the device is immediately back to zero to avoid any damage.

3. During normal operation , please don't press   end / reset button, otherwise it will interrupt the current program, the back to zero position .

5.10 Equipment Maintenance

Pic 5-12

Max operated times : If the number of the operated times is over the set times, the system will automatically remind the user to check the current working status by the dialogue box of "the equipment has run XX times, please maintain the equipment". Then the user should check the equipment such as the probe hanging situation, the abrasion and the corrosion of accessories, and the flexibility of driving medium which may need some lubricant. The equipment needs to be maintained if it does not work in order. The accessories which are in bad condition should be replaced in time, and add lubricant to the driving parts.By doing so, and the service life of the equipment will be prolonged.d
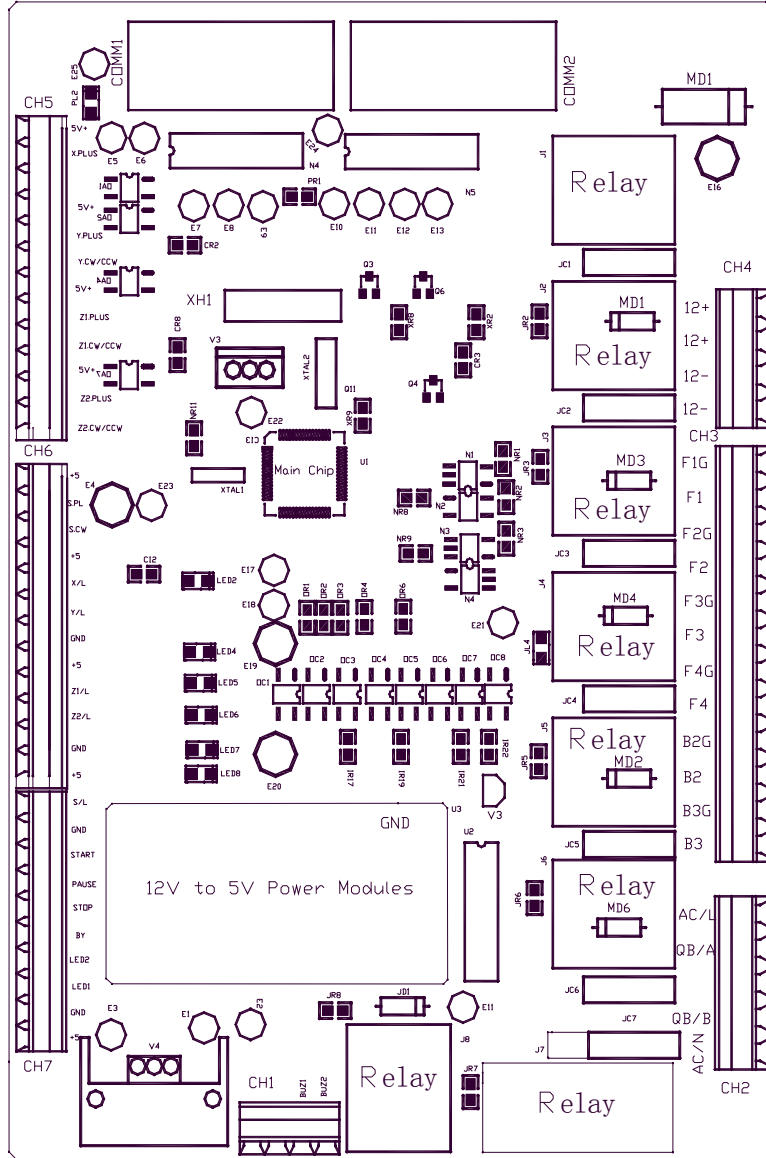
1. After clicking the "Main pump (buffer)" button, the main pump is started up, the pipe outlet automatically moves to the fixed position. And then the buffer fluid pours out of the pipe to empty the air inside the buffer fluid pipe. This procedure is stopped by click the "Stop" button.

2. After clicking the "Main pump (water)" button, water pours from the pipe in the fixed position to empty the air inside the distilled water pipe. This procedure is stopped by clicking the "Stop" button.

3. In the course of emptying air from the buffer fluid pipe and distilled water pipe, turn 180 degrees clockwise at the knob which is in front of the injector and wait for 3 to 5 seconds. By doing so, the air in the injector will be exhausted. When all air is exhausted, turn 180 degrees back at the knob.

4. When the equipment runs automatically, it will first empty the air from the buffer fluid pipe and distilled water pipe again to make sure there is least air in the pipe, and to improve the accuracy of dropping antibody.
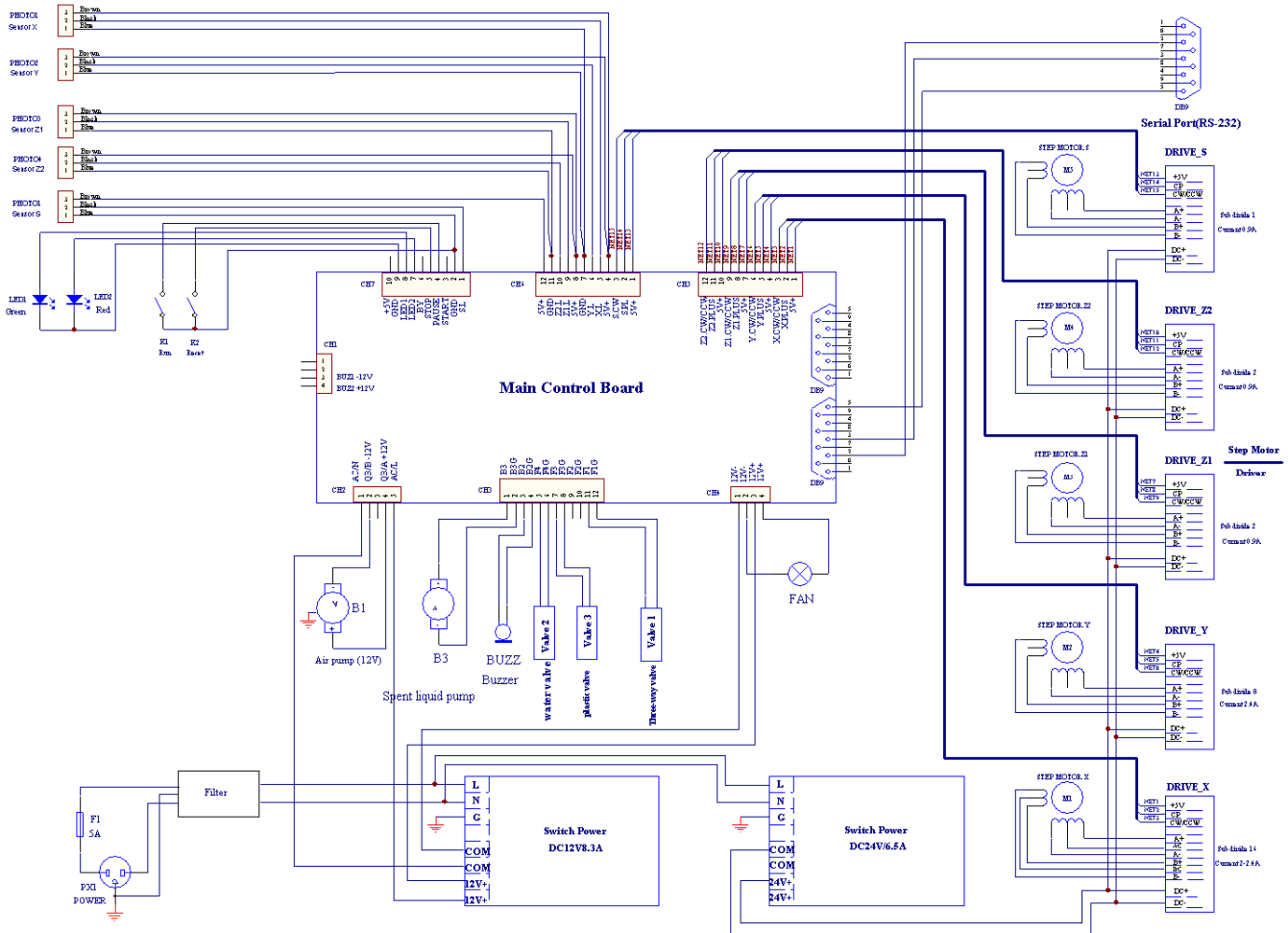
6.Maintenance:

1. Once use toxic DAB agents or other toxic agents, it is recommended to clean the machine . Please wear plastic gloves before cleaning to prevent harm to human body .

2. Please pay attention to regular running status , in order to detect hidden problems early .

3. Please carefully read this operation manual before operation. Operation should be done according to the requirements stipulated.

4. Please avoid using hard objects on the working platform to protect it from being scuffed.

5. Keep the apparatus tidy and clean. Please clean out the residual liquid and dust on the surface in time to protect the equipment from being stained.

6. Lubricant should be added to the transmission parts to ensure normal operation.

7. Please cut off the power supply, if the equipment will not be used for a long time.

8. When the equipment is under operation, the user should pay attention to the running status in order to find the hidden troubles early and deal with them in time.

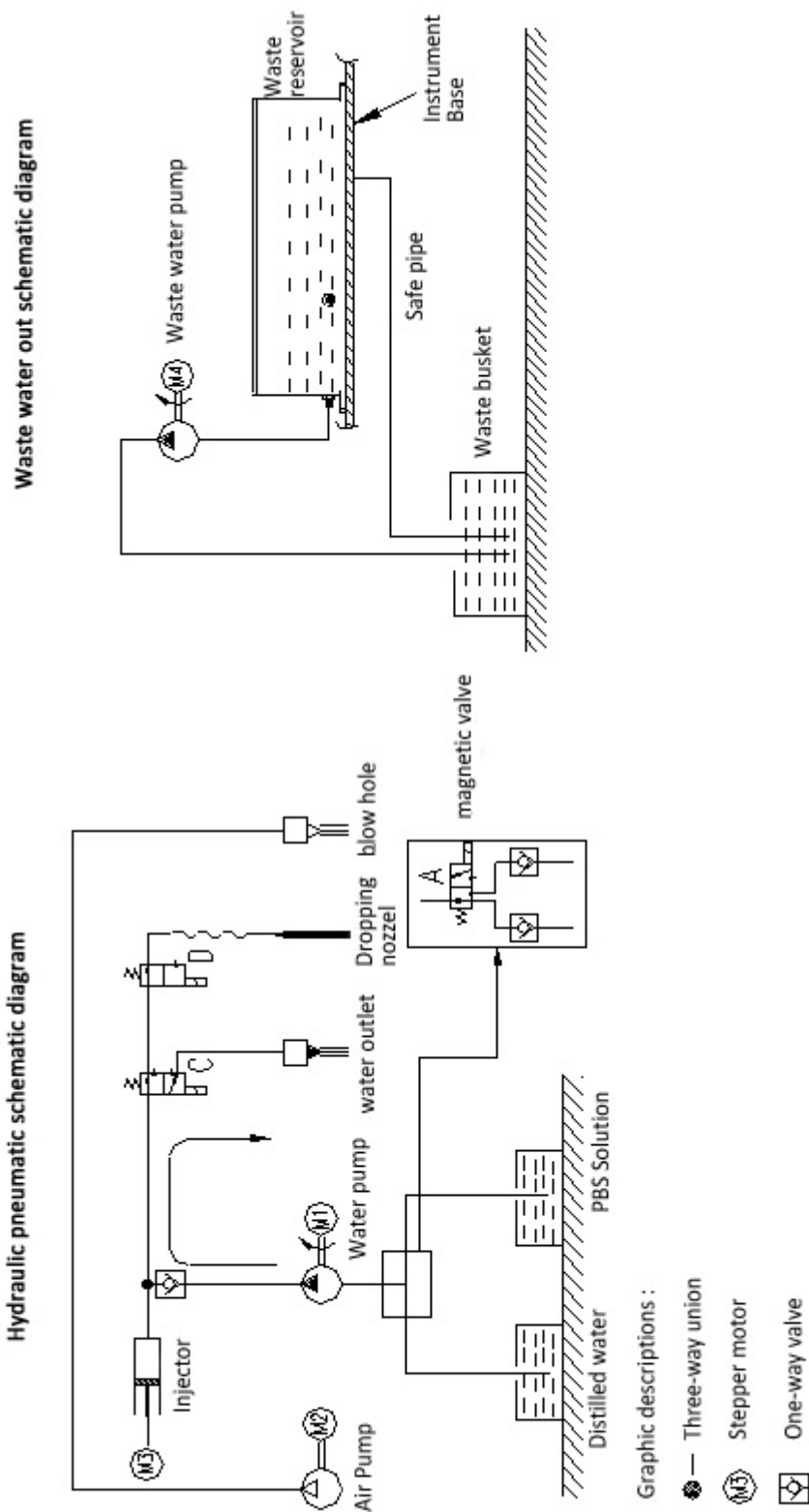9. Please confirm if it is back to zero position yet and then cut off the power .

7. Layout of

Components

8. Wiring Diagram

9. Pipe Diagram

Waste water out schematic diagram

Waste reservoir

Instrument Base

Waste water pump

M4

Safe pipe

Waste busket

Hydraulic pneumatic schematic diagram

Dropping nozzel   blow hole

magnetic valve

A

water outlet

Water pump

M1

PBS Solution

Injector

M3

M2

Air Pump

Distilled water

Graphic descriptions :

——   Three-way union

M3   Stepper motor

One-way valve

Standard accessories list

No	Accessory Name	Qty	Notes
1	Immunohistochemistry Stainer	1 unit	
2	Power cord	1 pc	
3	Fuse	4pcs	220V/3A 110V/5A
4	Slide Rack	4 pcs	
5	Reagent Rack	2 pcs	
6	Reagent Tube	500 pcs	
7	20L Water Bucket	2 pcs	
8	10L Water Bucket	2 pcs	
9	Label Printer	1 unit	
10	RS-232 communication cable	1 pc	
11	1.5M waste liquor blue pipe	1pc	
12	1.5M transparent soft tube	3 pcs	
13	CD	1 pc	● includes instruction for set-up ● includes Operation Manual
14	Operation Manual	1 pc	
15	Computer(option)	1 unit	

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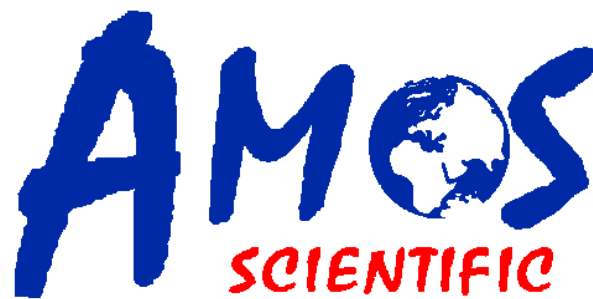
AMOS SCIENTIFIC PTY.LTD

7 Gabrielle Court,Bayswater North VIC 3153 Melbourne , Australia
Tel: +61-410190188   Fax: +61-410190188