HG-318

染色机控制电脑

HG-318 CONTROLLER FOR DYEING MACHINE

使用说明书

USER’S MANUAL

佛山市华高自动化设备有限公司

FOSHAN HUAGAO AUTOMATION CO.LTD.

I . Overview:

HG318 Microprocessor Controller For Dyeing Machine adopts LCD screen with both Chinese and English display method. It adopts friendly man-machine interface. Simple operation makes it is possible for you to finish most of the operation according to the interface even without the user's manual. With the perfect effect of controlling temperature, this machine can be widely applied for different objects of controlling temperature, such as: Normal temperature Dyeing machine, High temperature dyeing machine and yarn dyeing machine.

1) Output to connect

Relay output 8 (Relay output: 240VAC 3A)

Respectively control: main pump, heating, cooling, fill, cooling water out, decompression, direct heating, forward turn, reverse turn, calling.

2) Temperature control specifications:

Temperature measurement component:

Pt100 platinum's resistance.

Test temperature range: 000℃~153℃

Temperature control range: 030℃ ~145℃

Temperature control speed: 0.1℃~9.9℃/min

Temperature s control accuracy: isotherm state ±0.5℃

Temperature control method: optimized automatically control

3. Programmable functions:

Programmable process number: 100(0~99), 100(0~99) programmable steps per process.

4. Protective function

(1) The parameters of programmed technology process won't be lost after sudden power cutting with the advanced IC equipment.

(2) If there is suddenly power off while the machine is working, the present data can be kept and go on working if the power come again.

(3) It will alarm and stop working when the temperature is over 150 ℃.

5. Power working range

Power supplying range: AC180~250V 50/60HZ

Power consume of the whole machine:≤6 W

6.Working environment:

Working temperature: ≤50 ℃,

Relative humidity ≤90%

7. Dimension of apparatus:

160(W)X160(H)X 160(L) mm^3 .

Installing hole dimension: 152×152(mm²)

Installing way: embedded way of tray

II. Operating Guide

1) Functions of Keyboard

0~9 numeric key: enter 0~9 number.

RST key: make the computer reset.

RUN key: make computer enter working state.

STOP key: make the computer enter pause state.

ESC key: make the computer out from present state and return to main interface.

OK key: make pick out menu enter submenu or store function for technology program and setting parameter; press this key to stop calling when it is calling.

△▽key: up and down key for the cursor to move up and down.

◁ ▷key: left and right moving key to control cursor move left and right, it can be used as choosing function when cursor is in function sector; as look at last step and next step when cursor is in subroutine sector; as choosing language when the cursor is in parameters setting.

[+] key ----During programming, press this key together with [S] key,

insert 1 step.

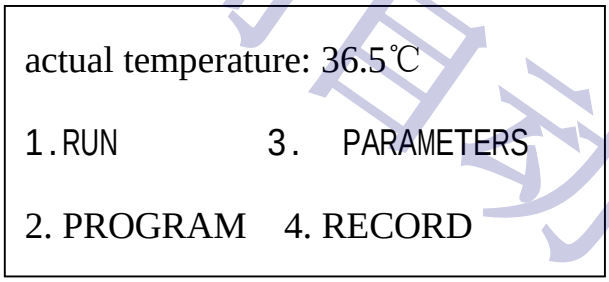
[--] key -----during programming, press this key together with [S] key, delete 1 step.

2). Main interface

After the power connect, the information interface will be shown first Picture I

Picture 1

If the computer was not under the running state before power-cut last time, the computer will shift to main interface in one second. (The interface of restoration state)



Picture 2

Actual temperature means exact temperature of dyeing tank.

If the computer is under technology running state, it will show the running interface:

Picture 3

actual temperature: 36.5℃
setting temperature: 065.0℃
speed rate: 2.5 time: 30
technology: 01—03 heating

This interface shows that the computer is under heating condition from present temperature 36.5℃ to set temperature 65.0℃ .up-gradient of temperature is 2.5℃/min , time of isotherm phase is 30 minutes. The design of the third step (L03) of the firs technology (F01), can keep the normal operation from unexpected power-cut while the computer is operating. If you need to quit from operation and retune to the reset condition, press STOP key first then press RST key, you can return to the picture 2.

3) Operation menu

The main interface menu is under reset condition as follows

1.RUN 2.PROGRAM 3.PARAMETER 4. RECORD

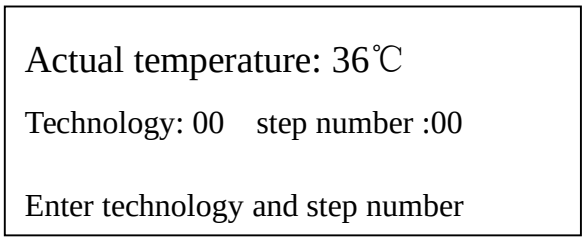
You can use (1~4) key to choose menu event your expect, then press OK key; If you choose operation, you can directly press RUN key to enter:

a) RUN (运行)

Under main interface (picture2), press 1 key or directly

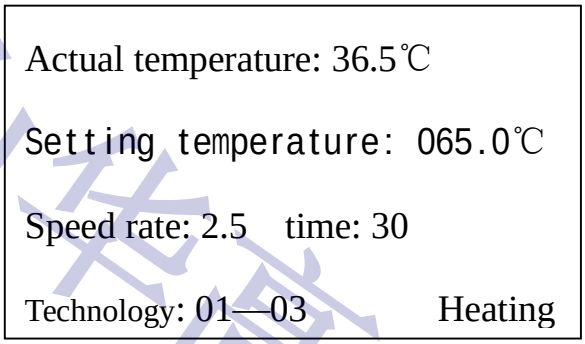
Press RUN key to enter running interface:

Picture 4



Now enter the number of the needed technology and step, then press “OK” key or “RUN” key to enter into running interface (picture 5) and begin to run.

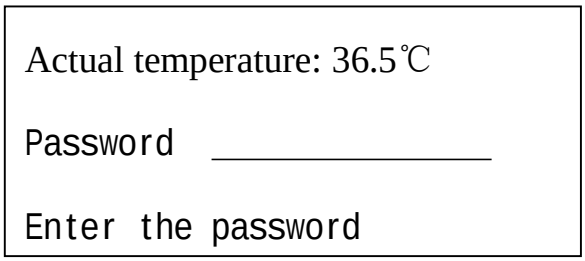
Picture 5



b) Program

Under main interface (picture 2), press “2” key, then press “OK” key to enter the following interface:

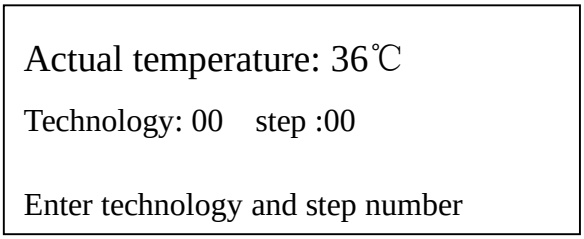
Picture 6



Enter 6 bit numbers, press “OK” key then enter into the following interface (picture 7). The original password is “000000”. In order to protect the technology parameters not to

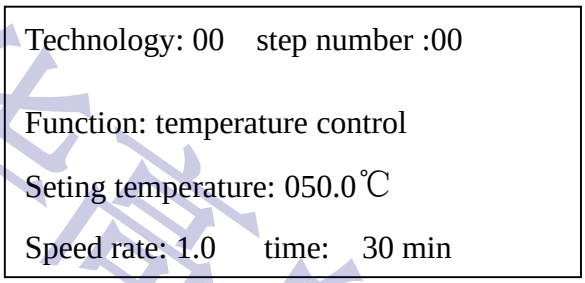
be modified, the customer should change the password into any for numbers for easily remember.

Picture 7



Enter the technology and step number, then press “OK” key to enter the program state interface (picture 8).

Picture 8



Now can use “◁ “ key or “ ▷ “ key to choose function, press “▽” key, the cursor move to next line; use “◁ “, “ ▷“ key and number key to set parameters. Press “OK” key to store after each step program. To the last step, press “ESC” key to return to main interface.

Program rules of control function:

1) Main pump run

Function sector program enter “main pump run”, temperature sector program “0”, speed rate sector program “0”, time sector program time data. During the running of this step, if

time sector program time data, the main pump will stop and enter into next step when time is out. If program “00” in time sector, the computer will jump to next step after compute begins to run and keep running until the end or programmed “main pump stop”.

2) Main pump stop

This function is used to stop the running of main pump.

3) Forward and reverse turn open 1

This function is used to control the circle times of forward and reverse turn. Forward turn sector program its circle times; reverse turn sector program its circle times; interval sector program interval time (unit is second). If just need forward turn, program reverse sector as “0”. Use constant shut approach switch to count circle times.

4) Forward and reverse turn open 2

This function is used to control the time of forward and reverse turn. Forward turn sector program its time; reverse turn sector program its time (unit is second); for example, 0013 seconds is 13 seconds, interval sector program interval time (unit is second). If just need forward turn, program reverse sector as “0”, interval time is “0”. The time range of forward and reverse turn is 00~99 sec. Interval time range is 00~99 sec.

5) Forward and reverse turn open 3

This function is used to control the time of forward and reverse turn. Forward turn sector program its time, reverse turn sector program its time (unit is second); interval sector program interval time (unit is second). If just need forward turn, program reverse sector as “0”, interval time is “0”. The time range of forward and reverse turn is 00~99 min. Interval time range is 00~99 seconds.

6) Forward and reverse turn stop

This function is used to stop the above three ways of forward and reverse turn running.

7) Temperature control

Program the object temperature into temperature sector; program up and down gradient of temperature into speed rate sector; program isotherm phase into time sector (00~99min). If the setting temperature is higher than actual temperature, that means heating; if the setting temperature is lower than actual temperature, that means cooling. When first heat should open the cooling water drain at the same time. Open cooling water drain should be set “3. Parameters” in “start time” sector and stop it when time is out. During heat and isotherm phase should open cooling water drain, interval time is set “3.Parameter” in

“interval time” sector. When open cooling should open cooling water out at the same time. When speed rate program 9.9℃/min, it means direct heat or direct decreasing temperature. Direct heating is to open the heating and direct heating till set temperature to stop. Direct decreasing temperature is to open cooling till set temperature to stop.

8) Decompression

No process control. During running state, when actual temperature is lower than decompression temperature, open decompression, decompression temperature is set in decompression temperature of “3. Parameter ”; when the actual temperature is higher than setting decompression temperature, close decompression. It will be 85℃ to decompression is no any setting.

9) Pause

When program “pause” in any step during craft process, it will escape from control state and alarm when it runs to this step, but the positive and negative turn will go on working and press “OK” key to cancel alarm. It is convenient for the worker to carry out the other craft operation. Press “▽ ” key to move to next line after finishing then press “RUN” key to go on running.

10) Stop

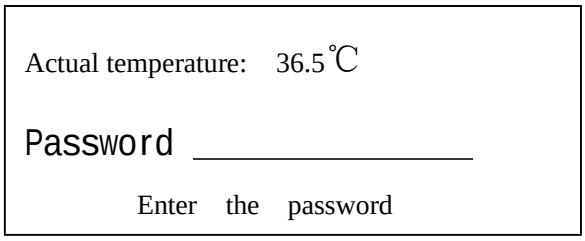
It is the last step of craft process and every craft must have this step. The computer will display “finish”, the other sector

such as temperature sector, speed rate sector, time sector will display “0” automatically. Press “OK” key then finish the whole craft program.

c) Parameter

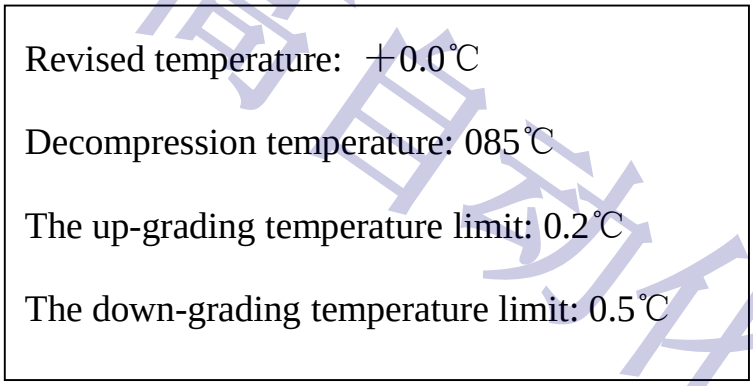
Under the main interface state, press “3’ key to enter the following interface.

Picture 9



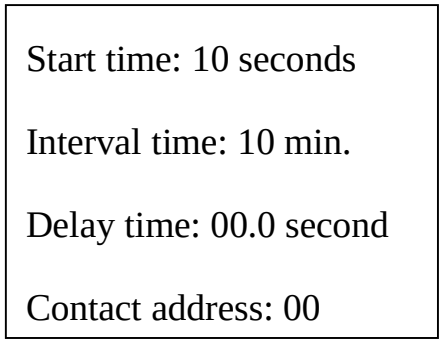
Enter the original password: “000000” then press “OK” key, enter into parameter interface (picture 10):

Picture 10



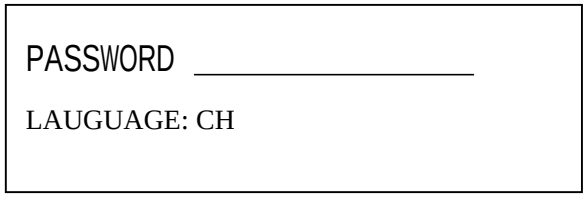
Press ▽ key to enter into the following interface (picture 11):

Picture 11



Press ▽ key to enter into the following interface (picture 12):

Picture 12



As picture 10, if there is deflection between actual temperature and display temperature, we can adjust by temperature revising. Revising range: ± 9.9 ℃ . The decompression temperature are free to be set, if there is no any setting, we can use 85℃ to control. The function of up and down-grading temperature limit: during isotherm state, open heating till the object temperature when the temperature is lower than 0.2℃; open cooling if the temperature is higher than 0.5℃.

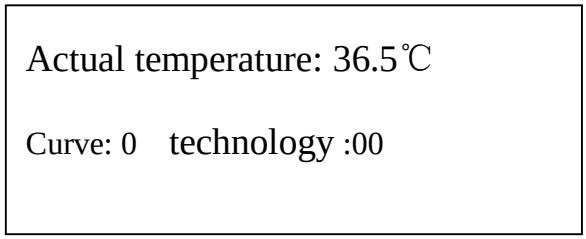
As picture 11, start time is the time when first open heating as well as cooling water drain; the interval time is the time when open cooling water drain; delay time is the delay stop time of positive or negative turn stop; contact address is the code number of centralized control.

As picture 12, the password can be changed into any numbers for easily remember, then press “OK” key, return to the main interface. Language sector can use ▷ key to choose Chinese or English way.

d) Record

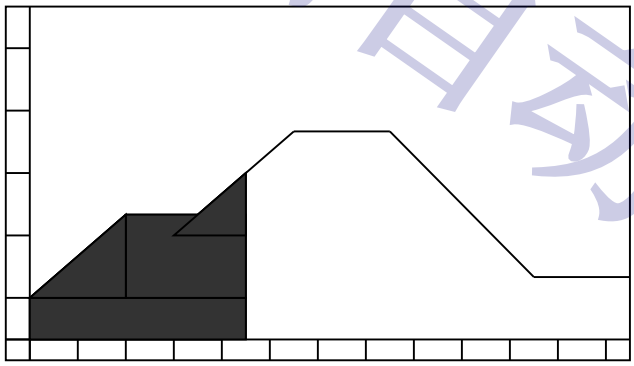
Under main interface, press “4” to enter into the following interface (picture 13):

Picture 13



Under this interface, we can look over ten latest run technology curve. Curve 0 is the latest technology curve; Curve 1 is the second new technology curve; in this case, curve 9 is the oldest technology curve. The technology number here stands for the technology it belongs to. Under this interface, enter the curve number needed to look over, then press “OK” key is ok. Just as the following picture (picture 14):

Picture 14

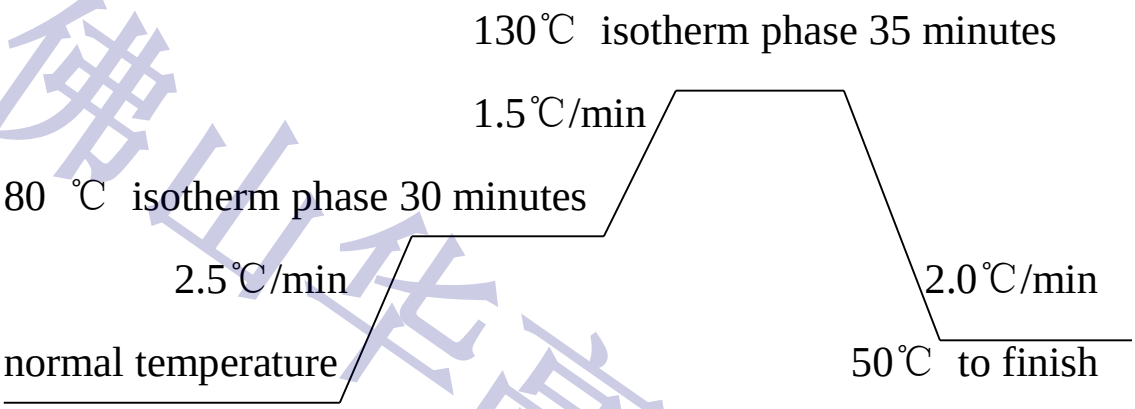


In the above picture, the ordinate representation temperature, the abscissa is time. The start point of temperature is 30℃ , the highest is 150℃ , the interval of ordinate is 20℃; The interval of abscissa is 10 min. The time of each page is 112 min. Every curve includes two pages, we can use ▷ key to

page up and down and we can use the ◁ key to return to history curve interface (picture 13), press “ESC” to main interface.

4. **Program examples**

Take the third step technology as example, step number starts from 0 (F03 L00)



Forward turn 3 min, interval 10 seconds, reverse turn 2 min.

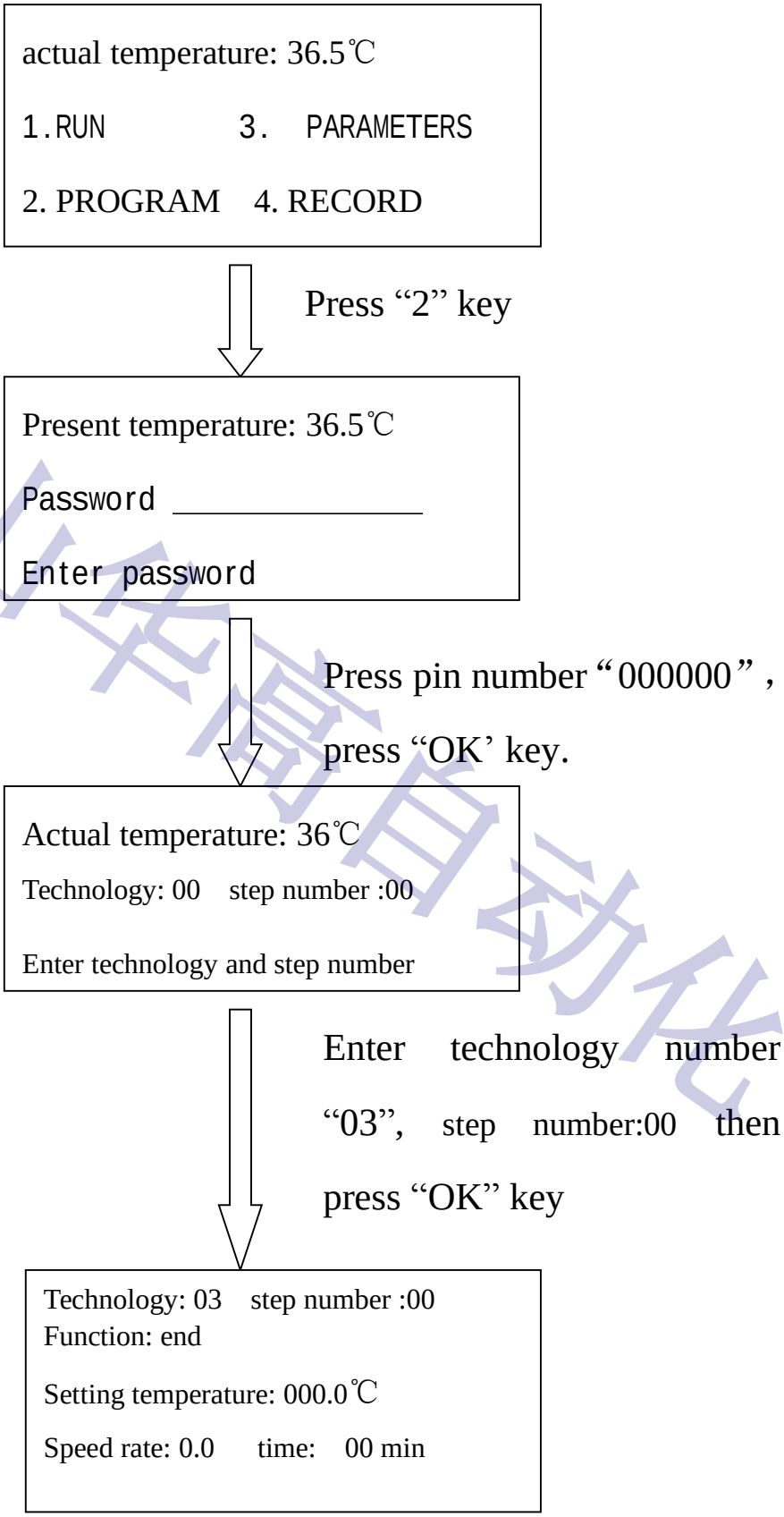
The above technology curve can be shown as the following table.

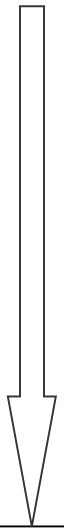
Subroutine number	Functions	Temp (Forward turn)	Speed rate (Interval)	Time (Reverse turn)
0	Forward turn 3 min, interval 10 seconds, reverse turn 2 min	0003	10	02
1	Up-grading temp 2.5℃/min, heat to 80℃ isotherm phase 30 min	080.0	2.5	30
2	Up-grading temp 1.5℃/min, heat to 130℃ isotherm phase 35 min	130.0	1.5	35
3	Down-grading temp 2.0 ℃/min, cool to 80℃ no isotherm phase	050.0	2.0	00
4	End	000.0	0.0	00

Program procedurals as following:

Press “ ESC” key to enter the main interface (press

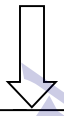
"STOP" key first if it is under running state):





Press “ ▷ ”key to function “forward and reverse turn open 3”, enter the data of “0” step: forward turn 3 min, interval 10 seconds, reverse turn 2 min.

Technology: 03 Step number :00
Function: forward and reverse open 3
Forward turn: 0003min.
Interval: 10 seconds
Reverse turn: 02 min



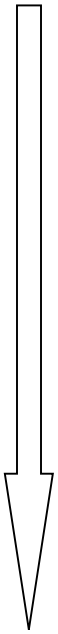
Press “OK” key

Technology: 03 step number :01

Function: end

Setting temperature: 000.0℃

Speed rate: 0.0 time: 00 min



Set the data of the first step in the same way. Press “ ▷ ”key to function “temperature control” , up-grading temp to 80 ℃ , speed rate 2.5℃/min, isotherm 30 min

Technology: 03 step number :01

Function: temperature control

Setting temperature: 080.0℃

Speed rate: 2.5. Time: 30 min

Press confirm key

Technology: 03 step number :02

Function: end

Setting temperature: 000.0℃

Speed rate: 0.0 time: 00 min

Set the data of the second step.

Technology: 03 step number :02

Function: temperature control

Setting temperature: 130.0℃

Speed rate: 1.5. Time: 35 min

Press “OK” key

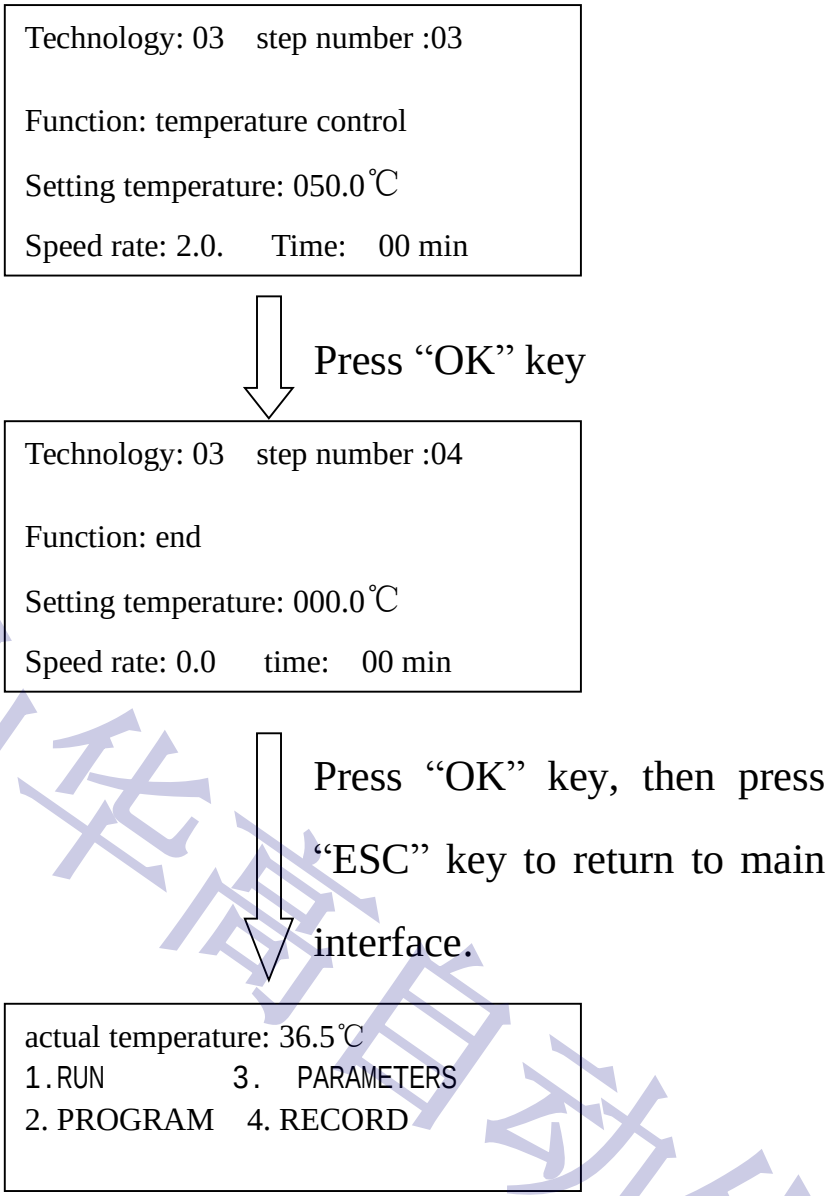
Technology: 03 step number :03

Function: end

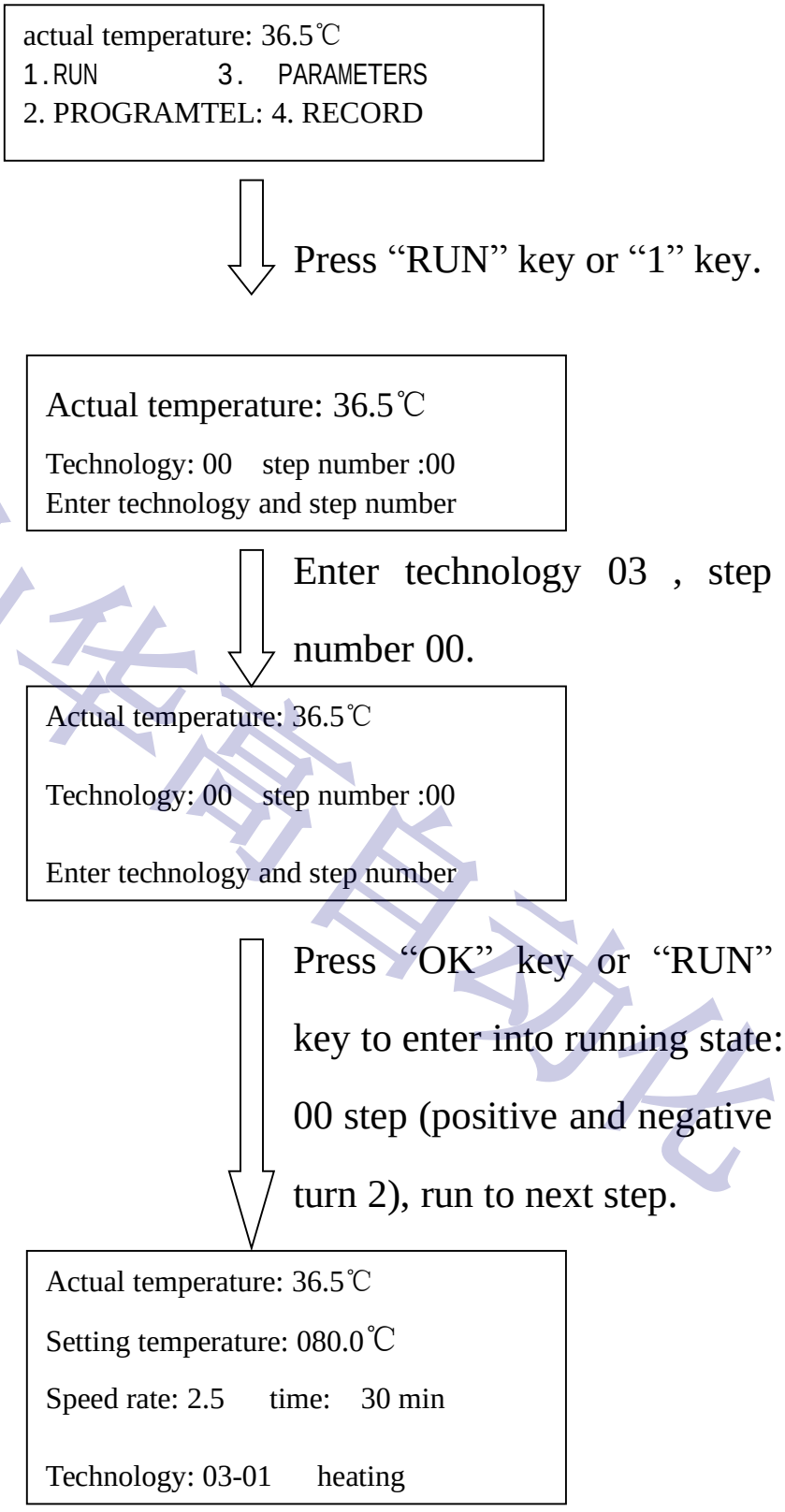
Setting temperature: 000.0℃

Speed rate: 0.0 time: 00 min

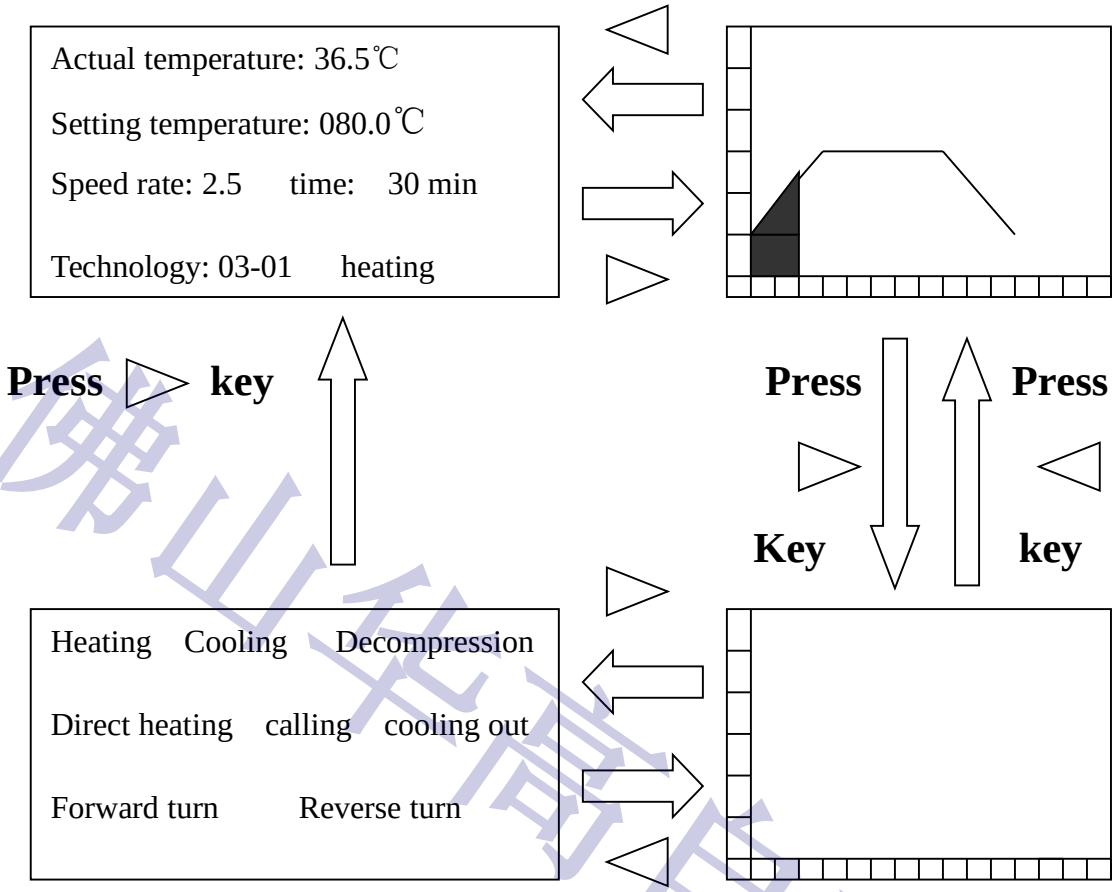
Set the data of the third step.


Technology: 03 step number :03
Function: temperature control
Setting temperature: 050.0℃
Speed rate: 2.0. Time: 00 min
Press “OK” key
Technology: 03 step number :04
Function: end
Setting temperature: 000.0℃
Speed rate: 0.0 time: 00 min
Press “OK” key, then press “ESC” key to return to main interface.
actual temperature: 36.5℃
1.RUN 3. PARAMETERS
2. PROGRAM 4. RECORD

5. Running example

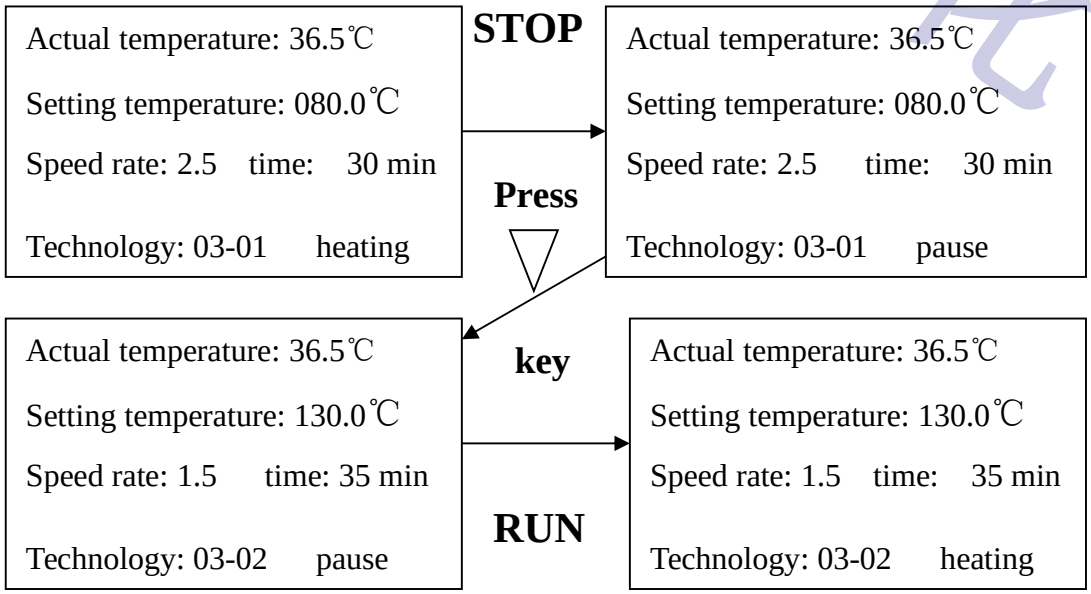


In order to better see the actual running circs, we design three ways of running interface:



6. Technology leap running

Under running state



7. Operation Attention

a. While programming, the speed rate of up and down gradient temperature can't be "00", "99" is most.

b. If you need to exit from operation under Operation condition and return to reset condition, you should press “STOP” key first then press “ESC” key.

c. Each technology need last step to stop (make all as 0), otherwise the computer will have errors.

d. If the computer stop when it is working, press ‘RST” key reset.

III. Installation and Adjusting

It is better to install the computer in a place with low temperature, best dry, well ventilated and no dust. You had better keep the computer from transducer or valve of electromagnetism, which has strong electromagnetism disturb. The power cable of the computer had better not share with the electric appliances of the big power. The temperature probe line of PT100 should adopt three screen’s line cable, combining will shield the layer connects to earth line of electric appliances controlling cabinets or machine hulls.

This computer is valuable and need to be best carefully protected, prohibition against touch or squeeze LCD

manifestation window, prevent from dye liquid or water, and keep the front-panel clean.

IV .Temperature checking methods

Use standard six bits resistance box to replace PT100 input

Temperature (℃)	Pt100 resistance figure (Ω)
0	100.000
10	103.900
20	107.790
30	111.678
50	119.400
100	138.500
130	149.820
150	157.370

Three minutes pre-heating after switching the computer, the bottom to choose 50, and high point for 130 as the final figure.

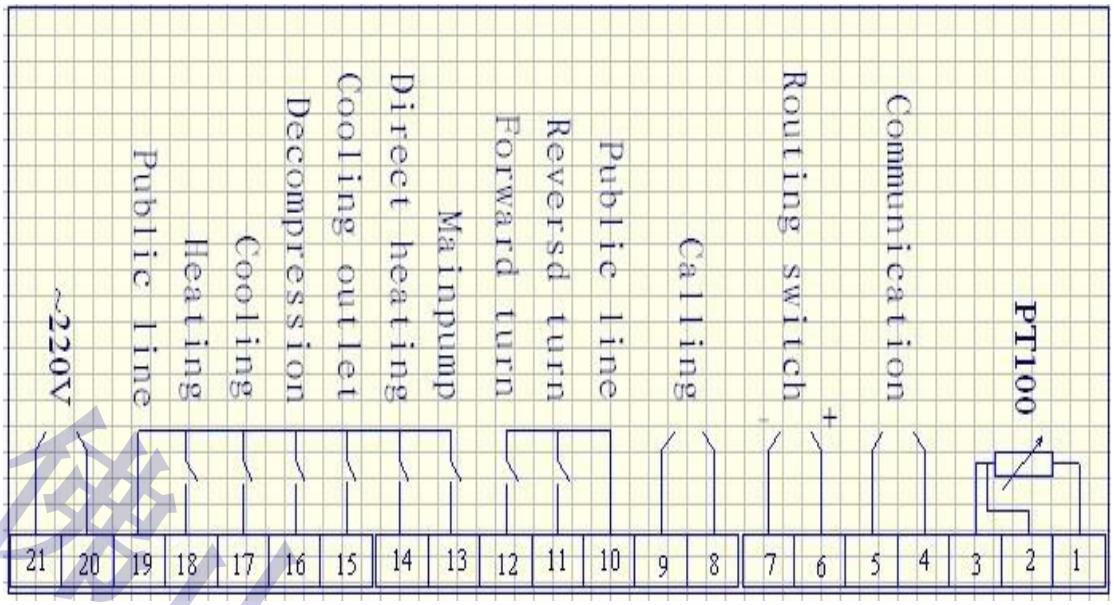
V. After service

Our company supply one-year free guarantee for the product and forever after service. If you have any problem while using our product, please contact with us anytime. We are always at your service.

TEL: 0757—83273176

FAX: 0757--83273179

VI. The back line diagram of the computer



佛山市华高自动化设备有限公司

咨询热线：400-800-7812

官方网站：www.fshg88.com

电话：0757-81631133/0757-83273176

传真：0757-83273179

邮编：528200

E-mail：hg@fshuagao.com

地址：佛山市南海区桂城天安数码城 5 栋 B 座 1008