TAIZHOU
ETERNAL HYDRAULIC

# Operation Manual of MS horizontal injectionmolding machine control system

# Welcome to use Our Injection Molding Machine Control System

## *Safety Cautions*

（Please read it before installation）

**Danger**

1. When the exterior power supply is abnormal or the control system breaks down, make sure the safety circuit is installed outside the control system in order to make the entire system work safely.
2. When abnormal situations occur, such as the control system unable to test the input/output, the output can not be controlled; in order to make the machine operate safety, for the output signal related to major accident, please design the exterior safety circuit or protection device.
3. The emergency door safety device is the core safety part of the injection molding machine. Make sure related safety protection devices for machine and oil line are added outside.

**Cautions**

1. Others except the trained and qualified professional technicans are not allowed to install and maintain this system.
2. When a valuable or large die is used, the travel control method must be adopted to use the neutron; otherwise, the control system can not guarantee the safety of the die.

# Line of MS

Operator's Manual

# Contents

# Chapter 1 System Configuration & Installation

## 1. System Configuration & Remarks

| No. | Code | Content | NO | Remarks |
|---|---|---|---|---|
| 1.Host Computer | MS300 | For specifications please refer to appendix 12Model selection chart | 1 Set | Optional |
| | MS500 | | 1 Set | |
| | MS700 | | 1 Set | |
| 2.Keyboard | MS210 7.0inch | | 1 Set | Optional |
| | MS220 7.0inch | | 1 Set | |
| | MS250 8.0inch | | 1 Set | |
| | MS260 10.2inch | | 1 Set | |
| 3.Power pack | PW350 | 350W | 1 Set | |
| 4.Message cable | DB-15F | 1To8 meter optional | 1 Set | |

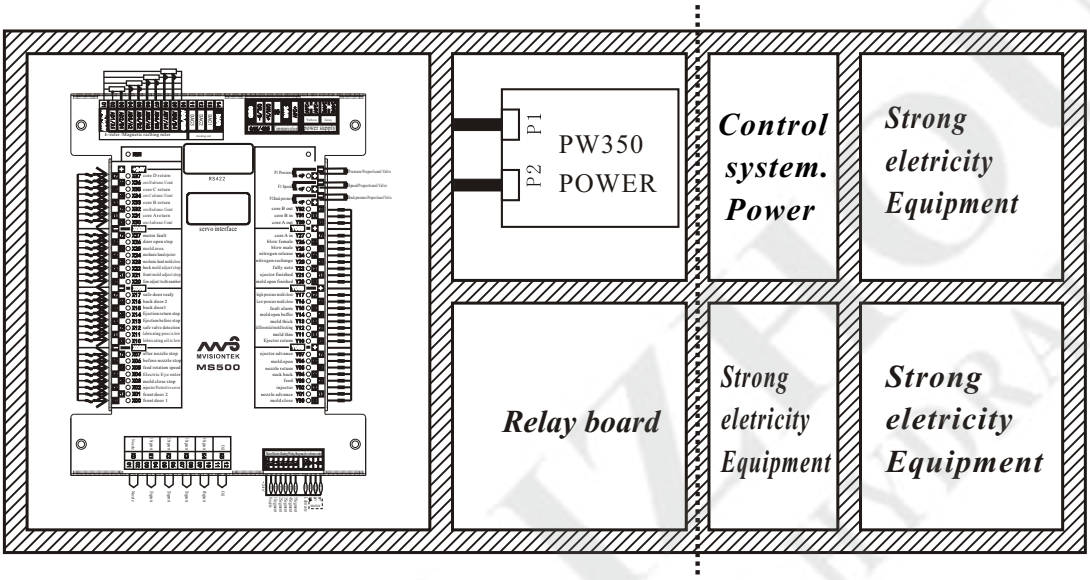
## 2. Characteristics of MC800AM Control System

- ▶ The system has bright LCD display
- ▶ The system adopts two CPU design with fast operating speed, precise control and high stability.
- ▶ It has the real time function to display time and date in real time.
- ▶ With 999 groups of mode data storage, it may enter the mode description and real-time
- ▶ operating help in Chinese and English.
- ▶ The password setting and data locking can prevent the operators from changing the established
- ▶ data arbitrarily to influence the quality of products.
- ▶ There are multiple languages for your choice that display dynamically in real time.
- ▶ Packing modulus setting function for 8-digit output may set the packing modulus.
- ▶ Various self-plugging and tein typeprograms are applicable for theself-plugging and tein
- ▶ control in different types.
- ▶ PID with self temperature control has (6+1) sections of temperatures.
- ▶ Temperature may be preset a week in advance to enable more convenient operation.
- ▶ Failure Self-detection functions, alarm display and voice prompt
- ▶ Input and output are done by the optically coupled circuit to isolate the interference of the
- ▶ external circuitry.
- ▶ 4 -channel of standard D/A output，max current output is 3 A（standard：1A）,2 -channel of PWM output.
- ▶ The output value of pressure, speed, current can have real-time dynamic observation,
- ▶ and it is not necessary to install another ammeter
- ▶ 8-channel of double-linear scale，8-channel of single linear scale，4-channel of maglev ruler，
- ▶ 4-channel of pressure detection.
- ▶ Presetting of the voltage and runoff values, proportional valve available for the products in
- ▶ all brands and better linear proportion.
- ▶ The management of 255machine production is by a host networking computer ,It canaccurate
- ▶ Statistics each machine production state and produce data type ,so it is convenient to manage.

## 3. Installation and Debugging of Computer Control System

### 3．1Cautions upon Installing the Control System

The design of control system is simple and easy, only one 15-core shielding cable connecting the keyboard and host computer shell with flexible and handy installation and connection. The sketch map for installation is shown as follows:




Ebb eletricity section　　Strong eletricity section

## control box equipment outfit (for reference only)

（1）Upon installing the host control box, adopt the enclosed distribution cabinet at the first choice. It shall be fixed in the well-ventilized, greaseproof and dustproof conditions equipped with a fan and dustproof. The distribution box shall be stored under 50degree.

（2）Upon fixing the host computer and power pack, please keep the interconnecting parts such as all AC connectors and transformers as far away from each other as possible to prevent the electric wave interference from the electronic grid.

（3）All electric wires and shielding wires shall not be cut off, lengthened or curtailed arbitrarily. You should use the electric wires and shielding wires provided by this company to prevent from influencing the reliability and normal operation of the control system.

（4）The shell of flame couple shall adopt the shielding wire. When the outer shielding of all flame couples adopts the thermal couple reticles, the reticle and machines shall be well grounded and connected to the ground with the earthing resistance below 4ohm.

（5）Upon wiring, separate the high and low pressure line from the computer control line as much as possible, do not bind all electrical wires together to prevent the interference from affecting the reliable operation of control system.

（6）Upon fixing the keyboard and 15-core communication connections of the host computer, you shall press and tweak with force to prevent the poor connection from affecting the reliable operation of control system.

（7）Pay special attention to the oil valve outlet public port YCOM, it shall be connected well to prevent the computer from inputting while having the phenomenon of oil valve having no motion.

3．2Inspection of the Control System

（1）After installation completed, carry out an over all inspection if all connection lines are well fixed including the switching power supply, host computer shell, electrothermal output line and the thermal couple of keyboard.

（2）After the line inspection completed, carry out anelectric connection inspection. First take Out the11-digital output line plug of the DC power supply outlet port, namely the power pack PW450, And then power on to examine and measure if the voltage is the same as the nominal values and observe if the output indicator on the power pack is normal.

（3）Power off after the measurement completed, insert the DC power supply to input to the plug of host computer shell. After power-on again for inspection, LCD on the keyboard will display the normal state of the main page. Revolve on the emergency stop switch to check if the RUN indicator on the host computer shell turns on. When it turns on, it indicates that the system can work soundly.

3．3gging of the Control System

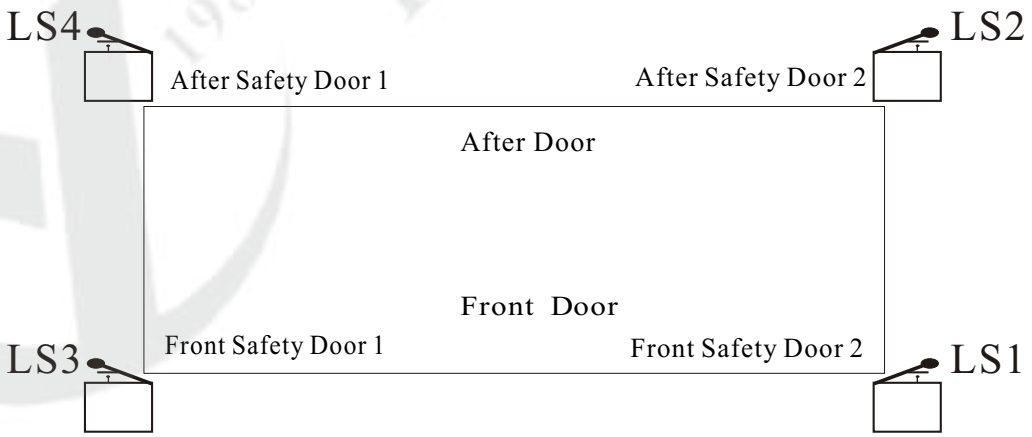
（1）After the system having shown normal operating state, press 1 STU button on the monitor page to adjust color and comparison.

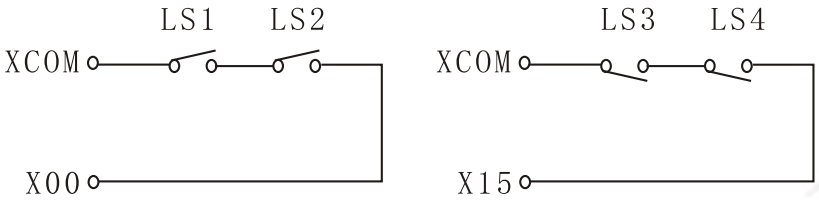
（2）To conduct the parameter setting and memory testing, press 資 料 DATUM button to select a group of module numbers and then set data in all screens. Press 輸 入 ENTER button to save data. Disconnect the power and connect it again after a few time, the system will automatically call the data of module numbers saved by you. In case of they are correct, it indicates that the memory is all right.

（3）Afterwards, set the data in all relevant data (please see Chapter III Explanation of the Parameter Setting for the detailed operations). Upon setting in the first time, set the pressure and speed as little as possible and then after all movements come normally, gradually increase the values to normal parameters to prevent from damaging the mechanical performances.

（4）After all parameter set, save them and carefully inspect if all input and output points are normal. Carry out an overall inspection of the alarm system, including the front and back safety doors. The wire of safety doors shall be connected as stated in the following figure.

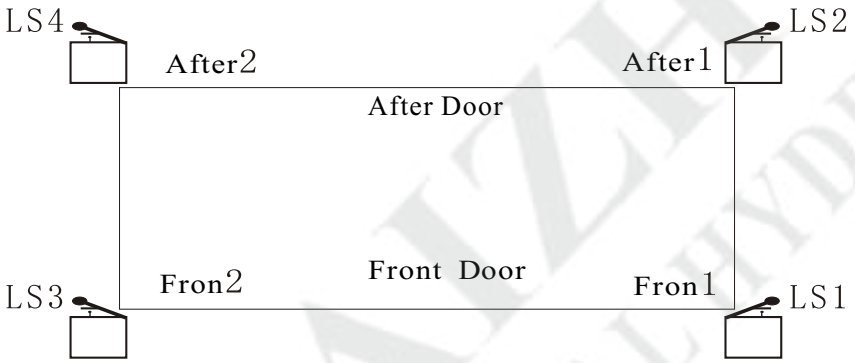
**Safety Door 1**

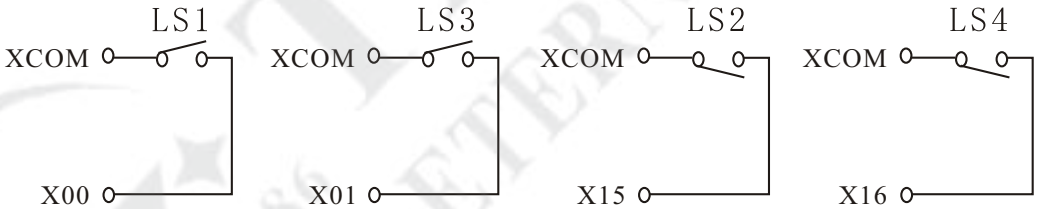





***Safety Door Wiring Diagram (for reference only)***

## Safety Door 2




**Safety Door Wiring Diagram (for reference only)**

### ★Safety Doors * Special Explanation:

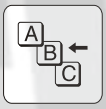
When X00=ON/X15=OFF orX00=OFF/X15=ON closing/opening the doors, or in case of other abnormal conditions, the system will issue an alarm 2 seconds later for Safety Door Failure and simultaneously terminate all operating output. In the semi-automatic mode, the condition for opening/ closing the safety doors is that the time from LS1, LS2, LS3, LS4 all turn [OFF] to all turn [ON] is more than 0.5 as valid in order to prevent the twitter of safety door switches from causing error operation.

# Chapter 2 Explanation of the Key Operations

## 1. Figure of Keyboard on the Operation Panel (See the figure below)

## 2. Explanation of the Functional Keys

| *Keys* | *Usage* |
|---|---|
| 開鎖模 M.PLT | Enter into page for mould opening & mould clamping setting |
| 射 出 INJECTION | Enter into page for ejection & pressure maintaining setting |
| 儲 料 FEEDING | Enter into page for feeding, shoot retreat & automatic material clearing setting |
| 座臺/調模 NOZZ/ADJ. | Enter into page for seat stand & mould adjustment setting |
| 托模/中子 EJE/CORE | Enter into page for ejector, self-plugging and huff setting. |
| 時 間 TIME | Enter into page to set timing and counting. |
| 温 度 TEMP. | Enter into page for temp pre-heating & temp monitor setting. |
| 資 料 DATUM | Enter into page for mould ,Datum modification setting |
| 快速設定 CELERITY SET | Enter into pages for celerity one、 two setting |
| 監 視 MONITOR | Return to monitor page at any time. |
| 幫 助 HELP | Enter into real time help page under current status. |

| *Keys* | *Usage* |
|---|---|
|  | Enter into page of USB setting |
|  | Enter into page to set alarm |
|  | Enter into page to injection, servo temp curve |
|  | Enter into pages to set production data & SPC Tracking |
|  | For entering into MES production management page |
|  | This function only limitto panel of Mk360.<br>Current page can be printed on pressing this key. |
|  | This function only limitto panel of Mk360.<br>When cursor moves to such as the time setup location,1 will be automatically increased with each pressing on this key. |
|  | This function only limitto panel of Mk360.<br>When cursor moves to such as the time setup location, 1 will be automatically reduced with each pressing on this key |
|  | This function only limitto panel of Mk360.<br>Press this key is equal to move cursor to [Enter] while in log in status and then press the enter key |
|  | This function only limitto panel of Mk360.<br>When cursor moves to such as mould name modification, press this key to switch Chinese/English input method |
|  | This function only limitto panel of Mk360.<br>Press this key is equal to move cursor to [Cancel] while in log in status and then press the cancel key . |

## 3. Explanation of the Parameter Setting


0-9 numeric keys are used for data input in the data settingpage. When electric lock is in "OFF" State, these ten numbers are locked to ensure the data will not be changed arbitrarily. In the meanwhile, there are 26English letters and special symbols respectively on 0-9 numeric keys used for the input ofChinese and English letters as well as the machine serial number. [Delete] key is used to delete the error words during entering the parameters and serial numbers. [Input] key is used to select the functions during function Selection and used to confirm during item confirmation.

## 4. Cursor Key

| *Keys* | *Usage* |
|---|---|
|  | Skip key, pressing it will skip the cursor to the upper line |
|  | Escape key, pressing it will move the cursor to the left |
|  | Escape key, pressing it will move the cursor to the right |
|  | Skip key, pressing it will skip the cursor to the lower line |

## 5. Operation Mode Selection Key

| Keys | Usage | Remarks |
|---|---|---|
|  | Pressing this key will enter the system into manual state. | There is an indicator on the left upper of all keys. Pressing any key will turn on this indicator, indicating the system Is in this state. Every time the computer is started, the default state of system is anual operation.In case of the temperature has not reached the set value, the system is impossible to perform semi-automatic 、senr-automatic and time automatic operations. The indicator will not turn on when the semi-automatic、senr-automatic and time automaticoperation key pressed till thetemperature reaches the set value. |
|  | Pressing this key will enter the system into semi-automatic operation | |
|  | Pressing this key will enter the system into senr-automatic operation | |
|  | Pressing this key will enter the system into time-automatic operation | |

## 6. Electro thermal ON/OFF key  and Motor ON/OFF key 

In the manual mode, press the key once and the indicator at the left upper will turn on,indicating the function state hasopened. Pressing the keyagain and this indicatorwill turn off,indicating the function state hasshut off. Repeatedly pressingthis key,the functions will turnon or offin turn. Upon the emergency switch stops, the motor will power off swiftly without affecting the electro thermal operation.

## 7. Manual Operation Keys

| *Keys* | *Usage* | *Operation Conditions* |
|---|---|---|
|  | Mold-opening operations | 1. Mold is not reached to the termination position. |
|  | Mold-closing operation | 1.safe door input is normal<br>2.ejector retreat is in position<br>3.mold closing not reached final position<br>4.manipulator signal（mold closed）is connected（manipulatr use） |
|  | Injection Operation | 1.if use time-inject，inject time not reached<br>2.if use position，not reached inject final position<br>3.all sections of temp in charging barrel must within set range（no temp alarms）and cool boot for screw timing is up |
|  | Suck back Operation | 1.if E-ruler not being used，suck back time not reached<br>2.if E-ruler being used，not reached suck back termination position<br>3.all sections of temp in charging barrel must within set range（no temp alarms）and cool boot for screw timing is up |
|  | Ejector advance operation | 1. mold open reached termination position<br>2. core retreat limit is connected or its time is up（core use optional）<br>3. manipulator signal （ejector）is connected （manipulator use optional）<br>4. if E-ruler being used，ejector advance position not reached termination position<br>5. if E-ruler not being used，1，stroke option is being used，not reached advance stop postion 2，time option is being used，timing for ejector advance not reached |
|  | Ejector return operation | 1. if E-ruler being used，ejector retreat position not reached termination position<br>2. if E-ruler not being used，1，stroke option is being used，not reached retreat stop postion 2，time option is being used，timing for ejector retreat not reached |
|  | Feeding Operation | 1 Feed not reached termination position<br>2 all sections of temp in charging barrel must within set range（no temp alarms）and cool boot for screw timing is up |
|  | Auto purging operation | 1 Auto purging being used<br>2 times of auto purging not completed<br>3 all sections of temp in charging barrel must within set range（no temp alarms）and cool boot for screw timing is up |

| Keys | Usage | Operation Conditions |
|---|---|---|
|  | multi-ejector operation | 1.operation condition is same as ejector advance,ejector retreat<br>2 . set times of ejector not finished |
|  | lubircating pump working | 1.Total time of lubricating not completed |
|  | male blowing operation | 1. male blowing optional<br>2. male blowing time not completed |
|  | female blowing opeation | 1. female blowing optional<br>2. female blowing time not completed |
|  | nozzle advance operation | 1 .nozzle advance limit not being used，no condition<br>2. nozzle advacne limit being used，a not reached nozzle advance stop position b.timing for nozzle advance slow not reached |
|  | nozzle retreat operation | 1.no conditions |
|  | mold adjustment option | 1.when manual mode is being used for mold adjustment，press Down the key and then if indicator ligh flash means manual adjustment is allowed<br>2.when auto mode is being used for mold adjustment，press down the key twice and then if indicator ligh flash means auto adjustment is allowed |
|  | mold adjustment backward operation | 1. enter into manual adjustment mode<br>2. mold adjustment backward not reached its termination position |
|  | mold adjustment forward operation | 1 enter into manual adjustment mode<br>2 mold adjustment forward not reached its termination position |

| Keys | Usage | Operation Conditions |
|---|---|---|
|  | core A advance operation | 1 .Core A being used<br>2. core A advance not reached termination position or time not completed<br>3. ejector retreat reached position or ejector retreat time is up |
|  | core A retreat operation | 1. core A being used<br>2. core A retreat not reached termination position or time not completed<br>3. ejector retreat reached position or ejector retreat time is up |
|  | core B advance operation | 1 .Core B being used<br>2. core B advance not reached termination position or time not completed<br>3. ejector retreat reached position or ejector retreat time is up |
|  | core B retreat operation | 1. core B being used<br>2. core B retreat not reached termination position or time not completed<br>3. ejector retreat reached position or ejector retreat time is up |
|  | core C advance operation | 1 .Core C being used<br>2. core C advance not reached termination position or time not completed<br>3. ejector retreat reached position or ejector retreat time is up |
|  | core C retreat operation | 1. core C being used<br>2. core C retreat not reached termination position or time not completed<br>3. ejector retreat reached position or ejector retreat time is up |
|  | core D advance operation | 1 .Core D being used<br>2. core D advance not reached termination position or time not completed<br>3. ejector retreat reached position or ejector retreat time is up |
|  | core D retreat operation | 1. core D being used<br>2. core D retreat not reached termination position or time not completed<br>3. ejector retreat reached position or ejector retreat time is up |
|  | line of Mk360 Keyboard<br>Nitrogen recharge operation | 1 stocker up limit not reached its termination position |

| Keys | Usage | Operation Conditions |
|---|---|---|
| 氮氣放壓 PULL N | line of MK360 Keyboard<br>nitrogen release operation | 1.No condition; |
| ●安全門開 DOOR OPEN | line of Mk360 Keyboard<br>safe door open operation | 1. Safe door open not reached its termination position or time not completed |
| ●安全門關 DOOR CLOSE | line of Mk360 Keyboard<br>safe door close operation | 1. Safe door close not reached its termination position |
| SW1 | line of Mk360 Keyboard<br>Standby operation keys | |
| SW2 | line of Mk360 Keyboard<br>Standby operation keys | |

## *8. Setting Scope of Numeric Items*

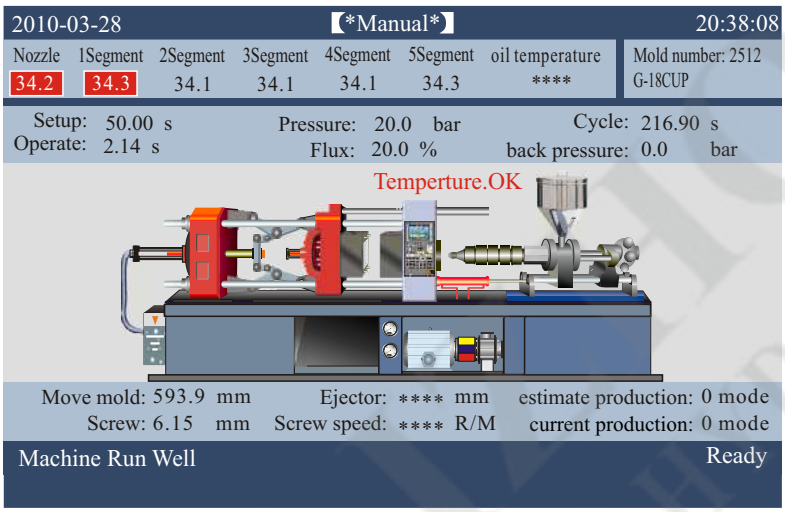
| *Number* | *Setting Items* | *Setting Scope* | *Unit* |
|---|---|---|---|
| 1 | Time Setting | Digital≤600.00 | Second |
| 2 | Pressure Setting | Digital≤160.0 | Bar |
| 3 | Speed Setting | Digital≤99.9 | % |
| 4 | Back Pressure | Digital≤160.0 | Bar |
| 5 | Temperature Setting | Digital≤999.9(Measure)<br>Digital≤600.0(set) | ℃ |
| 6 | Storage of Mold Data | Digital ≤999 | Number |
| 7 | Predicted Turnout | Digital≤99999999 | PC |

In case of the set values exceed the above-mentioned scopes, the system will not accept the numbers set and keep the original set values. For the habit of data input, the data input of this system is display from right to left.

# Chapter 3: Descriptions on setting parameters/functions

## 1. Main page of Starting up

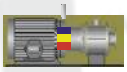
Connect with power, turn thered urgent stop switches, theoperation light of the computer-RUN-flickers, the following menu shown on the display now the control system is running and it is readyto operate the machine.




Press 

key at any time after re-turning on the computer, and then enter the menu of the monitor menu of the machine. This menu is for monitoring temperature and machine running condition.The names and numbers ofthe moulds will beset in mould information menu.The temperature scale and current oil temperature show the real value of each stage thus its information cannot be modified. Each function of the menus is described as follows:

***The descriptions on mode:***

| Mode | Meanings |
|---|---|
|  | Motor is running |
|  | Electric heating is operated |
|  | Lubricant pump is working with oil |

## 2.The descriptions on display:

| Display | Meanings and descriptions |
|---|---|
| Manual | The running mode of the machine; |
| Injector | This section is heating; |
| Mold number | The current mold number; |
| Movable mold | Shows the current position of the mold. The unit: mm; |
| Screw | Shows the current position of the screw. The unit: mm; |
| Thimble | Shows the current position of the thimble. The unit: mm; |
| Pressure | The set pressure value of the current movement; |
| Flux | The set flux value of the current movement; |
| Estimated output | Estimated output of current mould number; |
| Output | Record the numbers of mould opening for current mould number during the automatic operation of the system; |
| Set | The time value and counter data of the current movement; |
| Operation | When a time value is set for current movement, only the operation time gradual ly reached set value, can next movement be proceeded, if number of times is set correspondingly the number of times would be displayed and to reached its set . |
| Cycle | Cycle time of actual operation of system; |
| Low temperature | Actual temperature is not within setting range, showing current ly all sections of temperature are abnormal |
| Screw speed | The number of rotation of the screw in one minute (unit: RPM); |

## 3.Descriptions on alarm mode

| Alarm | Source | Solution |
|---|---|---|
| short circuit of input terminal | 1.There is no 24 v voltage output from power supply<br>2.Malfunction from main board<br>3.short circuit on peripheral circuit of input or output terminals | 1.repair power supply<br>2.repair main board<br>3.check peripheral circuit to find out short circuit source |
| Neutron A is not reach set point<br>Neutron B is not reach set point.<br>Neutron C is not reach set point.<br>Neutron D is not reach set point. | Neutron A,B,C,D was chosen by machine ,Limit connection of neutron A, B,C, D retreat must be done while at the time of eject-forward or multi-eject. | Check whether end switches of neutron A and B,C,D were connected correctly and can be press -fit normally. Please chose disable for neutron A and B,C,D while not using neutron functions |

| Alarm | Source | Solution |
|---|---|---|
| Rear safe door unclosed | Switches of X15 and X16 of rear safe door are in OFF status . | Please check whether switches of rear safe door correctly connect with ports X15 and X16 |
| Please open safe door | In semi-auto operation, single cycle ends,but safe door is not opened | Please open safe door to take out made product, close safe door and then continue to work |
| Failure of sensor inspection | In automatic operation, when inspecting sensor is still not ON after thimble retreats of sensor cycle mode and mid-time is over, Failure of sensor inspection will be alarmed. | Eliminate faults of ejecting forward or ejecting backward and judge if electric eye was estopped. Key inspection should be on conne ctions of sensor or sensor itself if light of X04 input port is on. |
| Mould opened is not reach set point | Clamping and open mould not completed within " the time limitation of the mould opening or closing" | Reoperate mould opened or check mould posi tion 1, if electronic ruler is ' able 'state,check position reading 2,if electronic ruler is ' disable state ,check X12 to confirm it is connected |
| Mould opening/closing beyond fixed time | Mould opening/closing is not done within fixed time | Check if there are abnormals in the process of mould opening/closing,if result is normal,adjust fixed time appro priately |
| Low- pressure protection time is up | Suppose low-pressure time is up, and yet not change to high-presssure,alarm will be on | Check if there are sundries in the mould, If result is no, adjust time of low- pressure protection appropriately |
| Fault of safe door | When only one of X00 and X01 is on, system alarms | Please check to see whether switches of Front /Rear safe door is connected correctly with input ports of X01 and X02 |
| Feeding is not done within fixed time | While feeding, it is not done within fixed time | Check if there are any abnormals during the process of feeding and check whether material inside charging barrel is none, if result is normal, adjust time of feeding appropriately |
| Failure of injection | Fail to press fit to stroke switch of injection inspection during the pro cess of injection or fail to reach inje ction inspection point while choose electronic ruler | Check process of injection and adjust deviation value of injection inspection |
| Motor is mulfunction | When there is signal inputs at motor protection point, system will be ala rmed | Check if hydraulic motor was working with overload that cause thermal realy to have protection action |
| Cycle time is up | Automatic production cycle time exceeds set value | Check if there are abnormals during the process of automatic production ,if result is normal,adjust cycle time appropriatedly |

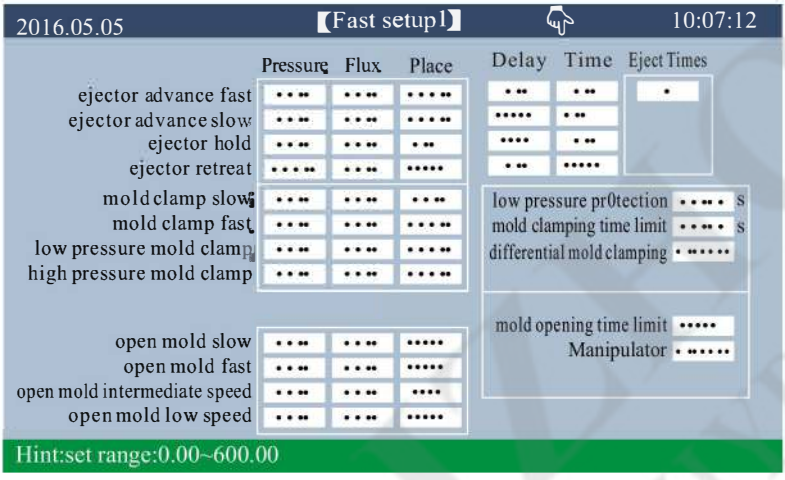
| Alarm | Source | Solution |
|---|---|---|
| Set output is reached | Machine stops when output of machine halt is started and the numbers of mould opening reached set value of output. | Solution: If you need the machine continues Running after the output reached, just set The [stop after alarm] in production menu as [out]; or reset the total mould opening of the current mould number . |

## 4.Descriptions on operation/prompt mode

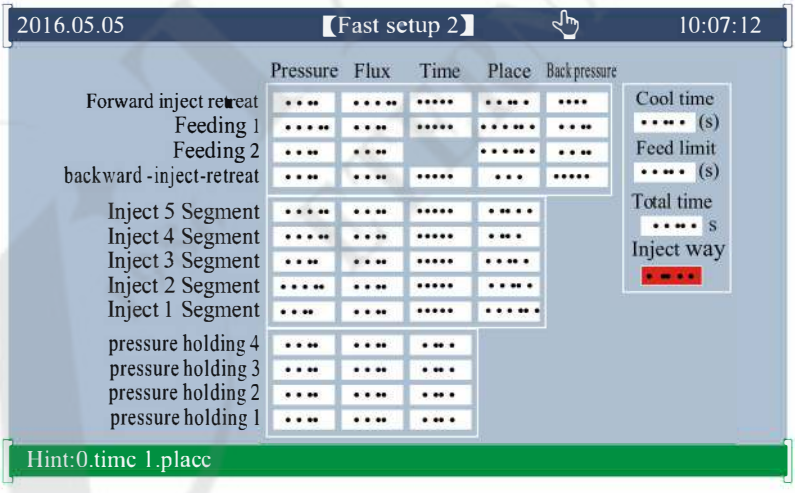
| Alarm | Source |
|---|---|
| High temperature in 1,2,3, 4,5, sections Injection nozzle. | Current section real temp to machine hopper is higher than max temp value.. (Higher limit value of temp = setting value of temp + setting value of upper limit). |
| Low temperature in 1,2,3,4, 5, sections Injection nozzle. | Current section real temp to machine hopper is lower than min temp value.. Lower limit value of temp = setting value of temp - setting value of down limit). |
| Temperature short circuit in 1,2,3, 4,5, sections Injection nozzle | Current section temp line was shorted or faulted to machine hopper. |
| Auto material clearing completed | After setting Number of movements completed and when using auto material clearing |
| Auto mold adjusting completed | Auto mold adjusting completed when using mold auto adjusting. |
| Auto mold adjusting not completed | Auto mold adjusting not completed when using mold auto adjusting. |
| Enter manual mode first | Operate manual keys when under auto state.. |
| Functions not selected | Certain function has not been selected when manual operate its keys. |
| Start motor please | When choose to use motor, pressed semi-auto/auto keys but motor yet not started. |
| Next cycle Prepared | In auto mode, the mid-time between completing a cycle and starting next cycle. |
| Sensor prepared | The mid-time has not been reached after withdrawing thimbles during auto sensor cycling. |
| Exit mould adjusting mode first | When operate non-[adjust forward, backward ] keys under mold adjusting state. |
| Enter mould adjusting mode first | When operate [adjust forward, backward ] keys under non-mold - adjusting state. |

## 5. Setting for celerity information

Press 快速設定 CELERITY SET key, enter the menu for fast setup 1 information, now as following:



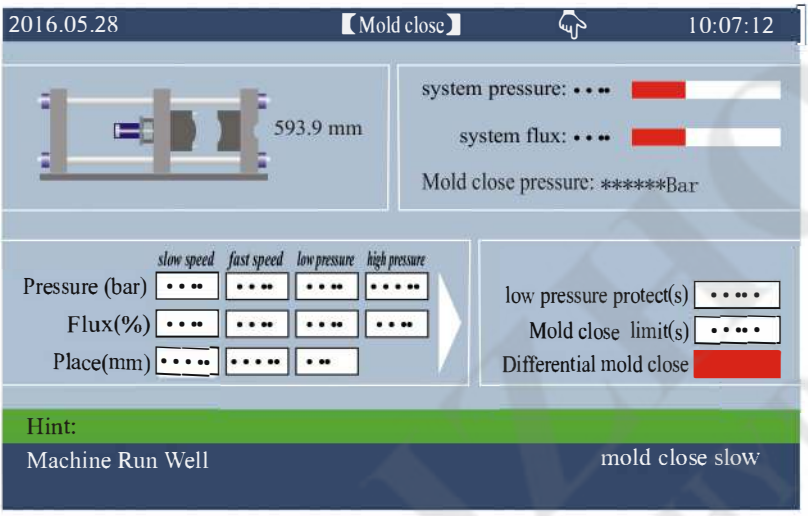

Press 快速設定 CELERITY SET key twice, enter the menu for fast setup 2 information, now as following:



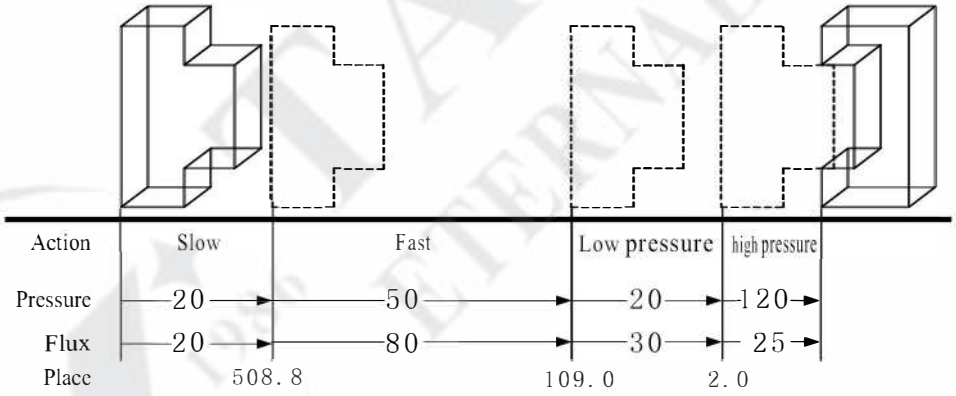

Fast setup 1 and 2 menus are parameters cluster menus common used by jet plastice machines. These two menus can provide important parameters needed daily adjustment by machines, including: mold close, mold open, injection, hold pressure, plasticization, ejector forward .

## 6. Set moId close information

Press 開鎖模 M.PLT key, enter the menu for setting mold close information, now the menu is as following:




### Descriptions on setting parameters/ process/function mold




(1). Process: while closing mould, enterslow clamping first, and thenenter fast clamping stroke Arrives at[508.8], and then enter low pressure clamping when stroke runs another [109.0],And then enter high pressure clamping when stroke runs another [2.0] till clamping completed.It alarms [low pressure mould protection time is over ] when the low pressure time is over but not enter the high pressure yet.

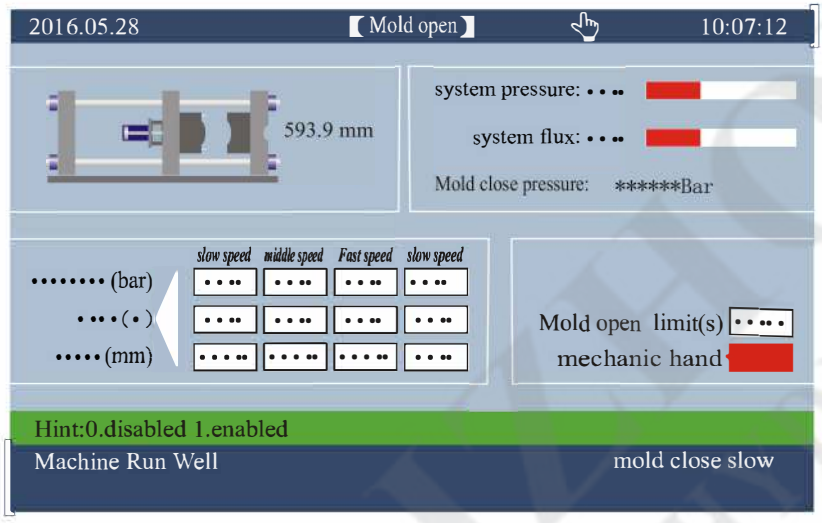
(2). Low pressure protection: Set a smaller low-pressure time for mould closing, it is better to be fitting, otherwise,the mould can not be protected.

(3). Limitation to mould closing: time limitation to mold closing,please set it longer, and it is Better to be fitting, otherwise, the system alarms [mold open/close not completed on time].

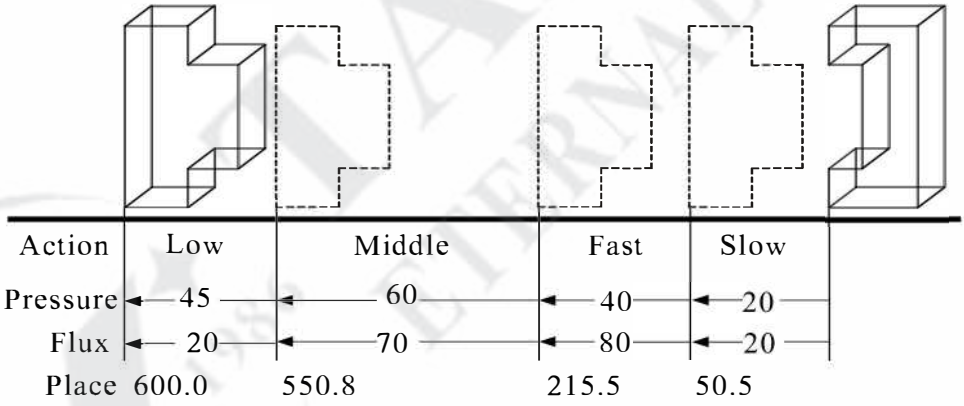
(4).Differential mould closing: press enter key to select[on]ofoff], output when select [on]for quick mould closing and Y12 iswith signal, when select[off] for quick mould closing,and Y12 is without signal.

## 7. Set mold open information

Press 開鎖模 M.PLT key twice, enter the setting mold open information, the menu is as following:




### Descriptions on setting parameters/ process/function mold



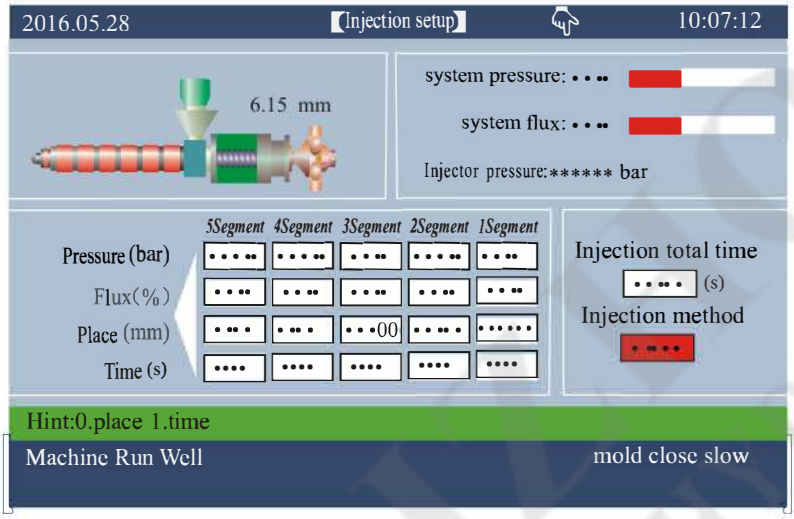

(1).Process: while opening mould, enter slow mould opening first, and then switches to fast mould Opening when stroke arrives at 50.5mm, and then switches to middle speed mould opening when arrives at 215.5mm, and then switches to low speed mould opening when arrives at 550.8mm,and then mould opening completed when arrives at 600mm

(2). Mould open limit: time limitation to mould opening and clamping, please set it longer, and it is better to be fitting, otherwise, the system alarms [mold opening/clamping not completed on time].

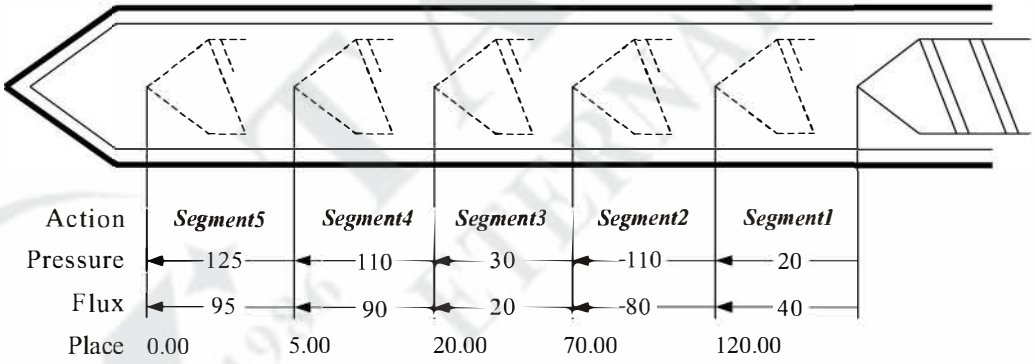
(3).The function of mechanical arm : if a mechanical arm is needed, please select [on] for it. After [on] selected,the machine will output manipulator signal while mold opening completed. Before mold close,the Next cycle starts only after receiving the manipulator signal, and stop the output of it at the same time.

## 8. Set the injector information

Press 射 出 INJECTION key, enter the menu for setting injector information, now the menu is as following:




### Descriptions on setting parameters/ process/function mold



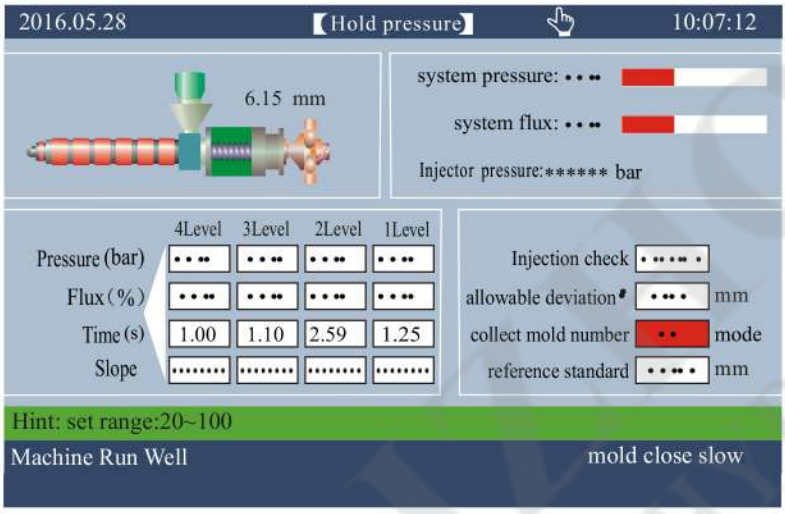

(1).Process: while injecting, 1stage injects plastic first, and then switches to stage2when arrives at 220.0mm, and then switches to stage 3 when arrives at 150.9mm, and then switches to Stage 4 when arrives at 98.5mm, and then switch to pressure retaining when arrives at 10.0mm

(2).Injection total time; monitor normal travel of injection.It starts to count when entering into injection and wait to be time up,if choose [injection total time],it will switch to pressure holding Regardless of distance reached or not,. Thus the injecting time should be set longer than real time.

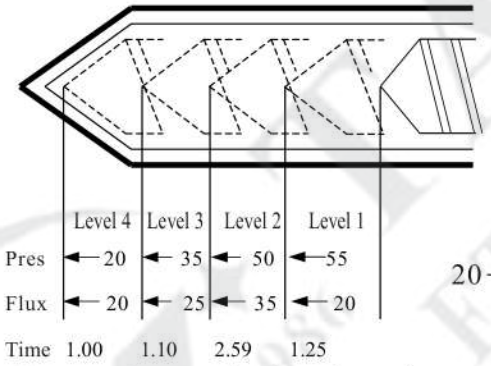
(3).Injectoion pattern: when screw electronic ruler is on ,[Position] or [Time] can be selected.a. If Select [position], injection will be switched to pressure maintaining from electronic Ruler position; b. If select [time],injection will be switched to pressure maintaining from Time.

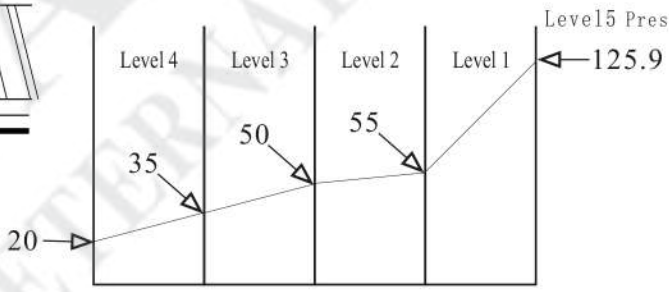
## 9. Set the hold pressure information

Press 射 出 INJECTION key twice, enter the hold pressure information, the menu is as following:




### Descriptions on setting parameters/ process/function mold




(Curve graph of slope function)

(1). Process: when entering into phase of pressure maintaining after injection, firstly from level 1 pressure of pressure maintaining and speed movement when [lever 1 time is up] enter into level 2 pressure maintaining And then enter into level 3 of pressure maintaining when [level 2 time is up],and enter into level 4 of pressure maintaining when [level 3 time is up] and then switch to storing delay when [level 4 time is up].

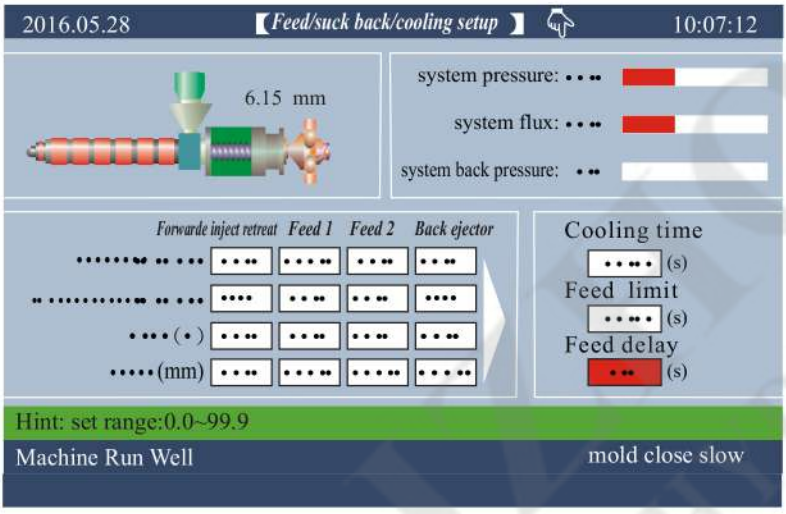
(2).Method of application: when level 1 pressure maintaining control is enough for condition of moulding control method is as below:please input time for level 1 pressure maintaining on level 1 time column , level 2 pressure maintaining time [0.00 set to be 0 while disable],level 3 pressure maintaining time [0.00 set to be 0 while disable],level 4 pressure maintaining time [0.00 set to be 0 while disable]

(3). Slope function: Controlling pressure maintaining means to hold pressure or slope change, referring to page to setting, the actual pressure output is as above chart.

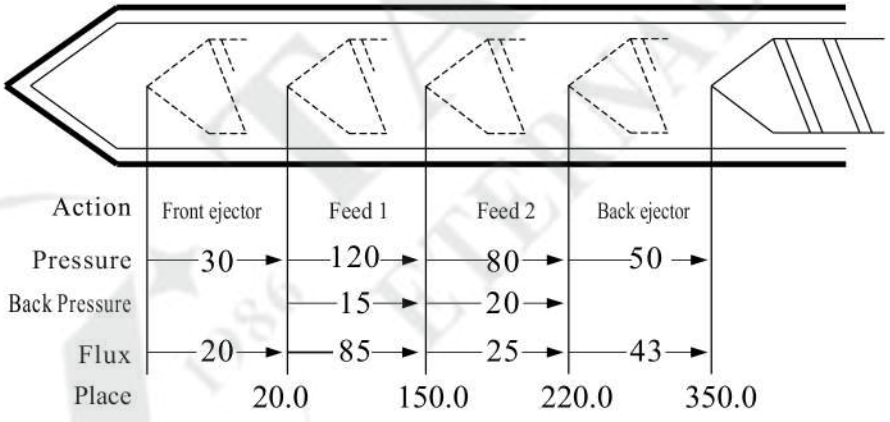
(4). Injection inspection:[Disable] and [Enable] cab be selected. Computer will automatically take average of injection terminal of first 1-100 output as inspection point, user can set alllowable error of numerical valueon page ofpressure maintained. If exceeds set mould numbers, and result is not reached or exceeded inspection range,[Injection fail] will be alarmed and meantime it will be regarded as defected product by output management .

## 10. The feed/suck back/cooling setup information

Press 储 料 FEEDING key , enter the feed/suck back/cooling setup information ,now the menu is as following:




### Descriptions on setting parameters/ process/function mold




(1). Process:After phase of pressure maintaining, it will switch to storing 1when injection retreats move To20.00mm, and then switch to storing 2 when move to150.0mm,and then switch to suck back backward when move to 220.00 and finish storing when move to 250.00mm.

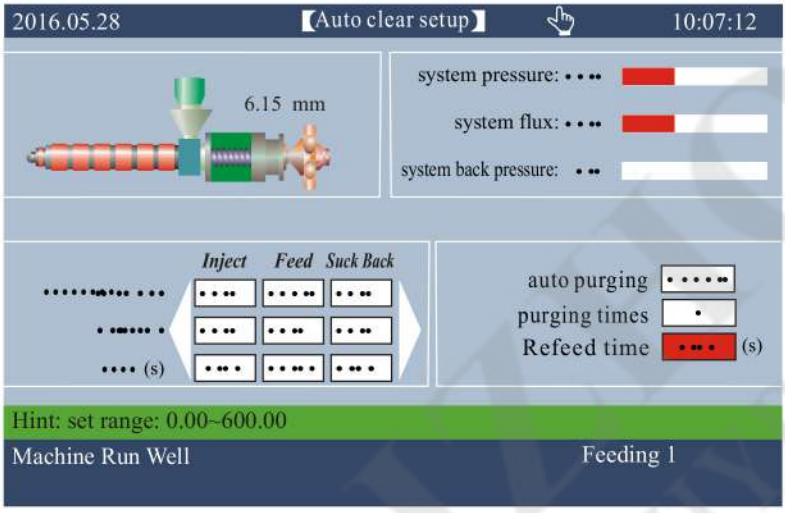
(2).Feed limit Time : Monitor time for no material. It is regarded as no material when time is up but Feeding is not completed, therefore, set time limit longer than actual feeding time, otherwise, [feeding not completed on time] will be alarmed.

(3).Cooling time: In auto mode, injection and pressure maintaining are completed, cooling time starts To count, time for feeding and injection retreats is also part of cooling time. If movement time ex ceeds cooling time, cooling time will end, and mould opened can be proceeded only if feeding,in jection retreats finished, conversely, cooling time ends to open mould immediately.

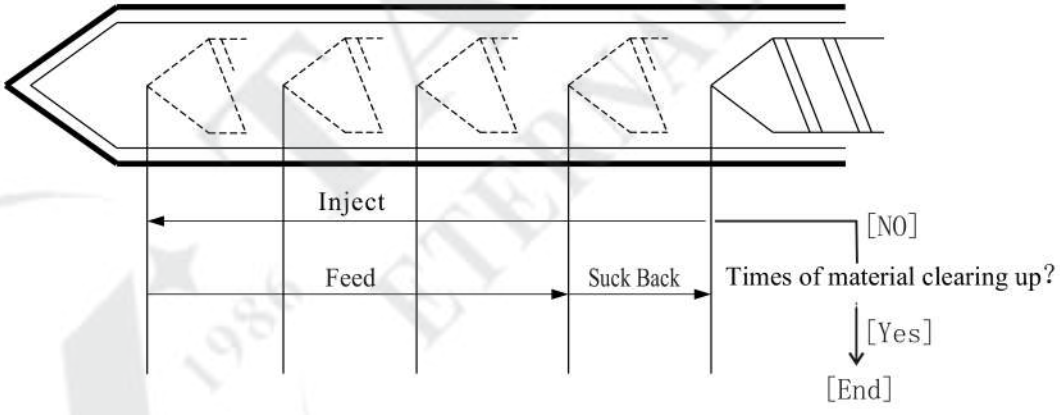
(4)Feeding time delay: Set delay time when under auto state and then to proceed for feeding.

## 11. Set the auto clear setup information

Press 储 料 FEEDING key twice, enter the auto clear setup information , now the menu is as following:




### Descriptions on setting parameters/ process/function mold




(1).Process: How to use the stuff auto-clearing up function. In manual mode, press key of material Auto-clearing up, the system starts the material auto-clearing up process, first is process of with drawing, and then cycles automatically according with process shown in the diagram above.

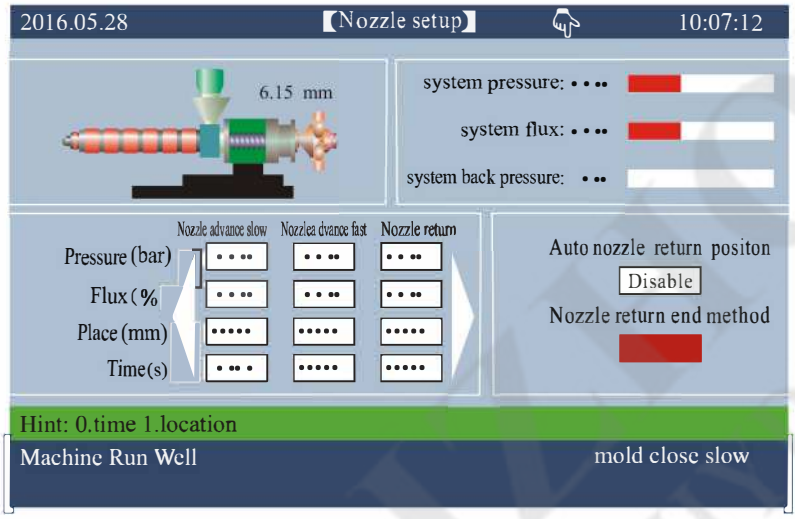
(2) Automatic material clearing:.Under manual mode, press [automatic material clearing] key, for automatic material clearing movement

(3)Times of material clearing: Repeat movement of feeding and injection..

(4) Material restoring time: Under auto mode, to proceed feeding movement when move forward completed and time is up then change to injection movement. .

## 12. Set the nozzle information

Press 座臺/調模 NOZZ/ADJ. key, enter the menu for setting nozzle information , now the menu is as following:




### Descriptions on setting parameters/ process/ function mold

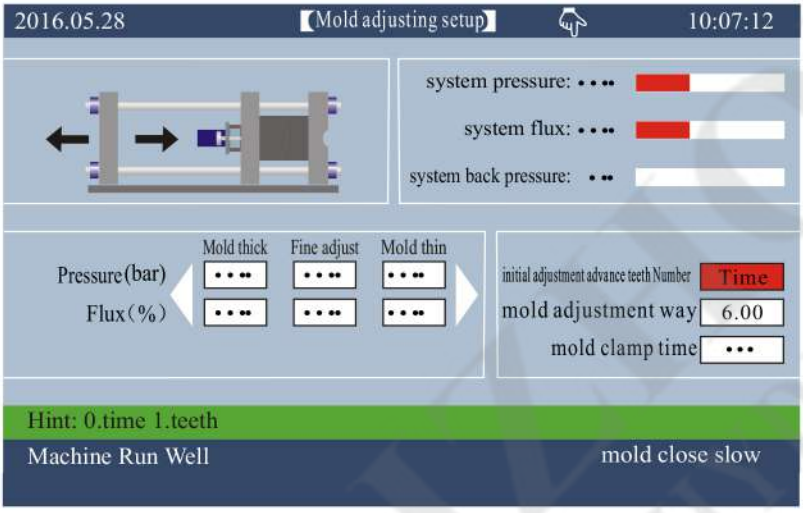
(1)Move forward slow motion: ①When electronic ruler is [disable], move forward encounters switch of move forward[X06] and then change to move forward slow and mould combination and time will counts to end of move forward ② when electronic ruler is [Enable],move forward Fast or slow was controlled by position of electronic ruler.(Function: To prevent crashing and protect mould)

(2)Position of auto base retreats:[Disable]or [Feeding completed] or[ cooling completed] can be selected, when [Feeding completed] is selected and under auto mode, move backward will be proceeded after feeding and sucking back finished, and when [cooling completed] is selected and under auto mode, move backward will be proceeded after cooling is finished.

(3) Move backward termination methods: ① When electronic ruler is [Disable], [travel] or [time can be selected, when [travel] was selected,] the position of automatic base was controlled by base stopped backward limit switch [X07],and when [time] was selected, the retreat of automatic Base was controlled by time.② when electronic ruler is [Enable], [position] or [time] can be selected, while [position] was selected, the retreat of automatic base was controlled by position Of electronic ruler; while [time] is selected, the retreat of automatic base was controlled by time. (Notice: Under manual mode, press [nozzle Ret] key and nozzle ret movement will not be affected.)

## 13. Set the mold adjusting information

Press 座臺/調模 NOZZ/ADJ. key twice, enter the menu for setting mold adjusting, now the menu is as following:




### Descriptions on setting parameters/ process/function mold

(1).adjust way: [Manual] or[Auto] can be selected,the pressure for mouldadjusting is about 20 - 50 bar, the speed is 30-60%.

(2).fine adjust teeth number: [Time]or [gear number]can be selected. Select [time] if the machine is not mounted with sensor; the initial value is controlled by [time]; select [gear number] if there is a sensor, the initial value is controlled by [gear number].

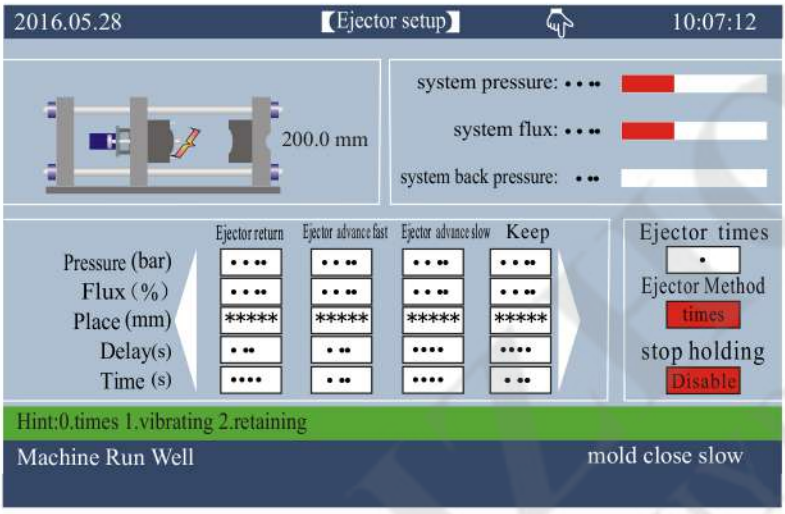
(3).The time of mold closing: In auto mould adjusting, time limitation for mould closing.

(4).How to use auto mold adjusting: Select[auto]for mold adjusting, press the key[mold adjusting] and [auto mould adjusting], and than enter the mode of auto mould adjusting as soon As the exit shut. The movement pressure and flux of adjusting forward and backward in the process of auto mould adjusting is controlled by a set value in the fine adjusting box. The sound of can be heard and [mould adjusting completed] shown after the mould adjusting completed.

(5).Initial adjustment number of teeth： the no. of teeth which is nothing change in number of teeth after 1st mold thin of auto mold adjustment and then open mold and readjust.

## 14. Set the ejector forward information

Press 托模/中子 EJE/CORE key, enter the menu for setting ejector forward, now the menu is as following:




### Descriptions on setting parameters/ process/function mold

(1) Times fixed : [Ejecting forward] → [Ejecting forward stopped] -[Maintain] -[Ejecting backward] [Ejecting backward stopped] as one cycle, move in according to times.

(2) Vibrating:[Ejecting forward stop] -[Ejecting forward stop]-[0.1Ejecting backward]-[time is up] as one cycle, set movement according with ejecting times, and ejecting backward movement will stop when times is finished.

(3) Remain:[Ejecting forward]-[Ejecting forward stop] movements stop ,ejecting backward will only Be conducted only before mould closing of next cycle.(Notice:[Remain] movement will not be limited by times, movement will be only conducted once when [times of ejecting] is larger than

(4). Backward delaying: after ejecting forward completed, the ejecting backward movement occurs while the set time delayed.

(5). Forward delaying: after mould opening completed, the ejecting forward movement occurs while the set time delayed.

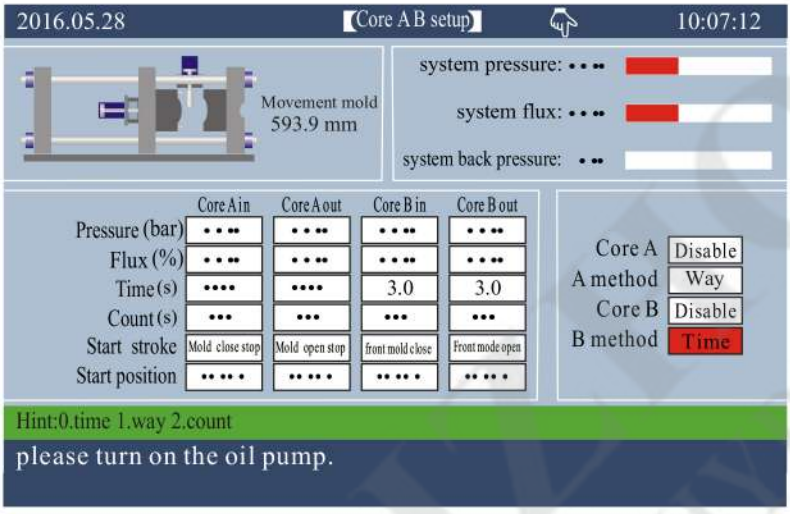
(6) Maintaining function: If maintaining time set to be 0,there is not maintaining function.The Retaining function is for retaining pressure,speed and starting retaining time for the output after ejecting forward completed. The retaining movement is completed as soon as the time is over.

(7). Retain maintaining function: [Enable] and [Disable] are available. Select the ejecting mode as retain while under semi-auto state. When retain maintaining selected disable, the process:ejecting forward stop--maintaining(time is up or opening and closing safe door)--cycle over,conversely, ejecting forward stop--cycle over.

(8) [Notice]:a.While ejecting is under manual mode, it will not be limited by times.(But while multi-ejecting is under manual mode, it will be limited by times)b. Ejecting function will be disable when [ejecting times] was set to be 0.

## 15. Set core A B information

Press 托模/中子 EJE/CORE key twice, enter the menu for setting coreA B information, now the menu is as following:




### Descriptions on setting parameters/ process/function mold

(1) Core A function: [Neutron],[Twist],[Disable] can be selected, while selecting neutron, inlet valve of core A will output meantime when injecting, while selecting twist, inlet valve of core A will not output meantime when injecting.

(2)Core B function:[Neutron],[Twist],[Disable] can be selected, while selecting neutron, inlet valve of core B will output meantime when injecting, while selecting twist, inlet valve of core B will not output meantime when injecting.

(3)Mode A.[Time], [stroke] and [count] can be selected. If [time] selected, set the time till the movement of loose core A terminated; if [stroke] selected, the movement of loose core will not terminate until the stop signal [X25, X26] of input point shows ON; if [count] selected, pipe Thread control can be taken, and themovement termination is decided by the number of pipe tread pulse inputted through [X25 ].

(4). Mode B: [Time], [stroke] and [count] can be selected. If [time] selected, set the time till the terminate until the stopsignal [X30, X31] ofinput point shows ON;if [count] selected, pipet movement of loose core B terminated; if [stroke] selected, the movement of loose core will not Hread control can be taken, and the movement termination is decided by the number of pipe tread pulsein putted through [X30]

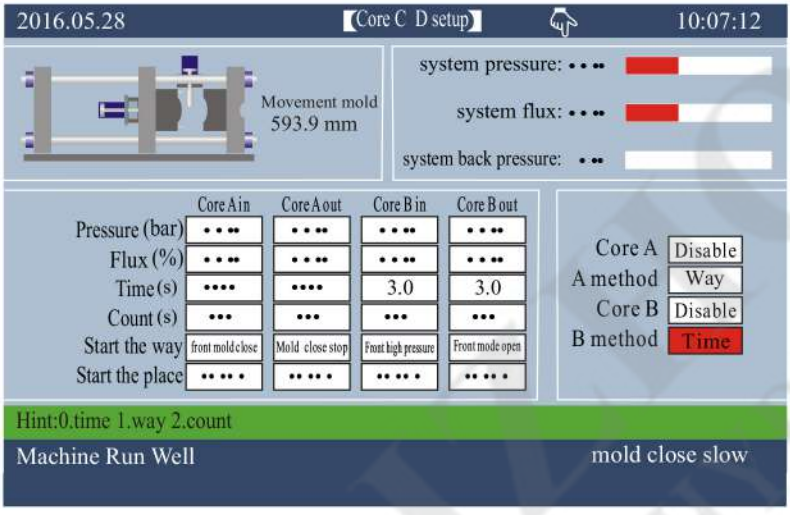
(5). Time: When neutron A or B select time, foward/backward of neutron was controlled by time. Gear number: When neutron A or B select gear number, forward/backward of neutron was continue rolled by gear number..

(6). Start stroke: the neutron start the position ofmovement (neutron in: [beforelock the mode], [before the low pressure], [before the high pressure] and [the lock mode stops]; neutron out: [Before the mode opening] [before the middle speed], [before the low speed] and [the mode Opening stops]), that is, where the template is moving, setup the action of neutron Aand B.

(7).Start position: The position for starting the movement of core knock in or knock outwhere the mould stops-- is a set value for the movement of core loose A and B.

## 16. Set core C D information

Press 托模/中子 EJE/CORE key three times, enter the menu for setting coreC D, now the menu is as following:




### Descriptions on setting parameters/ process/function mold

(1) Core C function: [Neutron],[Twist],[Disable] can be selected, while selecting neutron,inlet valve of core A will output meantime when injecting, while selecting twist, inlet valve of core C will not output meantime when injecting.

(2)Core D function:[Neutron],[Twist],[Disable] can be selected, while selecting neutron, inlet Valve of core B will output meantime when injecting, while selecting twist, inlet valve of core D will not output meantime when injecting.

(3)Mode C. [Time], [stroke] and [count] can be selected. If [time] selected, set the time till the movement of loose core A terminated; if [stroke] selected, the movement of loose core will not terminate until the stop signal [X25, X26] of input point shows ON; if [count] selected, pipe Thread control can be taken, and themovement termination is decided by the number of pipe tread pulse inputted through [X25 ].

(4). Mode D: [Time], [stroke] and [count] can beselected. If [time] selected, set the time till the terminate until the stopsignal [X30, X31] ofinput point shows ON;if [count] selected, pipet movement of loose core B terminated; if [stroke] selected, the movement of loose core will not Hread control can be taken, and the movement termination is decided by the number of pipe tread pulsein putted through [X30]

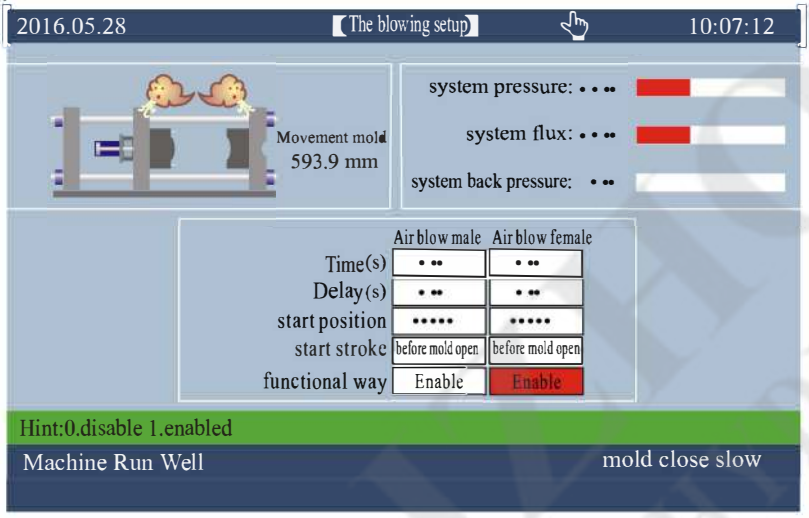
(5). Time: When neutron C or Dselect time, foward/backward of neutron wascontrolled by time. Gear number:When neutron C or Dselect gear number,forward/backward of neutron was continue rolled by gear number..

(6). Start stroke: the neutron start the position ofmovement (neutron in: [beforelock the mode], [before the low pressure], [before the high pressure] and [the lock mode stops]; neutron out: [Before the mode opening] [before the middle speed], [before the low speed] and [the mode Opening stops]), that is, where the template is moving, setup the action of neutron Aand B.

(7).Start position: The position for starting the movement of core knock in or knock outwhere the mould stops-- is a set value for the movement of core loose C and D.

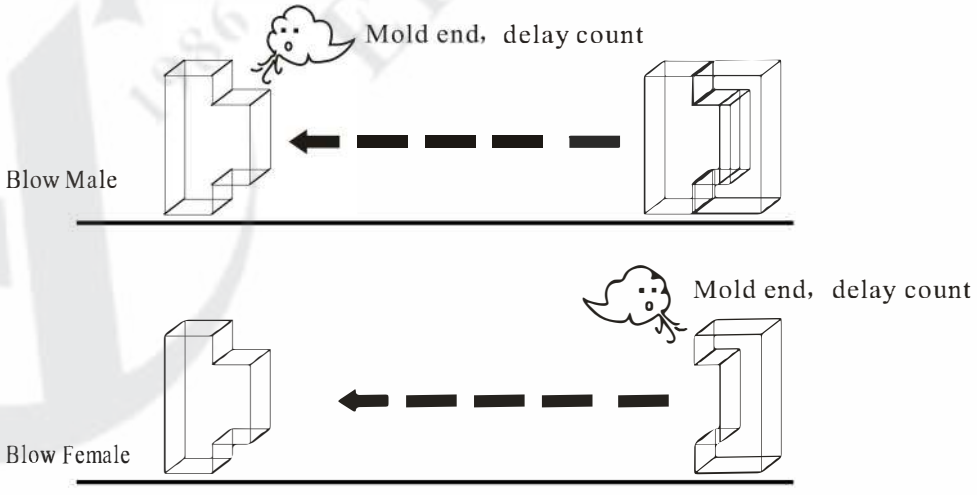
## 17. Set blowing information

Press 托模/中子 EJE/CORE key fouth, enter themenu for setting airblow information, now themenu is as following:



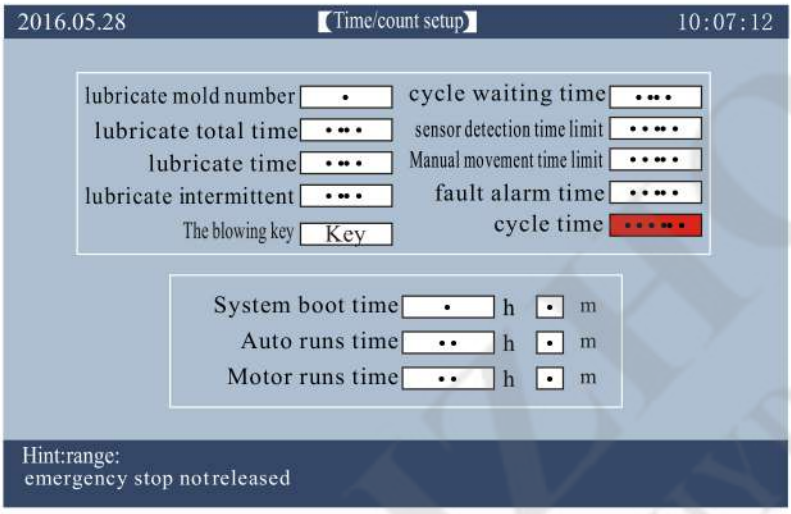

### Descriptions on setting parameters/ process/function mold

(1) .Why blowing air: This function can be used in the stamping mold that need air blow.
(2).Time delay: Delay first when arrives automatically at the position of airblow, and than blow air when delay time starts.
(3).Start the way: you can select[before the mold opening] or[after the mold opening] to set the value of blowing.
(4).Starting position: [Pre-mold opening] can be selected. [Pre-mold opening] is taken as a set value for the movement of air blow.
(5).Function mode: [On] or [Off] can be selected, no movement of air blow if [Off] is selected.



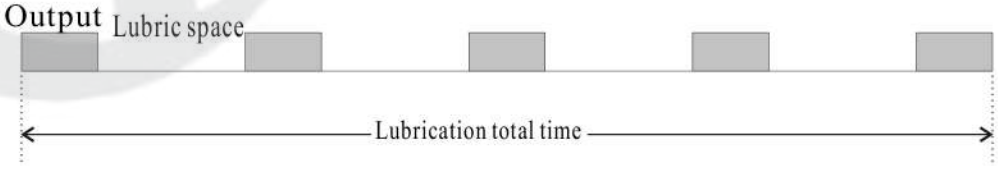
## 18. Set time/count information

Press 時 間 TIME key , enter the menu for setting time/count information, now the menu is as following:



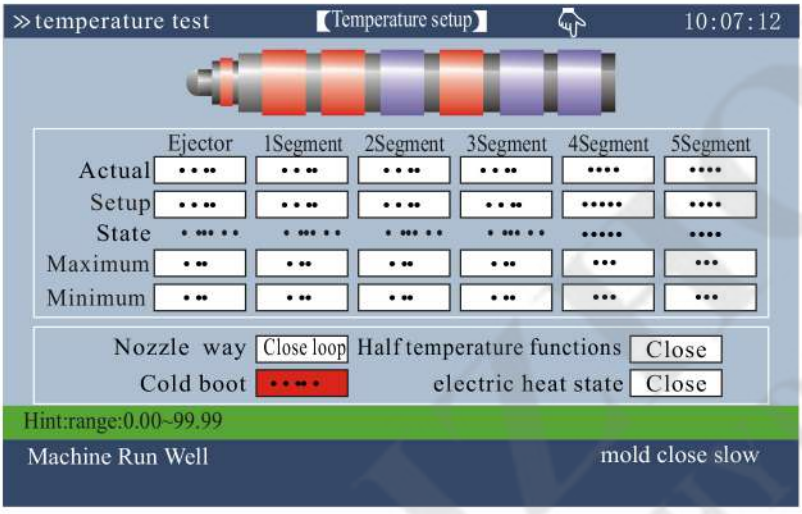

### Descriptions on setting parameters/ process/function mold

(1). Lubricate mold number:Count mold opening times.The oil pumpstarts when mold opening times reach the setvalue.
(2). Lubrication Total time : the total time spent in this lubrication.
(3). Lubrication time: the output of the repeated operation with the total time for lubricatin.
(4). lubricate intermittent:The interval of the repeated operation with the total time for lubricatin.
(5). Cycle Wait time: During auto process, it is the time between completed thimble movement and starting a movement of moulds clamping of next cycle.
(6).Cycle time: The time limitation to operation cycle in automatic process. The system alarms [cycle time is over] when the real operating time islonger than cycle time limitation.
(7).Movement time limitation: the max time permitted when output movement.
(8).Error alarm bell: The max time when error output occurs. To avoid long time alarming, the bell stops alarm when time is over.
(9) Alarm interval: The time between alarm output and stop in alarm time.
(10).Lubrication process: As it shows in the follow chart ,During the output time of lubrication, if it fails to detect any lubrication pressure signal, it would trigger an alarm, telling that the lubrication is failing. If "opping working" after the failing of lubrication ischosen, then it would stop lubricating and would change to work in manual mode and stop theengine after the cycle of the alarming.



## 19. Set temperature information

Press 温 度 TEMP. key, enter the menu for setting temperature information, now the menu is as following:




### Descriptions on setting parameters/ process/function mold

The set temperature value is 0.1℃( Celsius). The temperature of the hopper of injection molding machine is close-loop controlled after it is fed back to controlling system by K style thermal electriccouple.

The system provides total 6 stages of temperature control and 1 stage oil temperature testing. [Open-loop] /[close-loop]can be selected to control temperature for injection nozzle. The system monitors The temperature in every area to find out if the temperature ove passes the set top and bottom limitation. It cannot inject or melt plastic if the tempeature is lower than the bottom limitation and than the cold preventing screw starts. It alarms when the temperature is higher than the top limitation. The temperature of each stage is shown on the main menu.

Half of temperature functions: select use, at this time, the temperature setup value is half of the current showed setup value.

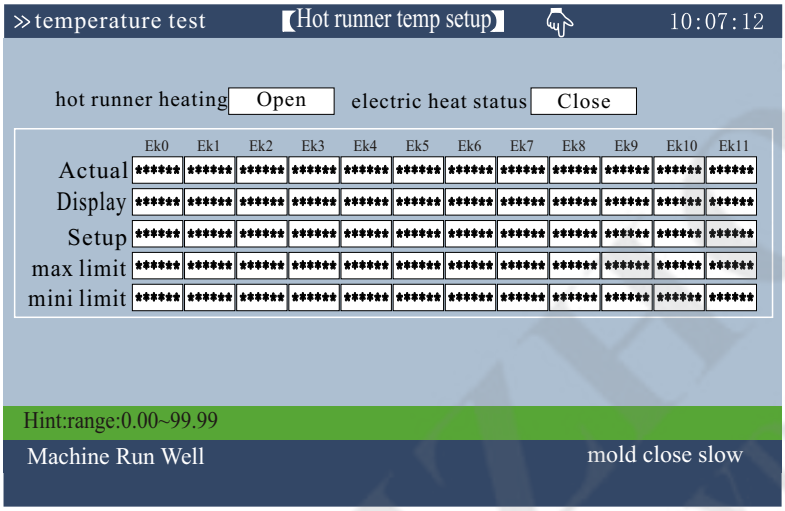
Cold boot: After the boot, the actual temperature in each area will be within the setup scope.

References on some plastic densities and pipe heating temperatures

| Material abbreviation | Density | Heating temperature | Material abbreviation | Density | Heating temperature |
|---|---|---|---|---|---|
| A. B. S | 1. 01-1. 05 | 190-270 | PMMA | 1. 17-1. 20 | 180-260 |
| PS | 1. 05 | 190-240 | PPO | 1. 08-1. 09 | 260-330 |
| A. S | 1. 06-1. 07 | 180-250 | PA/NYLON | 1. 08-1. 17 | 230-290 |
| H. P. S | 1. 05-1. 08 | 220-280 | NYLON66 | 1. 03-1. 15 | 280-330 |
| L. P. S | 0. 91-0. 93 | 150-260 | PVC/S | 1. 20-1. 40 | 150-180 |
| H. P. E | 0. 94-0. 96 | 190-260 | PVC/H | 1. 30-1. 58 | 160-200 |
| P. P | 0. 98-0. 90 | 200-290 | P. E. T | 1. 38-1. 41 | 280-310 |
| P. C | 1. 2-1. 22 | 280-320 | P. T | 1. 41-1. 52 | 220-280 |
| P. O. M | 1. 41-1. 42 | 190-230 | | | |

## 20. Hot runner temp setup information

Press 温 度 TEMP. key twice, enter enter into the page of hot runner temp setup,and page will be as follow:

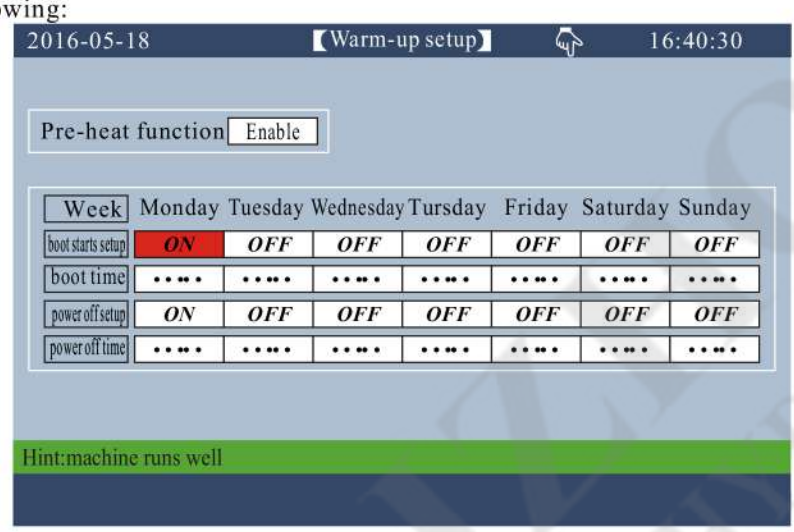



### Descriptions on setting parameters/ process/function mold

Attention：the mold temp control function provides 12-section temp heating

## 21. Set warm-up information


Press key three times, enter the menu for setting warm-up information, now the menu is as following:



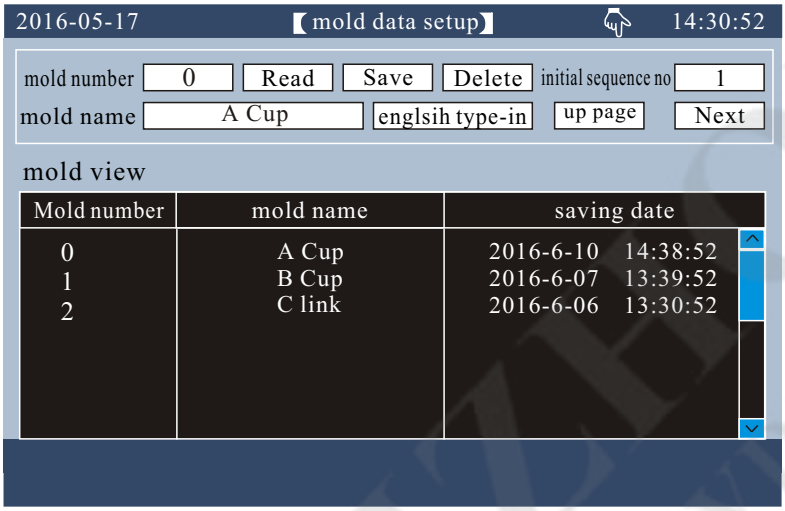

### Description on setting parameters

Warm-up function: Can set a time for seven days a week in advance. The system controls the heating system to heat through the set value of the intraday [on]/[off] time. The system heats automatically the hopper to working temperature before operator comes to the office. The operator's waiting time for heating hopper is decreased.

*[note]: The input value of time adopts the input value of 24 hours system. 00:00 is 12: 00 Midnight.

## 22. Set mold data information

Press 資 料 DATUM key, enter the menu for setting mold data information, now the menu is as following:




### Descriptions on setting parameters/ process/function mold

(1).Mold number: this system can store 10 mould numbers. The system can provide automatically the information of the modified mold number after they have been modified.

(2).How to store mold: Move cursor to the box of mold numbers, key in the mold number; and than move the cursor to the box ofthe name of the mold, key inthe name of the mold; this system provides the input mold with English/Chinese phonetic alphabet; move the cursor tobox of storage after the name has been keyed in and than press [enter] to store the name.

(3).How to get mold: Move cursor tothe box of moldnumbers, key in the mold numberthat will be read out, move thecursor to the boxof reading out, press[enter]to read out. Thefunctions of getting mold is limited within manual mold to prevent accident occurs; in the semi-auto/auto mold, the accident is caused by the influence of bad products, which comes from the sudden varying of the set parameters in the menu.

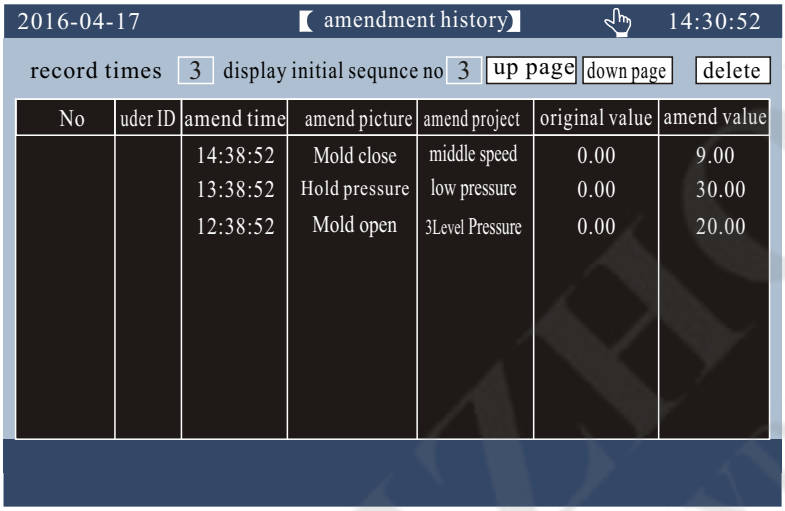
(4).How to delete: Move cursor to box of mold number, key in the mold number that will be deleted, and than movethe cursor thebox of deleting, pressthe [enter] todelete. The current mold number can notbe deleted.

(5).View method: a：move cursor to theup and downbutton to view，b，[initial sequence no display]：to locate by initial sequence no.and then use the up and down key to view.

(6)Mold no.1 as standard mold parameter and this is system self-own so no need to be stored，and when need to be stored change mold number

## 23. Amendment history information

Press 資 料 DATUM key twice, enter the menu for amend history information, now the menu is as following:



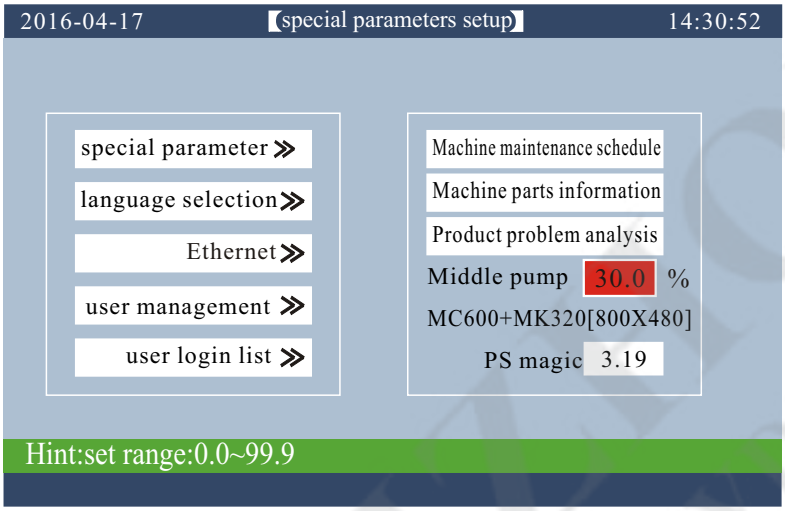

### Descriptions on setting parameters/ process/function mold

(1).Page number: This screen can keep at most 999 items of records,

(2).View method: a: move cursor to theup and down button to view, b, [initial sequence no display] : to locate by initial sequence no.and then use the up and down key to view.

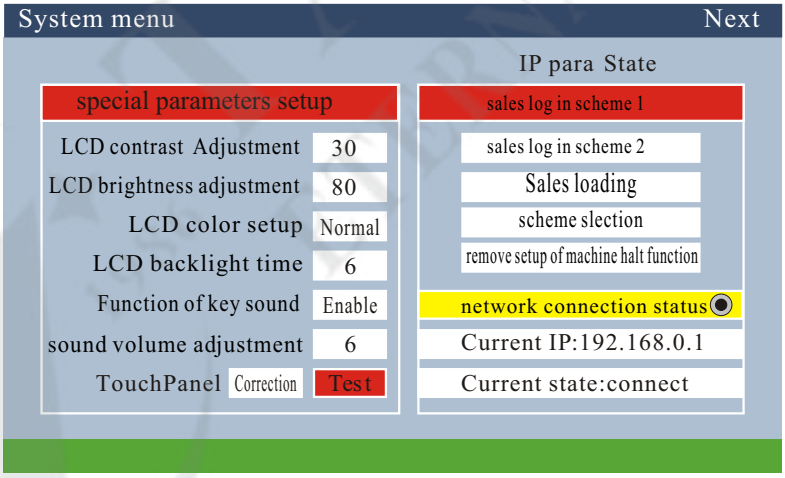
## 24. Set special parameters information

Press 1 STU key , enter the menu for setting special parameters, now the menu is as following:




(1) Mid / big pump start: when the setup executive action flow value is bigger than the setup mid/ big pump flow output value, the mid/big pump output point will have output.

(2) Move the cursor to select the [special parameters>>] button, press the input button, a new page will pop up. At this time, the screen displays as follows:




(2a) Adjustment of LCD contrast: move the cursor to this place, input the data [adjustment range "1-100%"]. Under appropriate brightness, the higher the contrast is, the richer the color will be (Note: when LCD is the STN screen, it can be valid).

(2b) LCD brightness adjustment: move the cursor to this place, input the data [adjustment range "1-100%"], the screen will display the darkness & brightness degree according to the data entered.

(2c) LCD color setup: the system can provide [normal/anti-color] two options, move your cursor to this place, press [input] button to select LCD color display.

(2d) LCD backlight time: the system has the function of screen protection, the background light time is adjustable, the setup scope is 1~6 minutes. If the keyboard is not pressed in the setup time, the background light will be automatically turned OFF. (Note: if any button is pressed, background light will be on)

(2e) Function of key sound: Select [use], you will hear a "tick" sound when the key is pressed, if do not select, no sound.

(2f) Key sound scope: move your cursor to this place, input the data [scope "0-10"] to adjust voice volume.

(2g) Correction of Touchscreen: click on the [Correction] button to enter the correction page (Note: only if keyboard has the touch function, the correction can be valid)

(2h) Network connection status: the network connection status is indicated with colors.

(2i) Current IP: show the IP address of the machine.

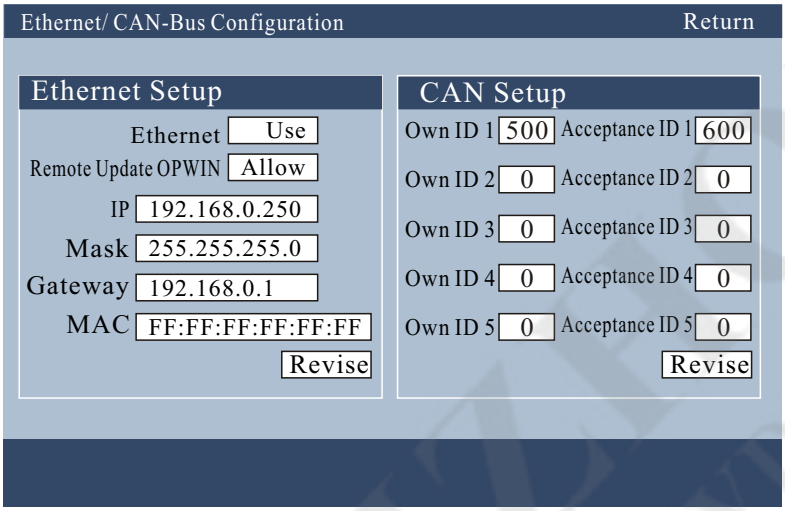
(2j) Current connection state: show the network connection status: disconnect / connect.

(3) Move the cursor to select [language conversion>>] button, press the input button, a new page will pop up. The screen displays as follows:


(4a) Language options: the system provides [Chinese / English / Russian /Japanese] the four language options, move the cursor to this place, press the [input] button, you can carry out the conversion. (Note: the language categories of the system can be set up by users)

## 25. Set Ethernet information

Move the cursor to select [Ethernet] button, press the enter button to eject a new page, which will display the following information:




## Parameter Setup Instructions

(1) Ethernet: With the remote communication function, the user can prepare programs and change different versions of software remotely. The network connection software provided by us allows the network connection and management of 255 injection molding for production machines by one PC host and the production of each machine can be calculated accurately and production data can be printed and managed conveniently.

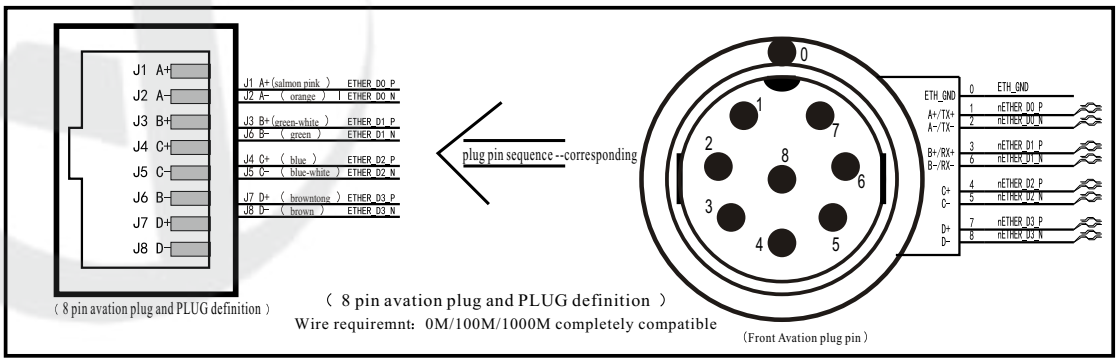
(2) Remote OPWIN Update: The update item can be respectively set as [Allow/Forbid], choose [Allow] to prepare programs remotely and change different versions of software and conduct system program updates.

(3)CAN_bus: Such setup can realize the function of one keyboard connecting with multiple hosts.

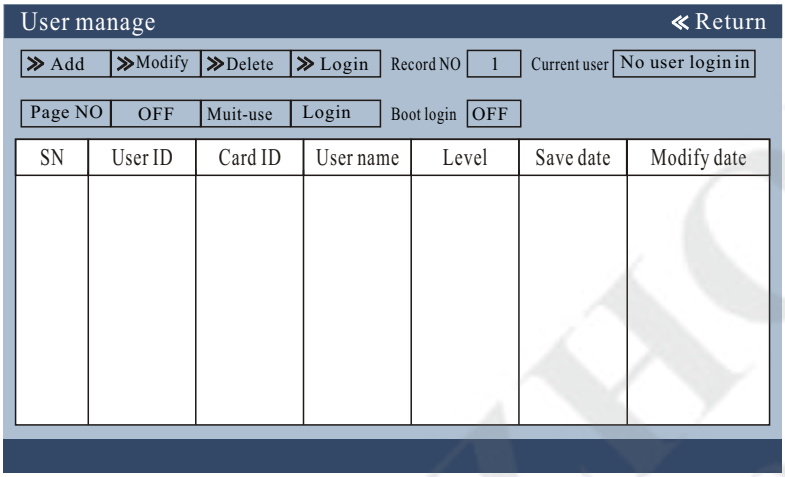
Note:

a. The above revised parameters will not come into effect unless the cursor moves to [Revise] for confirmation and a restart is made.

Method for ethernet PLUG switch to aviation plug



（4）User management data setup：move cursor to press【user management】button and then the page will be as below:

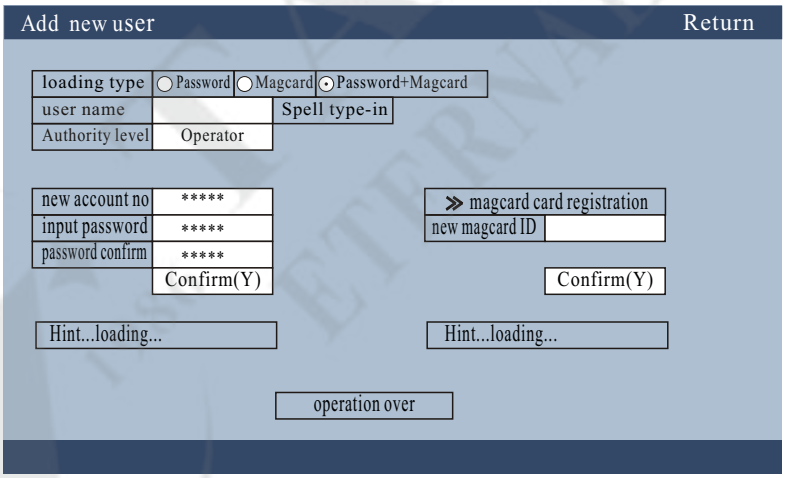



（4a）Multi-user function：There are【close】【open】available，use password to log in when select to close，and use magcard when select to open.

（4b）Listing：Show all users information：User ID

（4c）Add modification delete three functions available

（4d）Click add and then the following chart will be popup




a、Loading type：There are【password】【magcard】【password or cagcard】available，use password to log in【password】mode；and use cagcard to log in in【cagcard】mode，and use password or cagcard in【password or cagcard】mode.

b、User name：shows user information

c、Authority level：There are【operator】【management】【technician】【dept manager】【technical engineer】or【system management】options available which isto meet different category peoples demand ofmanagement.

d、 new account no: means the account no for log in

e、 input password：means the password no for log in

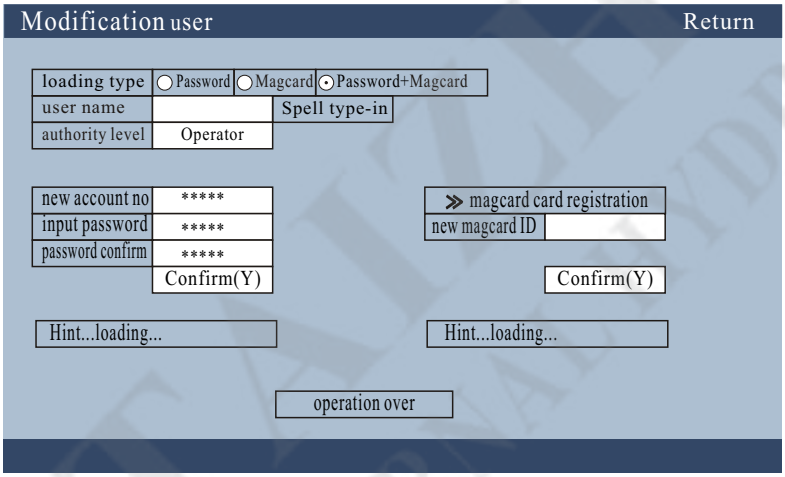
f、 Password confirmation：input the password again to confirm its accuracy

g、 New account no confirmation：after done data input press this button to be listed。

h、 Magcard card registration：use magcard to punch NFC（within 2cms）and hold 2 seconds，punch again when heard the sound of Di and see the hint：punch again，please .

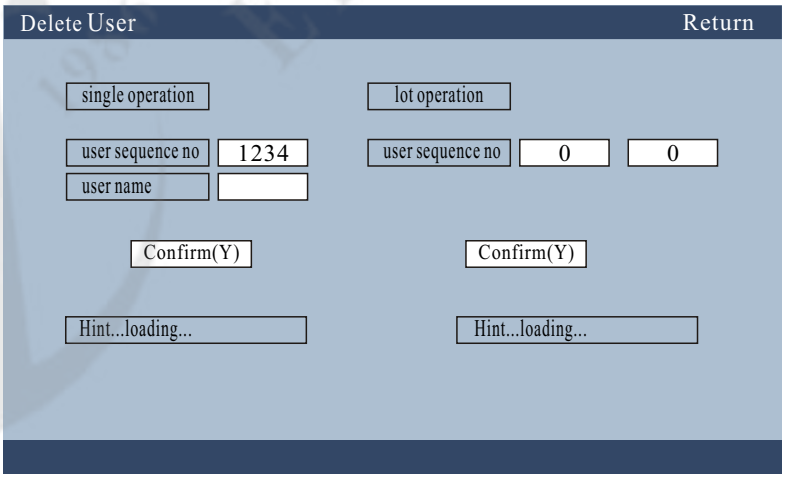
Then remove the card beyond 10cms over NFC and then move back punch again，the data collection is finished when heard the sound of Di，finally move cursor to confirmation to press it.

(4e) Press Enter button when password、



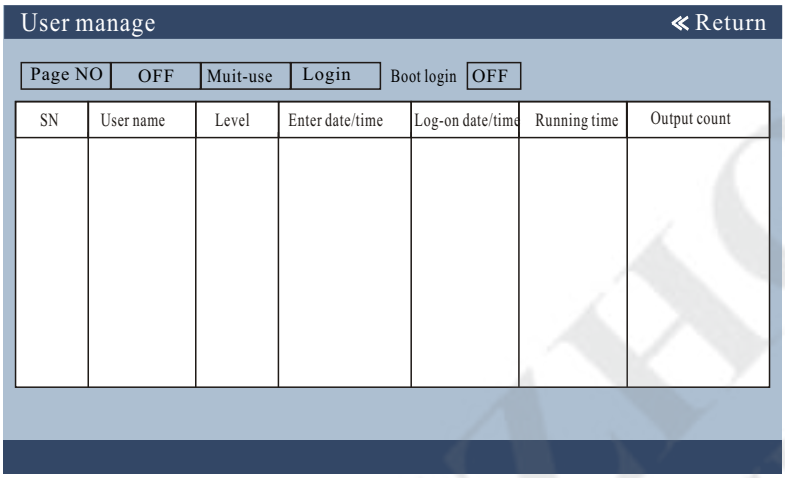

a、User serial number：input the serial number which need to revise，all user data can be changed based on their actual need，and for how to input data please refer to Way of adding new user.

(4f) Click delete and then the following chart will be as below..



a、User deletion：single operation、；continuous users will be deleted in bulk operation mode（prudent operation）

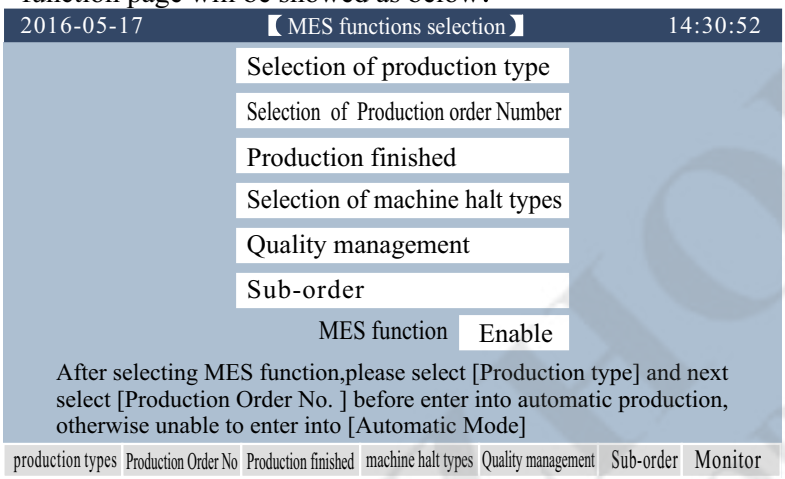
5.user list

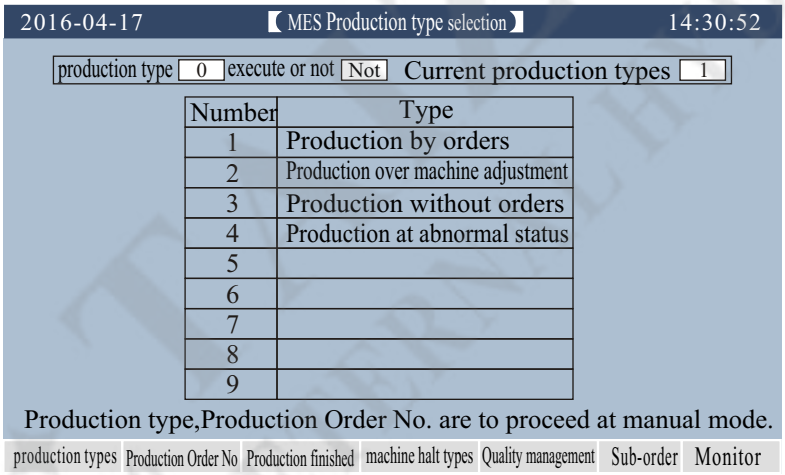



a、Use to record all user data，user name，authority level，loading date，cancellation date，run time and production during period.

## 26. MES---setup of injection molding workshop management system（optional）

Press 監視 MONITOR key four-time（MK310,MK320 and MK330）or press MES key（MK360) and then MES--function page will be showed as below：

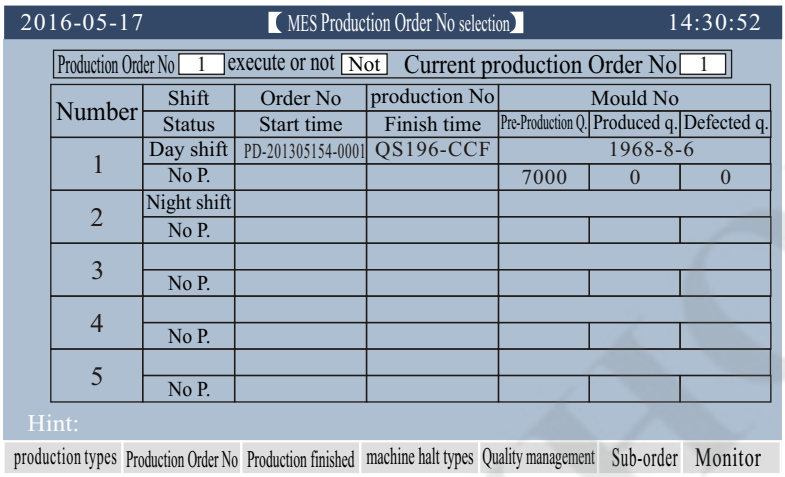


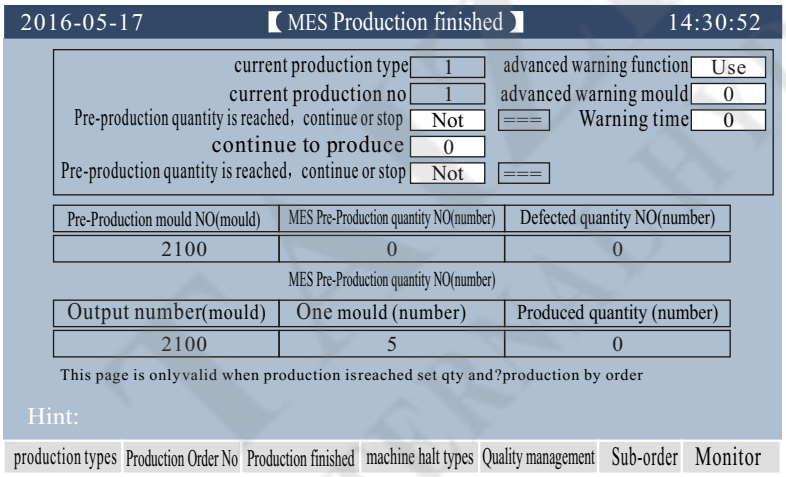




### Description on setting parameters

（1）MES function selection: [Enable], [Disable] option, machine is in MES management mode while select [Enable],conversely,it is in Standard mode.

（2）Production type selection:[ Production by orders] [Production over machine adjustment] [Production without orders] [Production at abnormal status].Opertional method:Please input production types of sequence no. .in [Production types selection]based on actual situation,next select[YES] on [Execute Or not ],.after successful execution,chosen,sequence will be displayed on [Current production type]
Notice： MES function is only available for keyboard with Ethernet function.

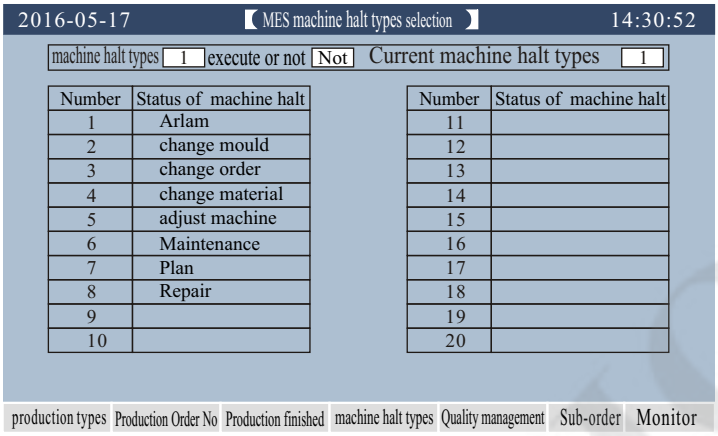


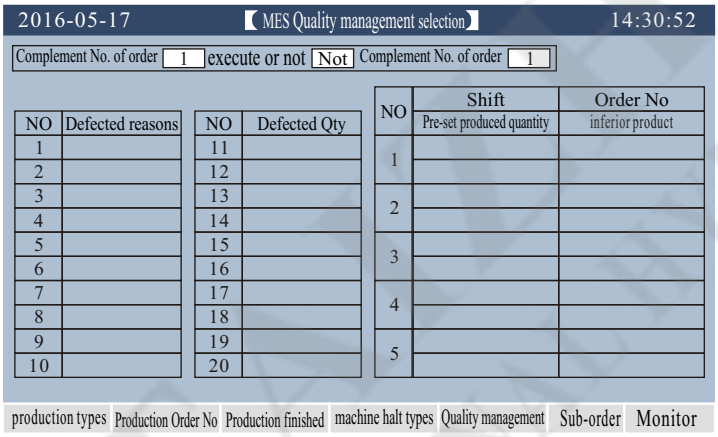



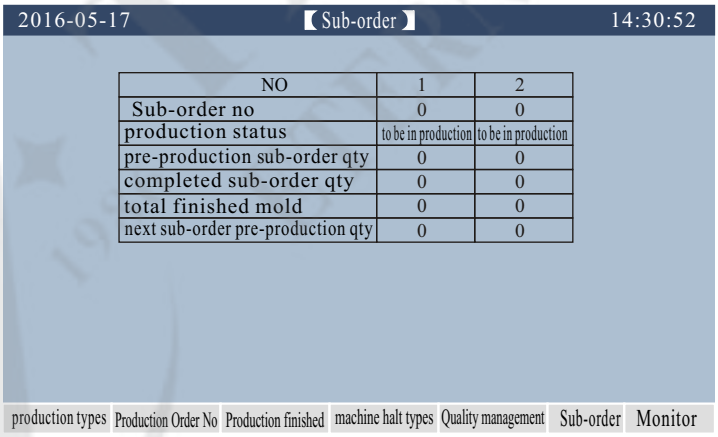

## Description on setting parameters

(1)、Selection of Production order No.: The choose of Production order No. Can not be empty when [Selection Of production types] is [Production by orders].Please choose the order NO. That need to be produced according to actual production situations ,and the operation method please refer to [Selection of production types.]

(2)、Production termination:When [Selection of production types] is [production by orders]and[output was reached set pont] ,the following page will be automatically jump out while alarming such as: [finish this order] or [continue to production] and [continue same production output ] ,choose one of the two.Please choose[termination]when the set output of this order is being reached,and if want continue to production then the needed produced output must be input first and next choose [continue to production].




## Description on setting parameters

(1) Selection of machine halt types: Please select reasons of machine halt by jumping out of this page when changing automatic mode to manual mode under manual status.

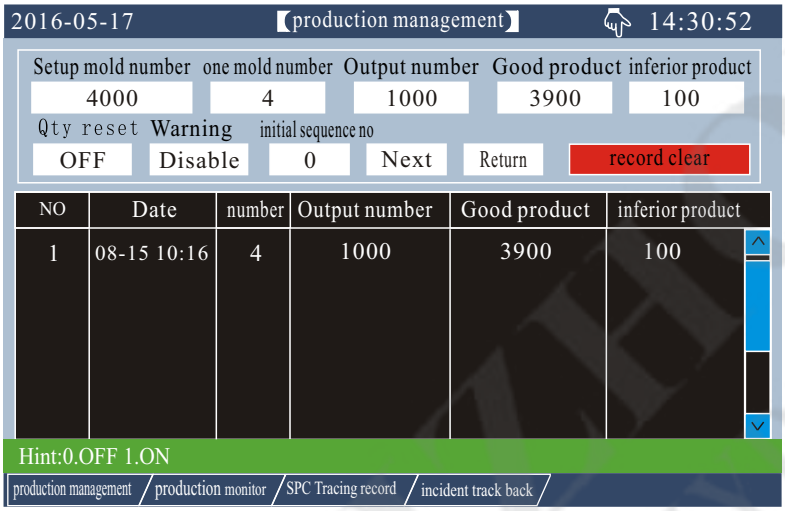
(2) Quality management: ,input defected quantity into corresponding order form based on orders,so good products quantity are able to supplement in time during production to insure pre-set good ones.

# Chapter 4 production management

## 1. Set production Imformation

Press 

key , enter the menu for setting production information, now the menu is as following:




### Description on setting parameters

(1) The quality products equal to the number of the opened mold times the amount of one mold minus rejects. The rejects are controlled through ejecting testing function. When ejecting testing function is on, just like in stroke. When too much or too less stuff occurs, the rejects will increase amount value of one mould, and [Failure of plastic] alarms.

(2). Set mold numbers: In the mold numbers setting of pre-production, the system starts alarming when the number of mold opening arrives at the first 5 molds till it reacheded The set output .

(3). Warn Stop : [On] or [Off] can be selected. It will continue producing even arrives at the set mold number if [Off] has been selected till an operator stops it.

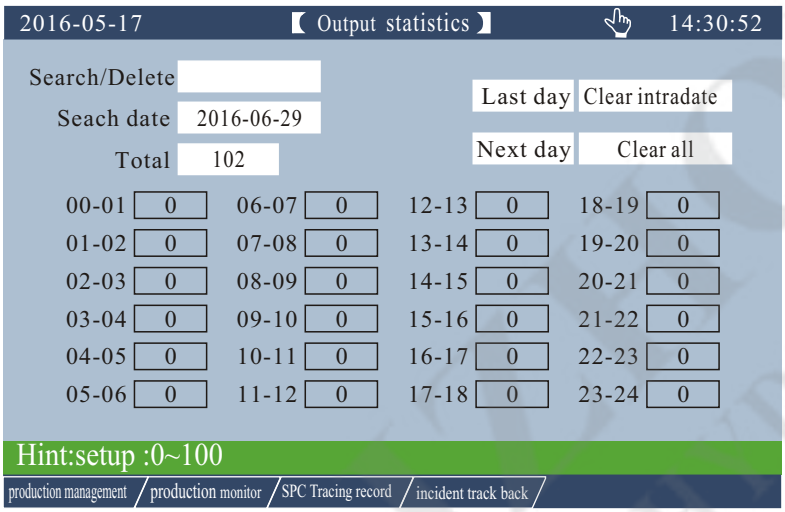
(4).View method：a：move cursor to theup and downbutton to view，b，[initial sequence no display]：to locate by initial sequence no.and then use the up and down key to view.

Attention：Press 

key continuously to change production management page.

## 2. The output statistics iformation

Press 生產管理 FLOW CHART key to enter into flow chartand then Press 射 出 INJECTION key enter the output statistics , now the menu is as follows：




### Description on setting parameters

Computer provides function for production output statistics，system automatically record for past 15 days（per hour/per day production）

(1) Inquiry/elimination: There are [Able]/[Disable] optional. Move cursor to [the day before],[the next day] and press [ENTER]to check the production data of the the day before or the next day; move cursor to [clear intraday output] and then press [ENTER] key to delete the query date output data,move cursor to [clear all data]and press [ENTER] key to delete all production output data.

Attention：Press 生產管理 FLOW CHART key continuously to change production management page.

## 3. SPC Tracing record imformation

Press 

key three times, enter the into SPC Tracing record page which be as following：


### Description on setting parameters

(1). Record: the pagel has up to 999 pages, containing the consecutive information of the 999 modules. The SPC Tracing record system can provide up to 7 important parameters of the latest 999 modules. The operator can scroll up and down between page 1 and page 10 to manage the production of The modules. By using the system, the operator will be able to have more insight of the actual Variation of the important parameters and take specific and proper actions to adjust the system's operation and improve the quality of the product as a result.

(2).Intermittent cycle: record the data once every several cycles.

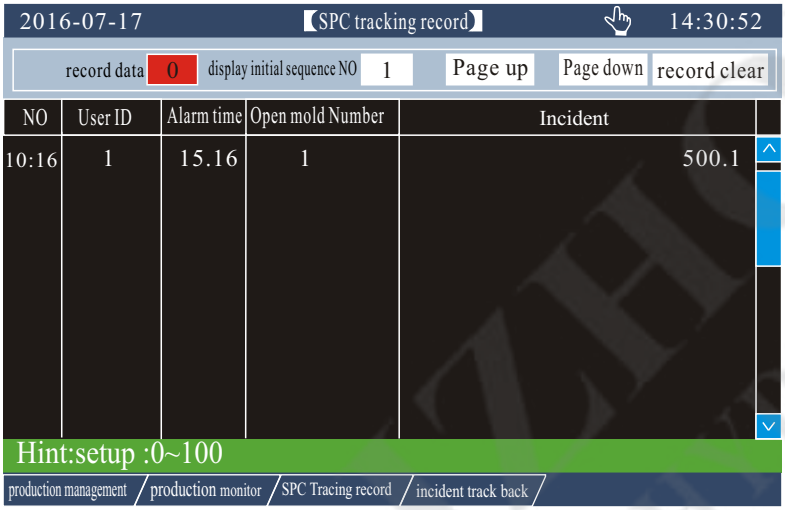
(3).View method：a：move cursor to the up and down button to view，b，[initial sequence no display]：to locate by initial sequence no.and then use the up and down key to view.

Attention：Press 

key continuously to change production management page.

## 4. The Incident track back page

Press 生產管理 FLOW CHART key to enter into flow chart and then press 座臺/調模 NOZZ/ADJ. key to enter Incident track back page which will be as below：




### Description on setting parameters

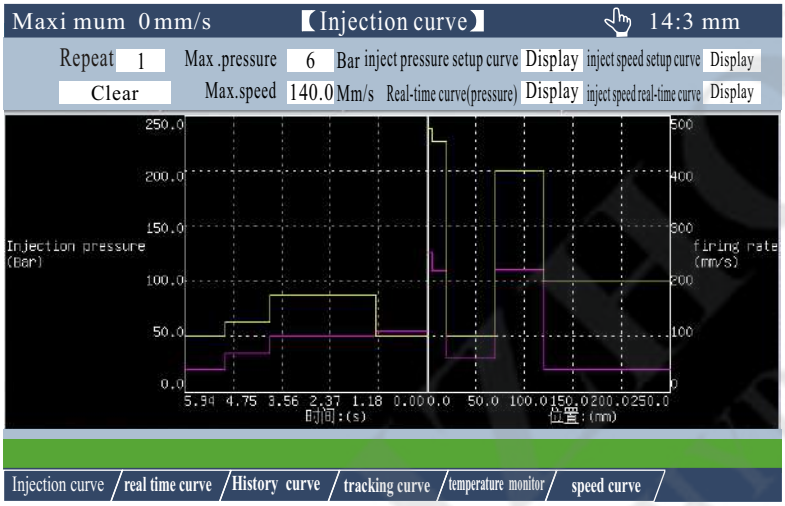
(1).Display: there are 999 alarm records to be checked which provides convenience For equipment maintenance/repairing.

(2).View method：a：move cursor to theup and downbutton to view，b，[initial sequence no display]：to locate by initial sequence no.and then use the up and down key to view.

Attention：Press 生產管理 FLOW CHART key continuously to change production management page.

## 5. The injection curve page

Press 曲 綫 CURVE key to enter into flow chart and then press 開鎖模 M.PLT key to enter injection curve page which will be as below：



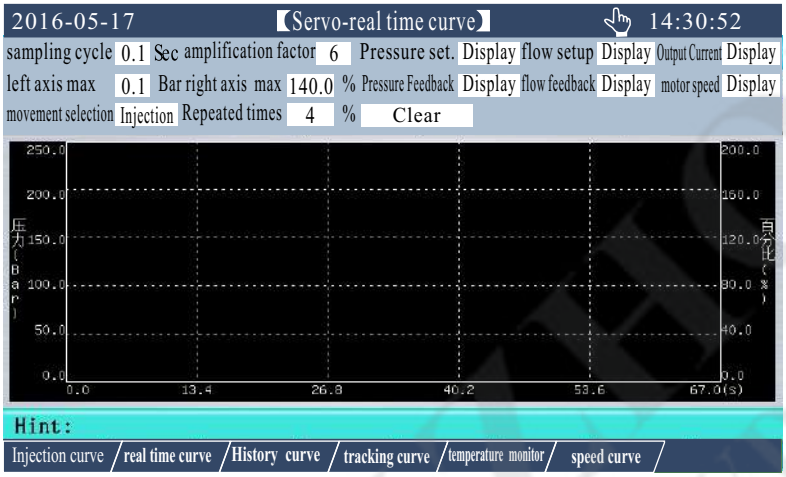

### Description on setting parameters

(1)Repetition times：accpetable to 1--4times.It will dispaly the latest curve data when selected one time，and it will display the last 4 times? cruve data once 4 times is selected。
(2)max pressure：the setup curve that the max pressure of left Y axis
(3)max speed：the setup curve that the max speed of left Y axis
(4)Pressure setup:[displayed]【not displayed】optional.Pressure curve will be displayed，not displayed on the contrary，It can be displayed six curves at the same time.

Attention：Press 曲 綫 CURVE key continuously to change curve management page.

## 6. The servo -real time curve page

Press 曲 綫 CURVE key to enter into curve management,then Press 射 出 INJECTION key enter the actual curve page , now the menu is as follows：




### Description on setting parameters

(1)Movement selection：there are "injection，'feeding"，mold-clamping，mold-opening"available. When injection was chosen.

(2)Repetition times：accpetable to 1--4times.It will dispaly the latest curve data when selected one time，and it will display the last 4 times? cruve data once 4 times is selected。

(3)Sampling cycle：the frequency that curve data adopts namely the interval time range：0.1s--1.0s）

(4)Left axis max：the setup curve that the max pressure of left Y axis

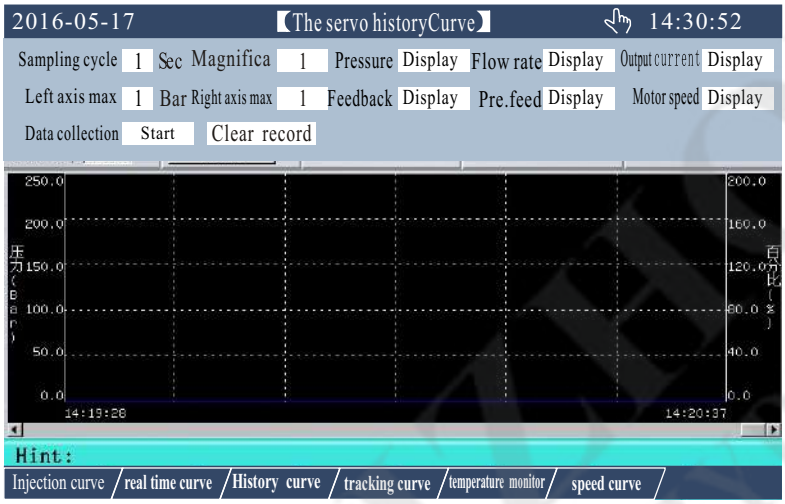
(5)Right axis max：the setup curve that the max percentage of right Y axis

(6)Pressure setup:[displayed]【not displayed】optional.Pressure curve will be displayed，not displayed on the contrary，It can be displayed six curves at thesame time.

Attention：Press 曲 綫 CURVE key continuously to change curve management page.

## 7.the History curve page of servo page

Press 曲 綫 CURVE key to enter into curve management and then press 儲 料 FEEDING key to enter the curve page of servo history which the page will be as below：




### Description on setting parameters

(1)Data collection：There are 【start】，【stop】available.Data collection be started，when selects 【start】,on the contrary，data collection will be stopped.

(2)Sampling cycle：the frequency that curve data adopts namely the interval time range：0.1s--1.0s）

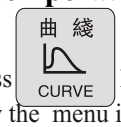
(3)Left axis max：the setup curve that the max pressure of left Y axis

(4)Right axis max：the setup curve that the max percentage of right Y axis

(5)Pressure setup:[displayed]【not displayed】optional.Pressure curve will be displayed，not displayed on the contrary，It can be displayed six curves at thesame time.

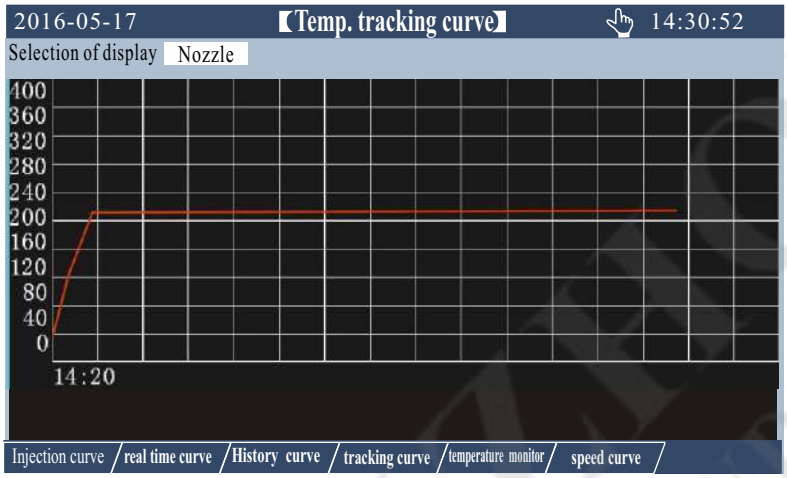
Attention：Press 曲 綫 CURVE key continuously to change curve management page.

## 8.the temperature tracking curve page

Press 

key to enter into curve management,then Press 

key enter the tracking curve page , now the menu is as follows：




### Description on setting parameters

(1) Selection of display which is the historical tracking curve for checking on certain sections of temperature, temperature historical tracking record function of the system can provide the first 6 hours historical parameters for 6 sections of temperature and that enable operators master the change of machine actual inspection temperature better that lead to operators are able to make a comparison and analysis of affect to product quality by temperature.

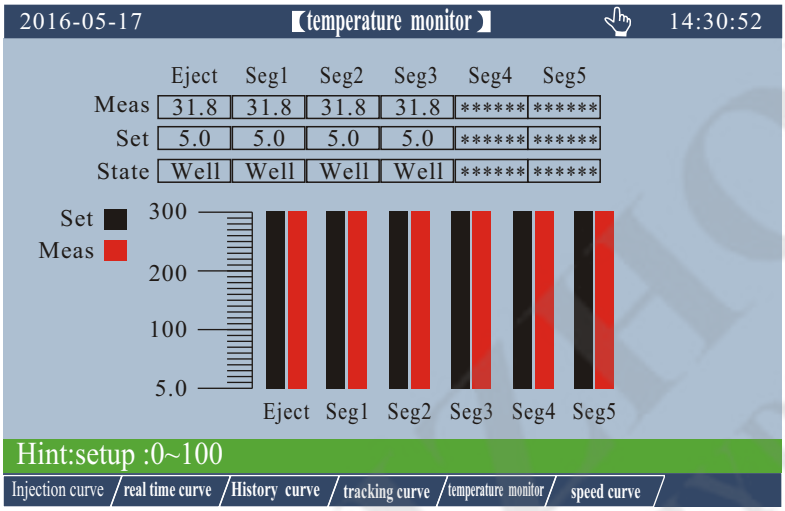
(2) Interval of sampling record: the time for sampling record interval ,5 minus.

Attention：Press 

key continuously to change curve management page.

## 9.the temperature monitor page

Press 曲 綫 CURVE key to enter into curve management and then press 托模/中子 EJE/CORE key to enter the temperature monitor which the page will be as below:




### Description on setting parameters

parameter setup instruction:

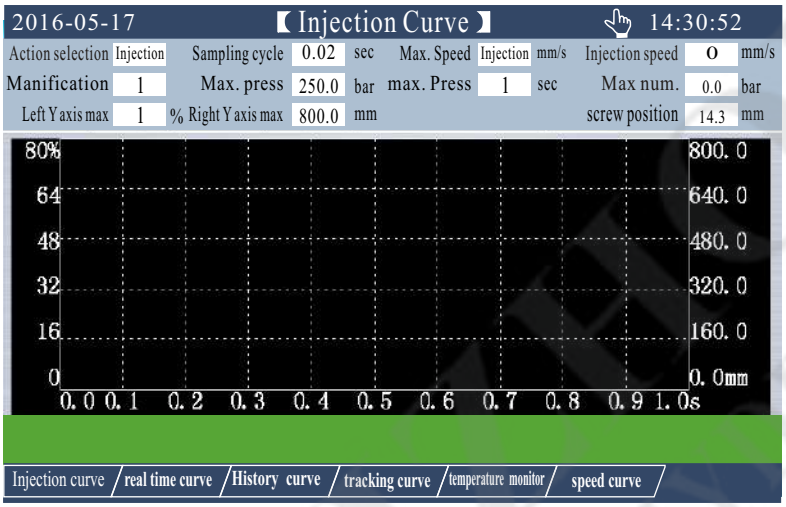
(1). use bar chart to show the relationship between actual temperature and setup temperature

(2).show the heating output situation ,actual value ,setup value and status of every section of temperature

Attention: Press 曲 綫 CURVE key continuously to change curve management page.

## 10.the injcetion speed curve page

Press 曲 綫 CURVE key to enter into curve management and then press 時 間 TIME key to enter injection speed curve the page will be as below:




### Description on setting parameters

(1). Movement selection：there are "injection，'feeding"，mold-clamping，mold-opening"available. When injection was chosen.

(2). Sampling cycle：the frequency that curve data adopts namely the interval time（range：0.1 s--1.0s）

(3). Left Y axis max：the setup curve that the max pressure of left Y axis

(4). Right Y axis max：the setup curve that the max percentage of right Y axis

(5). max speed: max speed of linear scale variation,this percentage data which is use current collected vary speed of to compare with max speed, range 1---60000

(6). max speed: max displayed pressure value,this percentage data which is use current collected actual pressure to compare with max pressure,range 0---250

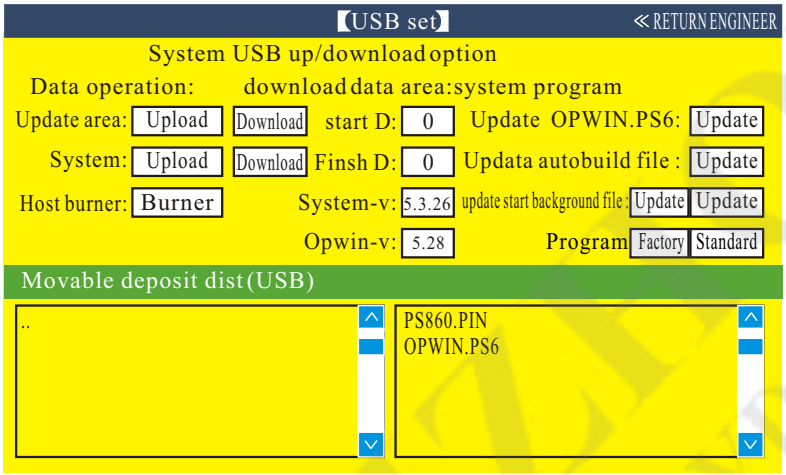
(7). X axis is the biggest;setup the longest time for curve X axis

Attention：Press 曲 綫 CURVE key continuously to change curve management page.

## 11. USB setting page (for options)

Press 

key; enter USB setting page. and it is as follows:




## Parameter setting introduction

(1) Formula downloading: download the mold data from control system of jet injection machine to the USB of moveable disc.

(2) Formula uploading: upload the mould data from the USB of moveable disc to control system of jet injection machine; at the same time the data will overlay previous data correspondingly.

(3) System downloading: download the mold data from control system of jet molding machine to the USB of moveable disc.

(4) System uploading: upload the mould data from the USB of moveable disc to control system of jet moulding machine; at the same time the data will overlay previous data correspondingly.

(5).Start/End D: when you are downloading the material of [formula] and [system], please designate the scope of the downloading data .

(6).Mainframe replication: means updating the host procedures. First, press the stop button on the keyboard, then move the cursor to [replication], press the enter button and move the cursor to select [. Pin] files and update it.

(7).Update OPWIN.PS6: means updating the keyboard procedures. Move the cursor to [update], press the enter button and move the cursor to select [. PS6] files and update it.

(8).System value backups: 【factory value】【standard value】.factory value comes from system backups(can be backuped based on customer’s demand).Standard value comes from system self-own parameters(fixed parameters can not be modified)

(9).Frames activated setup as below:

(a).Picture play function: 【Disable】【Able】optional.Normalpage will be displayed after system booting when selects【disable】; and photo will be played after system booting when selects 【Able】

(b) photo uploading:【addition】、【replacement】optional.Only new photo will be added when Selects【addition】; new photo will be added after deleted all exist photos when selects【replacement】

(c) Entering into normal page: 【counting reached】、【input】optional.One photo will be automatically displayed after every interval time in [counting reach] mode;photos will be automatically played in turn after every interval time in [input] mode and then press [input] key to enter into normal page.

(D)photo message

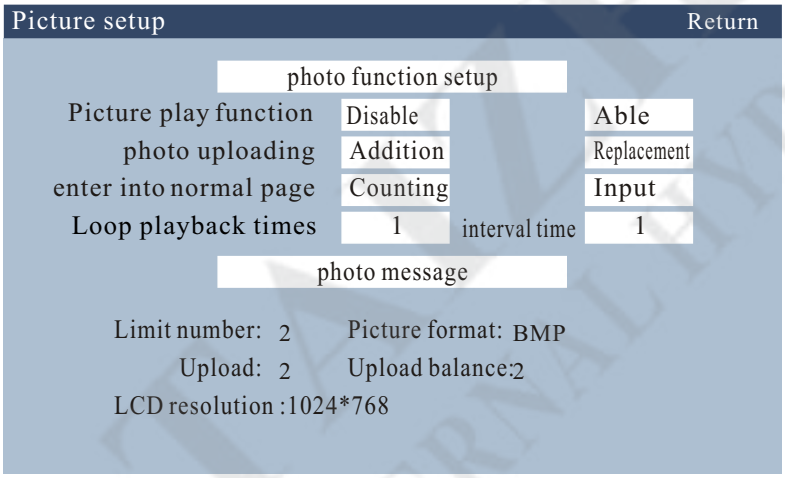
Limit number: maximum 5 pieces of photo

Picture format: bmp only at present

Upload: the photo number which has been uploaded

Upload balance: the photo number which uploaded balance

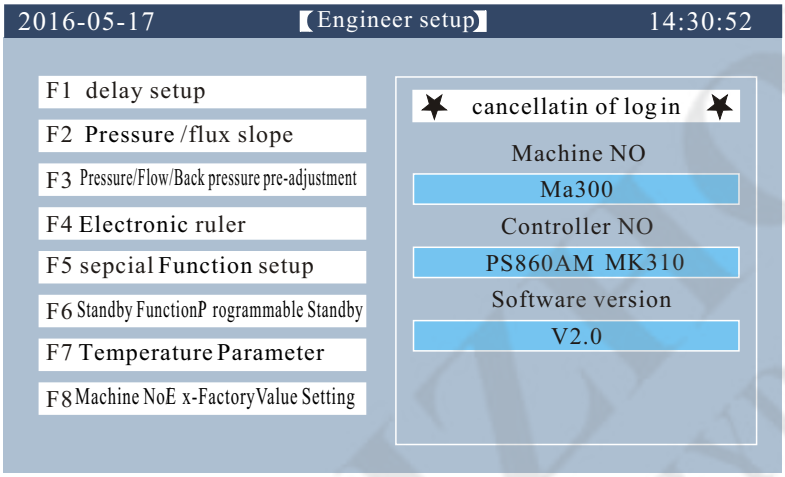
LCD resolution ratio: max resolution ratio of photo



# Chapter 5 Instructions for the System Commissioning Settings

## 1. Engineer Setting Page

Press 0 [ ]/-. Key the Main Page to enter the Engineer Setting , and the following will be displayed:



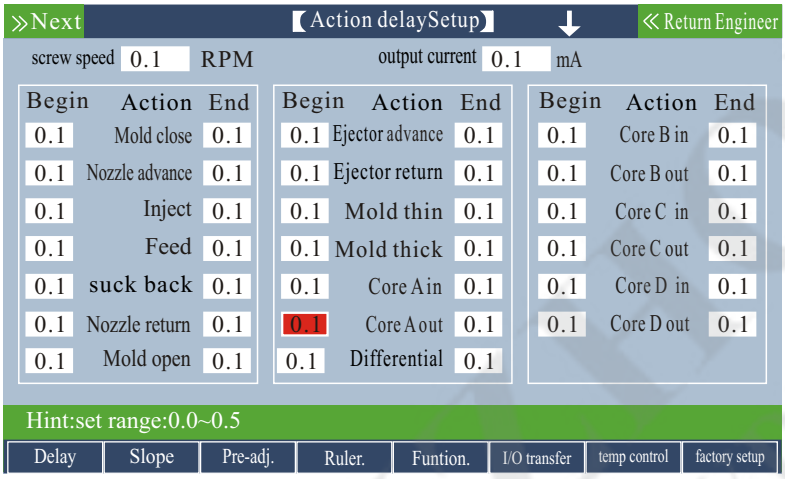

Enter the password * * * *.If the password entered is correct, you can enter the system parameter setting page. It is notNecessaryfor the equipment end-user to adjust thesystem parameters. Please consult the equipment manufacturer for any query. Any parameter adjustment disorder may result in damage to equipment capability,unstable performance or failure to operate.

After the correct password isentered, the cursor jumpsautomatically to the firstitem from the right. The cursorcan be moved to different items and then Key ▲ ▼ is pressed to enter the corresponding pages. Alternatively, you can press the following keys 輸入 ENTER to enter directly the corresponding pages:

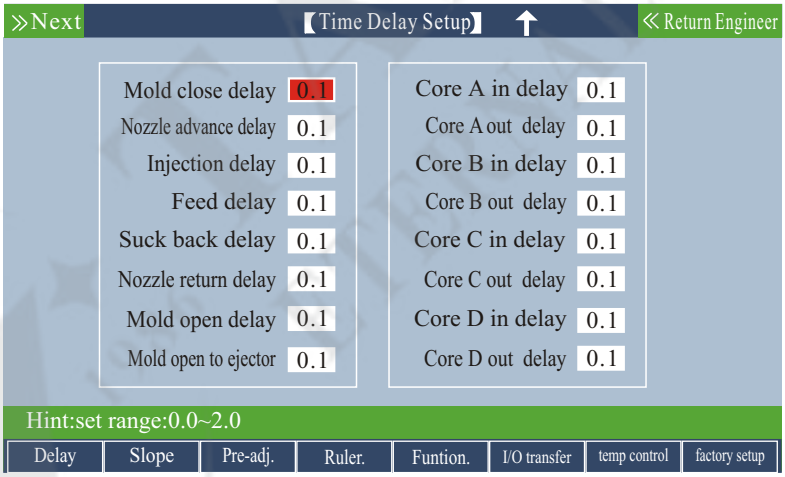
| Key | Entering Page | Key | Entering Page |
|---|---|---|---|
| 開鎖模 M.PLT | <Delay Setup> | 托模/中子 EJE/CORE | <Standby Function Setting> |
| 射出 INJECTION | <Pressure/Flow Setting I><br><Pressure/Flow Setting II> | 時間 TIME | <Programmable Standby Points> |
| 儲料 FEEDING | <Pressure Pre-Adjustment><br><Flow Pre-Adjustment> | 温度 TEMP. | <Temperature Parameter> |
| 座臺/調模 NOZZ/ADJ. | <Special Function Options> | 資料 DATUM | <Machine No./Ex-Factory Value Setting/Time Setting> |

## 2. Delay Setting Page

Entering Engineer Setting Page, press 開鎖模 M.PLT Key enter the Delay Setting Page. The following is displayed:




Entering Engineer Setting Page, press 開鎖模 M.PLT Key twice to enter the Delay Setting Page.The following is displayed:



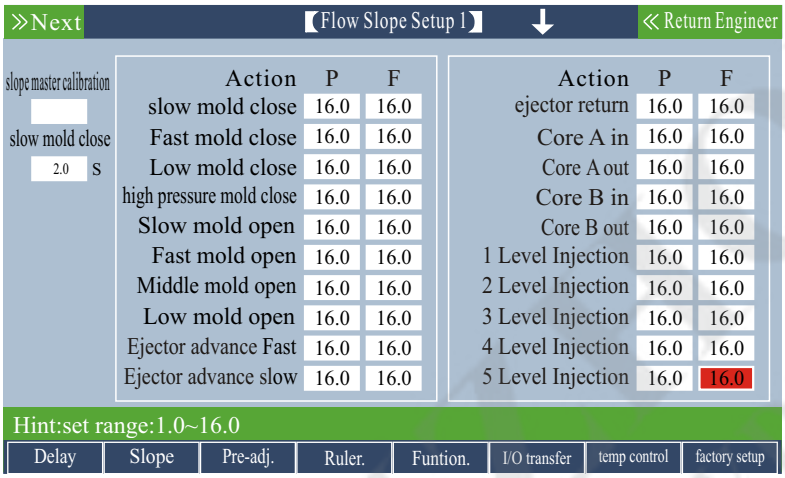

### Setting delay between actions

(1) The meaning of Start Delay: the corresponding action valve ON → delay time T1 → pressure output ON; flow output ON

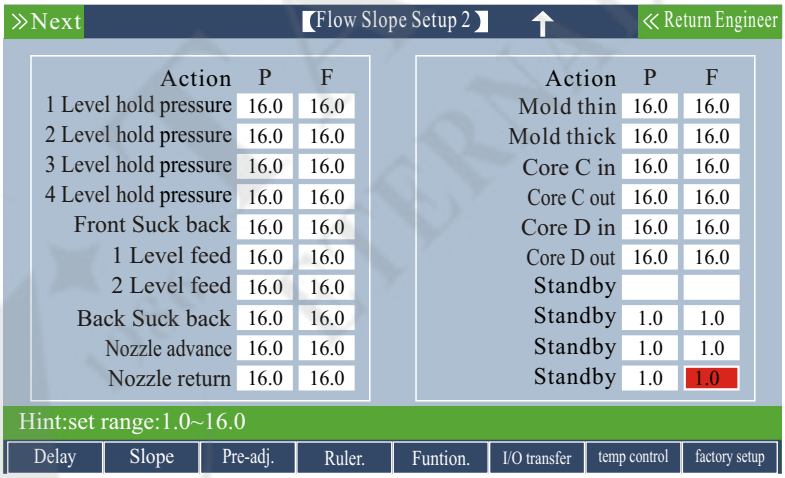
(2) The meaning of End Delay: the corresponding action valve → pressure output OFF; flow output OFF → delay time T2 → action valve OFF

## 3. Pressure/Flow Slope Setting Page

Entering Engineer Setting Page, press Key 射 出 INJECTION once to enter Pressure/Flow Slope Page I. The following is displayed:




Entering Engineer Setting Page, press Key 射 出 INJECTION twice to enter Pressure/Flow Slope Page II. The following is displayed:

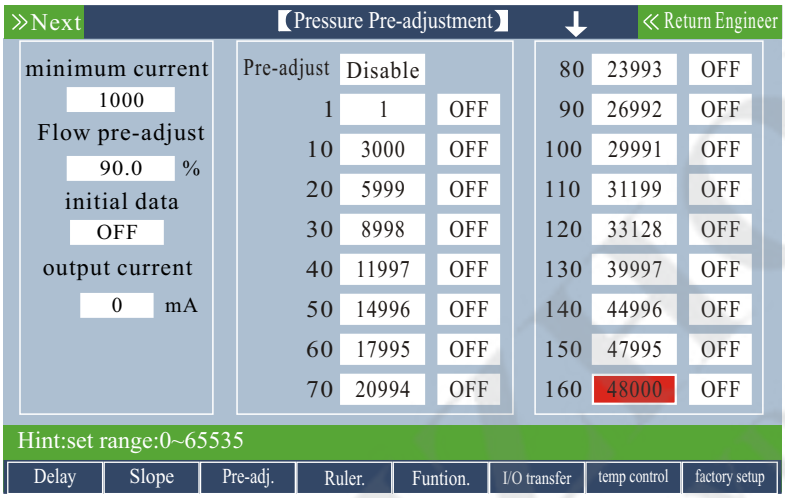



### Description on setting parameters

The Pressure/Flow Slope refers to the steep degree of rise or fall when the pressure/flow changes from one value to the next value. "0.1 stands for the slowest change and "16.0 stands for the fastest change. The setting range is .[0.1-16.0].

# 4. Pressure Pre-Adjustment Page

Entering Engineer Setting Page, press 储 料 FEEDING Key once to enter the Pressure Pre-Adjustment Page.The following is displayed:




## Description on setting parameters

The pressure pre-adjustment is the linear adjustment of pressure output. In general, the standard pressure is 0-800mA and the standard output impedance is 10-20Ω, unless the manufacturer has specific requirements since different manufactures' overall oil piping designs and the capabilities of the pressure proportional valve being used are different.

Pressure Adjustment Method:

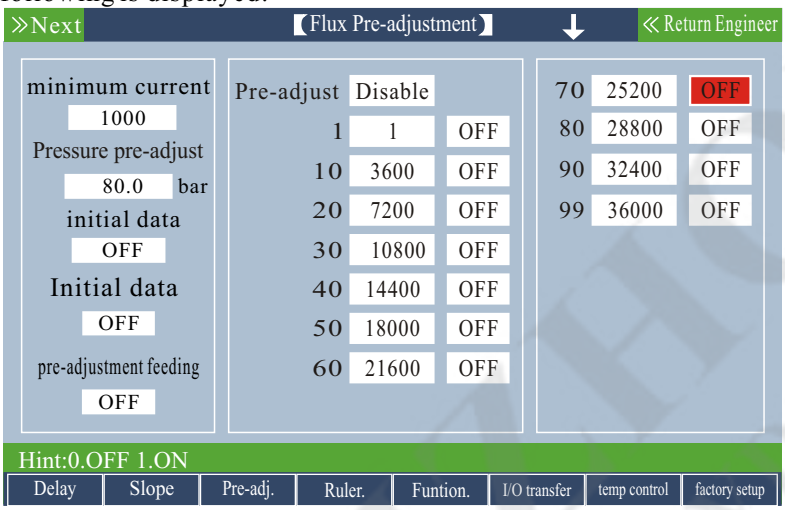
The parameters on this page have been set before ex-factory. If the capability of the proportional valves being used by the user is different, and the normal proportion and linear proportion cannot be achieved, the parameters on this page can be adjusted. First set the pre-adjustment to be [Activated], and then set the pre-adjustment item to be [ON]. For example, for the 50 bar Pressure position of Item 50, if the reading on the pressure meter is 45 bar, the parameter of this item should be increased until the pressuremeter reading reaches 50 bar. Make adjustments On all parameters which need adjusting and make the 0-160 bar pressures being set correspond to the pressures being shown on the oil pressure meter respectively. After the adjustments are completed, the computer executes automatically linear processing and takes the processing results as the subsequent normal D/A proportional output values.

Initial data:

First, pre-adjust the needed maximum pressure data in 160bar, and then move the cursor to [initial data], press the enter key and select [ON], the system will automatically distribute average data to 10bar---160bar.

## 5. Flow Pre-Adjustment Page

Entering Engineer Setting Page, press Key 储 料 FEEDING twice to enter the Flow Pre-Adjustment Page.The following is displayed:




### Description on setting parameters

The flow pre-adjustment is the linear adjustment of flow output. In general, the standard value is 0- 800mAand the output impedance is 40 Ω ,unless the manufacturer has specific requirements since different manufactures' overall oil piping designs and the capabilites of the pressure proportional valve being used are different.

Flow Adjustment Method:

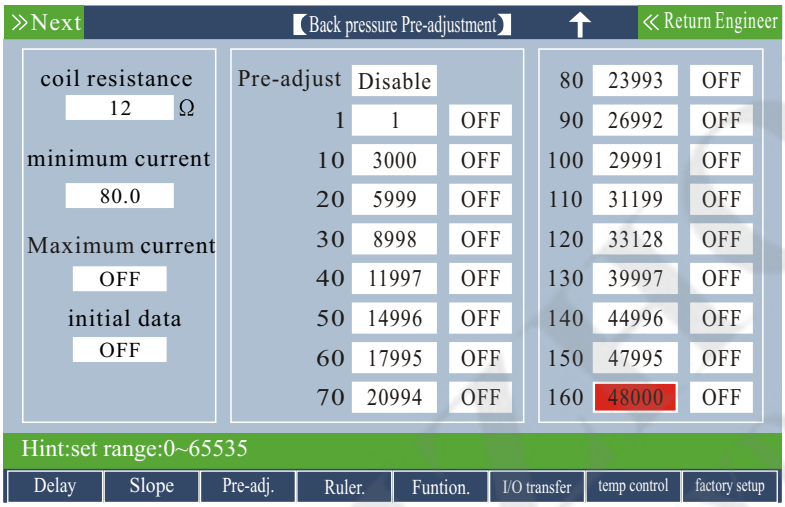
The parameters on this page have been set before ex-factory. If the capability of the proportional valves being used by the user is different, and the normal proportion and linear proportion cannot be achieved, the parameters on this page can be adjusted. As for the speed adjustment, different manufacturershave different measuring methods. Some manufacturers use the melt tachometer to measure the rotation speed. First heat the barrel until the barrel temperature reaches normal melt temperature. Set the melt speed to be 1, 10, 20, 30, and more until 99 and check the actual values. Make adjustments onall parameters whichneed adjusting and make the 0-99% speeds being set correspond to the proportional coefficients being shown on the tachometer respectively. After the adjustments are completed, the computer executes automatically linear processing and takes the processing results as the subsequent normal D/A proportional outputvalues.

Initial data:

First, pre-adjust the needed maximum flow data in 99%, and then move the cursor to [initial data], press the enter key and select [ON], the system will automatically distribute average data to 10%---90%.

## 6. Back Pressure Pre-Adjustment Page

Entering Engineer Setting Page, press Key 储 料 FEEDING third to enter the Back Pressure Pre-Adjustment Page. The following is displayed:




### Description on setting parameters

The back pressure pre-adjustment is the linear adjustment of back pressure output. In general, the standard pressure is 0-800mA and the standard output impedance is 10-20Ω,unless the Manufacturer has specific requirements since different manufactures' overall oil piping designs and the capabilities of the pressure proportional valve being used are different

.Back Pressure Adjustment Method:

The parameters on this page have been set before ex-factory. If the capability of the proportional valves being used by the user is different, and the normal proportion and linear proportion cannot beachieved, the parameters on this page can be adjusted. First heat the barrel until the barrel temperaturereaches normal melt temperature. Set the melt back pressure to be 1, 10, 20, 30, and more until 160 and check the actual values. Make adjustments on all parameters which need adjusting and make the 0-160bar back pressures being set correspond to the back pressures being shown on the back pressure meter respectively. After the adjustments are completed, the computer executes automatically linear processing and takes the processing results as the subsequent normal D/Aproportional output values.

Initial data:

First, pre-adjust the needed maximum pressure data in 160bar,and then move the cursorto [initial data], press the enter key and select [ON], the system will automatically distribute average data to 10bar---160bar.

## 7. Electronic Ruler.Pressure text Setting Page

Entering Engineer Setting Page, press Key 座臺/調模 NOZZ/ADJ. onec/twice enter the Electronic Ruler/ Pressure Setting Page. The following is displayed:


### Description on setting parameters

(1) Electronic Ruler Function: If the equipment needs to use the electronic ruler, choose [Enable].If the equipment adopts stroke switch control, choose [Disable].

(2) Measurement Values: indicating the actual dynamic positions of the electronic rulers for the moving mould, the screw and the ejector.

(3) Total Length: referring to the actual lengths of the electronic rulers for the moving mould, the screw and the ejector.

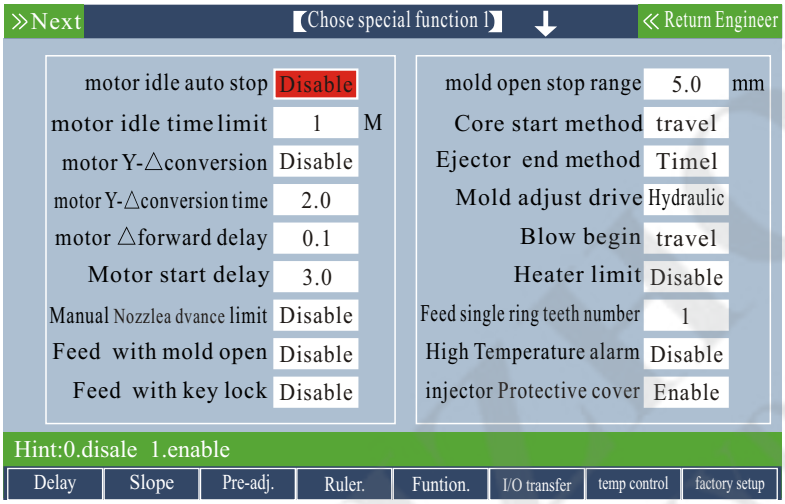
(4) Limit Position: It refers to the maximum value set for the position. This parameter is subject to the maximum position setting. For example , if the parameter set is bigger than the limit position value, the system will not accept the parameter set and will retain the original setting.

(5) Zeroing: When the equipment choose [Enable] for the Electronic Ruler Function and uses the Electronic ruler, it may appear that the mechanic movement stroke is in place and yet the actual positions of the electronic rulers for the clamping unit, the injection unit and the ejector do not Indicate "0". In such case, the corresponding ruler should be zeroed. Move the cursor to the Zeroing button for [movable mold ruler], [ screw ruler] and [ejector ruler], and then press 输入 ENTER Key to make zero clearing for the corresponding electronic ruler.

(6) Sensor function、maglev ruler、double-ruler setup：setup method same as electronic ruler。
Special instruction：maglev ruler（unit：m/s）is one signal of transmission speed in waveguide tube，each pieces of maglev ruler’s transmission speed is different，please fill with correct data from the magleve ruler‘s sticker so not to affect its accuracy. Attention：strongly recommends double-channel of ruler（refer to appendix）

## 8. Special Function Options Page

Entering Engineer Setting Page, press 托模/中子 EJE/CORE Key to enter the Special Function 1 Options Page. The following is displayed:




### Descriptions on setting parameters function mode

(1) Motor Idle Running & Automatic Stop: When [Enable] is chosen, time setting is effective and the setting range is2-99minutes. If the equipment has no operation within the set time period after the motor starts up, the motor is turned off automatically to protect the motor life and to save electricity charge.

(2) Motor Y-△Conversion: If [Enable] is chosen, the system converts from star output to delta output when the motor starts up. The conversion time period can be set and the setting range is 2.0-99.9seconds.

(3) Motor Startup Delay: After the motor starts, no manual/auto operation can be conducted until the set time is delayed.

(4) Manual Base Advance Limit: If deactivated, the injection base advance is not subject to stroke control. If activated, the injection base advance position is subject to the control of the limit switch X06.

(5) Mould Opening with Melt: If activated, the mould opening can be done as soon as the cooling time expires, even if the melt has not finished taking out.

(6) Melt Key Locking: If activated, press the melt key once and then the melting continues and will stop when the melt position is reached or the time expires. Or press the melt key once more to stop the melting.

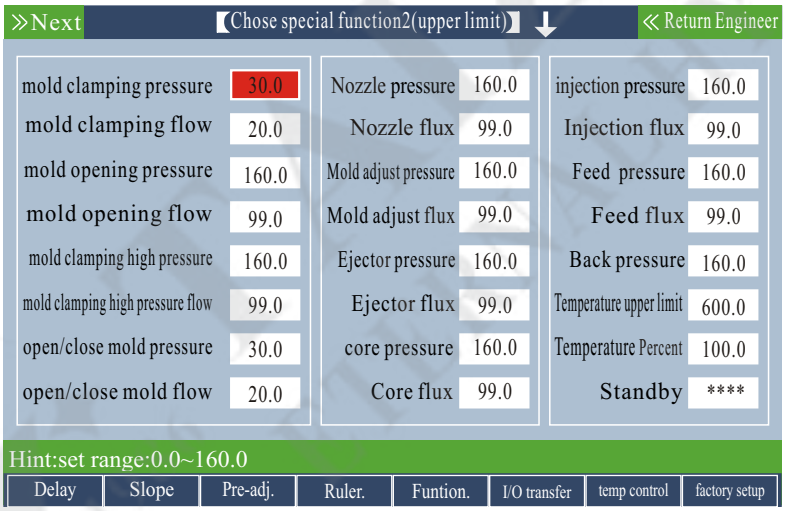
(7). Neutron beginning methods: select [travel] or [position], select [position] to set the position value, and the Movements when the dynamic mode arrives; select [travel], select the starting movements from the four options of dynamic mode trip.

(8). The Core start method: select [position] or [travel], start the blowing work at the dynamic mode position or the trip conditions in automatic state.

(9) Ejector Stop Type: [Stroke] or [Time] can be chosen. If [Stroke] is chosen, the stop is subject to the stroke. If [Time] is chosen, the stop is subject to the set time.

(10) Mould Adjustment Activation: [Hydraulic] or [Electric] can be chosen. When [Hydraulic] is chosen, mould adjustment pressure and speed do not participate in the mould adjustment job.
(11) Begin Blowing: Choose [Location] or [Travel], then the machine will blow in the mold moving location or travel conditions in automatic mode.
(12) Electric Heating Restrict: Choose [Disable] or [Enable], in [Enable], the electric heating will not be started in the process of motor start, but will in [Disable].
(13) Stock Single Ring Gear No.: The number of the gears around the screw.
(14) High Temperature Alarm Function: Choose [Disable] or [Enable], when in [Enable] and the actual temperature is beyond the upper limit; ? in the automatic state, alarm [High Temperature] and ejection, stock and withdrawal will not act; ? in manual state, ejection, stock and withdrawal will continue working. In [Disable], all actions will not be affected by temperature upper limit.
(15) Ejection Protective Boot Function: Choose [Disable] or [Enable], when in [Enable] and the ejection, stock and withdrawal act and X02 is OFF, the system will alarm with [Ejection Protective Boot not Closed] and there is no action output; on the contrary, the action will not be affected by Xo2 state.

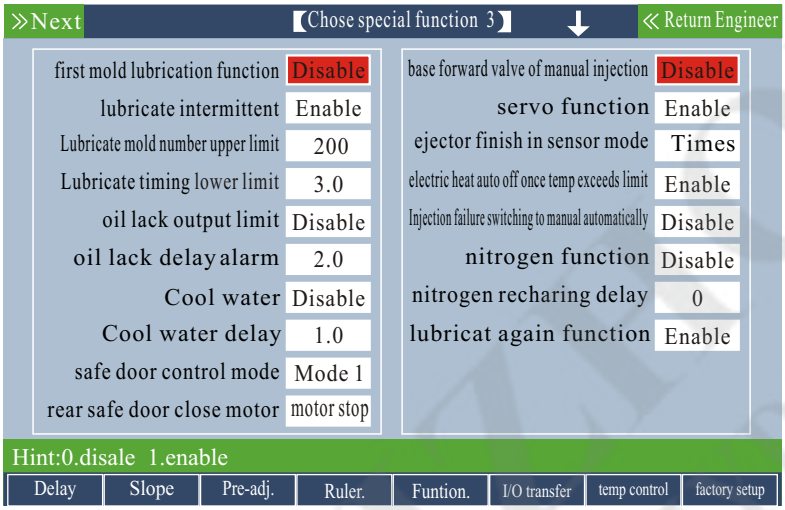
Entering Engineer Setting Page, press 托模/中子 EJE/CORE Key twice to enter the Special Function 2 Options Page.The following is displayed:




## Function parameter setting introduction

(1) Pressure/flux upper limit: the setting value in this page will lie on the upper limit range for setting values of mold parameter in every page.
(2). Maximum temperature / percentage: the scope of maximum temperature setup value.

Entering Engineer Setting Page, press 托模/中子 EJE/CORE Key third time toenter the Special Function3 Options Page.The following is displayed:




## Function parameter setting introduction

(1) First mold lubrication: select [Enable], lubricate once when the motor is from close to open and first molding. or it will not lubricate.
(2) Interval lubrication: can select [Enable] or [Disable] , it will lubricate no intervals when select [Disable], it will lubricate intervals when select[Enable]
(3) Maximum lubricating mold number: The maximum number of lubricating mold ,it is used to control lubricating cycle
(4) Minimum lubricating time :The minimum time of lubricating
(5) lack of oil delay alarm: select [Enable] it will alarm when the input time in the lack of oil delay alarm X32 is up
(6) Water cooling: select [Enable], the cooling water switch is ON in normal state, and it will alarm " the switch of cooling water is not open "until setting time is up
(7) safety door control mode: can select [mode 1] or [mode 2] , select [mode 1] front safety door : X00,X01, back safety door :X15,X16(back safety door control motor), select [mode 2] front safety door : X0, back safety door :X15 (please refer to safety door diagram I ,II)
(8) Back Safety Door Open: Choose [Stop Motor] or [Disable]. If the [Safety Door Control Mode] chooses [Mode 1], the [Back Safety Door] function will be valid. When [Stop Motor] is chosen, if the rear safety door X15 or X16 is OFF, the system will alarm with [Rear Safety Door Not Closed] and the motor will stop; on the contrary, only alarm without stopping the motor.
(9) Base forward valve of Manual injection :there are [Enable] or [Disable] can be selected,when select manual state is [Enable],signal of base forward-stop is on,Y1 is outputted and there is injection movement, conversely no output.
(10) Servo function: there are [Enable] or [Disable] can be selected,the relevance pages will be displayed when selecting [Enable],conversely no display.

(11) Electric heating off whenTemperature exceeds uppper limit：there are【enable】and【disable】available.Under enable status，when the actual detection temperature is above its upper limit，turn off heating function and alarms：temp detection exceeds set upper limit,otherwise no need to do it.

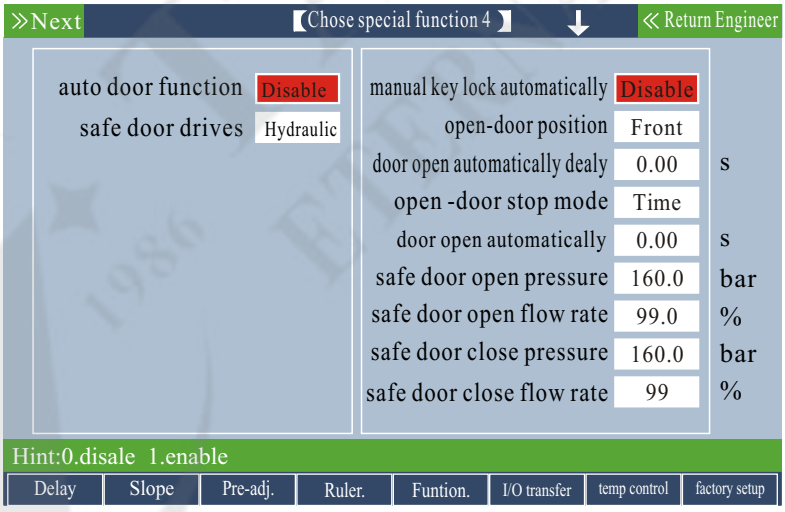
(12) Ejector finsished under sensor status：thre are【sensor detection finished】and【times of ejector reached】available.When under sensor auto mode and when choosing【sernsor detection finished】times of ejector not reached but sensor detection okay，system will go to next cycle by ejector finished；and when choosing【times of ejector reached】namely even sensor detectin okay，it have to wait for times of ejector finshed and then go to next cycle.

(13) Nitrogen function：there are【enable】and【disable】available.When choosing【enable】，turn on motor and motor delayed time reached----nitrogen charing delay?---time---time is up--proceed to charing/releasing nitrogen.

(14) Injection failure switching to manual mode：there are【enable】and【disable】available。When choosing【enable】，under auto mode，if injection failure alarms andswitch to manual mode；otherwise only alarms no switching tomanual mode.

(15) Relubricating function:there are [enable]and [disable] availale.When choosing [enable], while lubricating failure alarms(malfunction elimination)please lubricate again,it stops alarming when detection signalfrom relubricating movement.

Entering into engineer page and then press 托模/中子 EJE/CORE 4 times for specialfunction page 4 which will be as following：




(1) Auto safe door function：there are【enbale】and【disable】available. When choosing【enable】，the open or close action is being done by actuator，conversely，need manual.

(2) Safe door drives:there are [hydraulic] and [motor-driven] available,when choosing [motor-driven] to adjust pressure,speed not participate in the door open/close movement;conversely working.

(3) Door-opening stop mode：there are 【time】and 【distance】available，when choosing【time】，one of the time or distance to open-stop completed and then safe door open movement；when choosing【distance】，use distance to finish and safe door open movement

(4) Safe door key lock automatically：there are 【enbale】and 【disable】available，when choosing 【enable】inching keys of open door or close door for door opening or door closing，and press again for movement sotp；otherwise press for movment and release for movement stop.

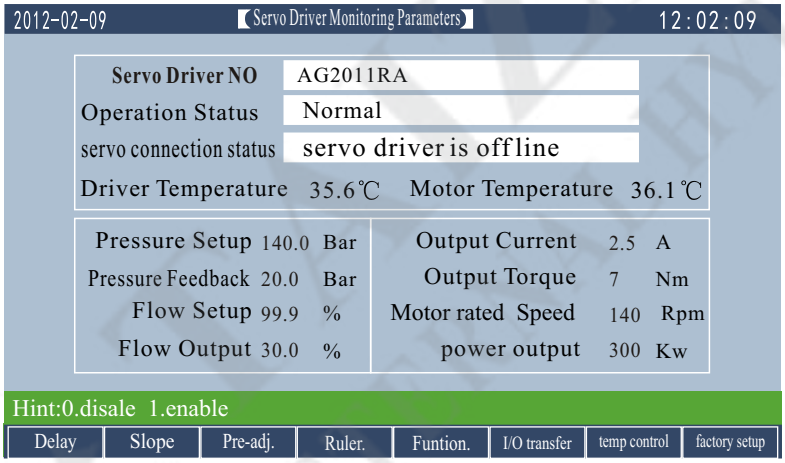
(5) Door open starting position：there are 【pre-mold opening】【mold open stop】and 【ejector Finisheed】available.When choosing 【pre-mold opening】under semi-atuo mdoe and mold open movement,s door open，same to others.

(6) Door open start delay：time begin to count before safe door runs，and when time is up then proceed to door open.

## 9. Servo Driver monitor Setup Page

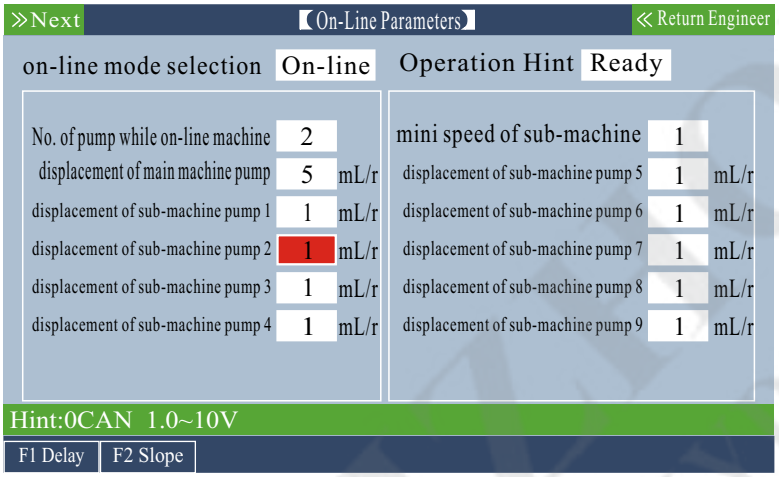
Press 

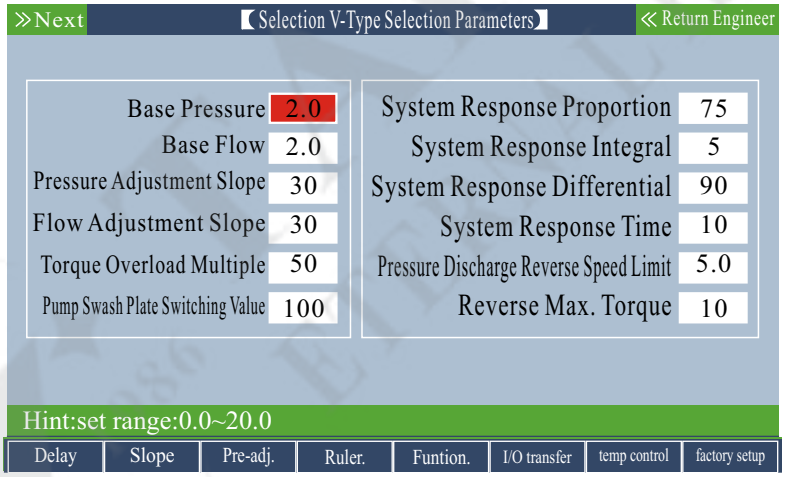
key to enter the servo driver setup page with the display as follows:

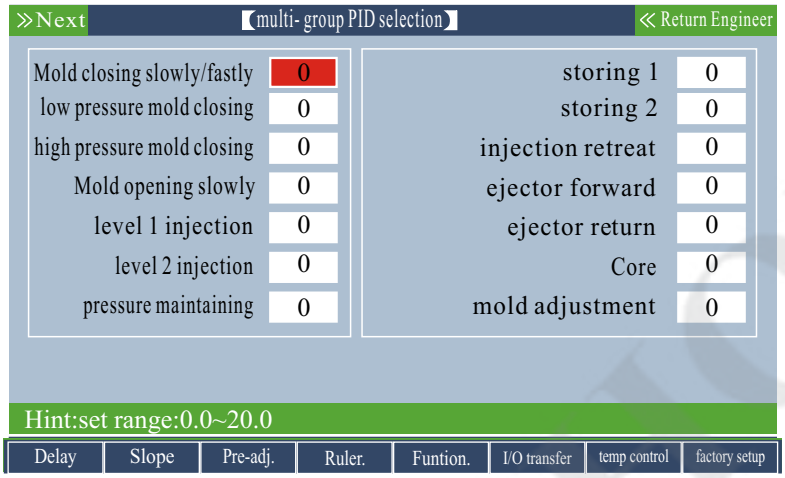


## 10. Servo Driver Setting Page

Enter the engineer page, press 托模/中子 EJE/CORE key to enter the setup page with the display as follows:



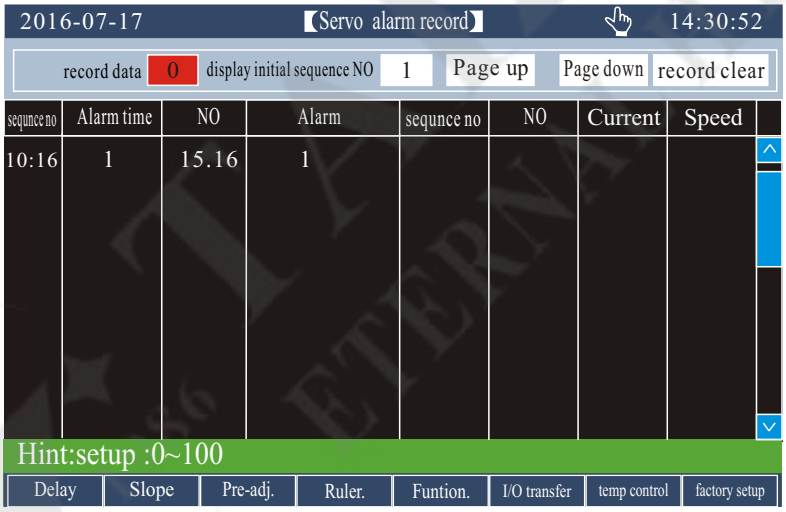






Press 

key to enter into diagnose then Press 

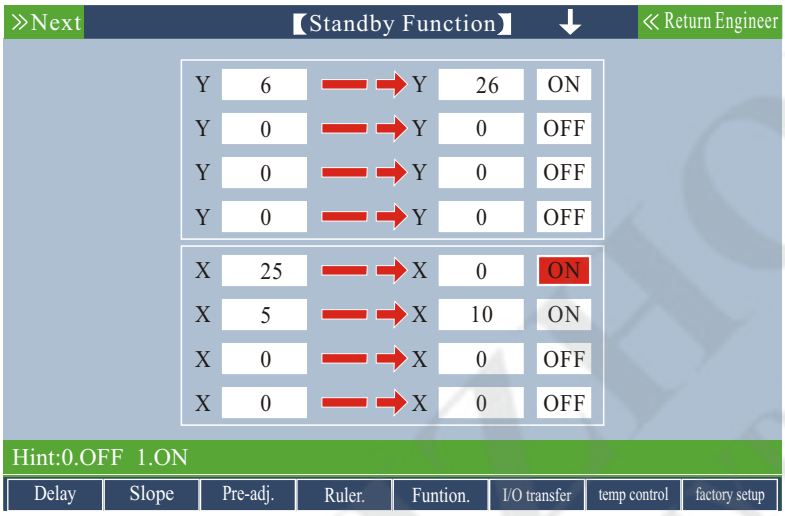
key enter the Servo alarm record,now the menu is as follows：




Note: The above is the page of the related parameters of the servo driver. Please refer to [User Manual of Servo Driver] for details.

## 11. Standby Function Setting Page

After entering the correct password, press 時 間 TIME Key to enter the Standby Function Setting Page. The following is displayed:



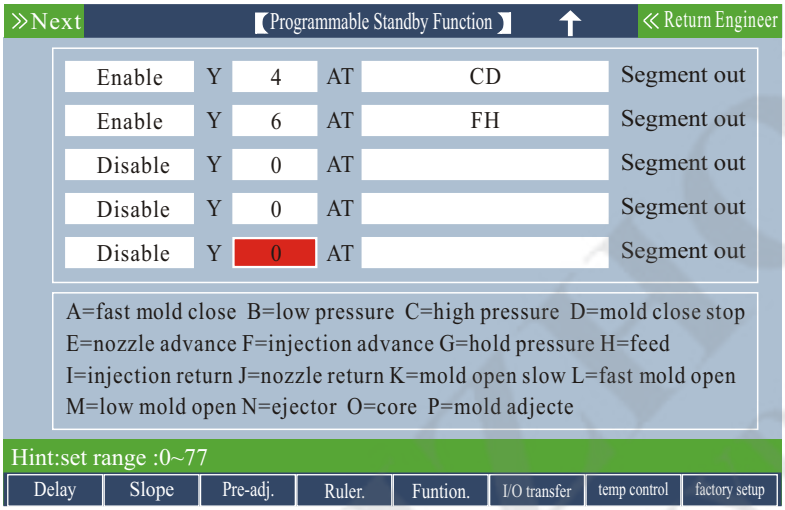

### Descriptions on setting parameters function mode

(1) Output Point Transfer Function: This function can be enable or disable. If enable, the output point executes immediately transfer operation. In case that mal-function or damage occurs to a certain point, the control can be transferred to another point by activating this function. For example, in case that failure occurs to the mould opening output point and the knockout core function is disable, the Y06 mould opening point can be transferred to Y26 and then the output wires should be exchanged. The system is equipped with the function of simultaneously transferring two output points. Once this function is enable, the system makes judgment on the two selected items. If the item is [ON], the transfer of the pre-set conditions of the item will be executed.

(2) Input Point Transfer Function: This function can be enable or disable . If enable, the input point Executes immediately transfer operation. In case that mal-function or damage occurs to a certain point, the control can be transferred to another point by activating this function. For example, in case that failure occurs to the front safety door input point and the knockout core function is disable, the X00 front safety door input point can be transferred to X25 and then the input wires should be exchanged. The system is equipped with the function of simultaneously transferring two input points. once this function is enab le, the system makes judgment on the two selected items. If the item is [ON], the transfer of the pre-set conditions of the item will be executed.

## 12. Programmable Standby Function Page

After entering the correct password, press 時 間 TIME Key to enter the Programmable Page.The following is displayed:




### Descriptions on setting parameters function mode

In order to meet diversified application needs and provide an innovative product, we take the Initiative to offer the programmable standby function page so that the users can define and revise by themselves the functions and the action sequence.

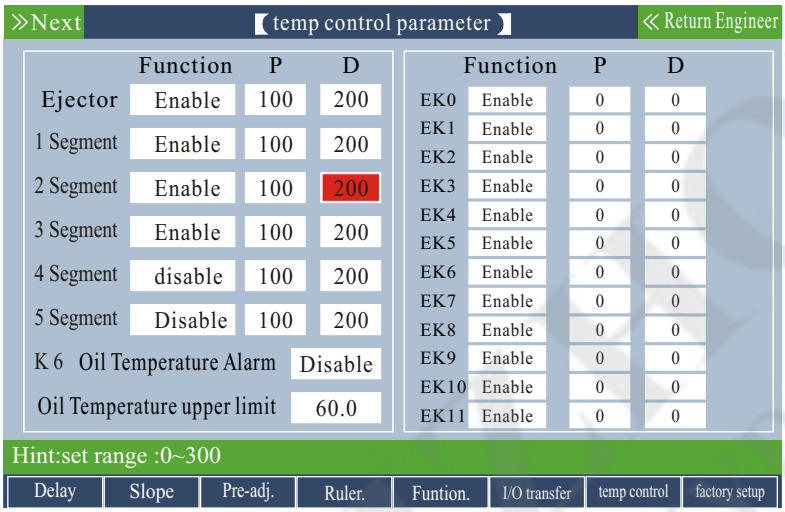
Example 1: For a certain mould injection machine, due to the different design of the oil piping, it is required that a point is output while clamping at high pressure and the power will not be interrupted until the melt finishes taking out. To achieve such a special function, choose an item and have it activated,and then specify an output point (i.e. this function is output through Y 01), and then set the action sequence [CD].

Notes: Regarding the output scope of Sequence D Clamping Stop, in automatic mode, the Clamping switch is contacted during the process of mould close at high pressure, and this sequence output starts until the melting finishes; in manual mode, the clamping switch is contacted during the process of mould close at high pressure, and this sequence output starts until the mould opening key or the reset key is pressed.

Example 2: For a certain mould injection machine, due to the different design of the oil piping, it is required that a point is output while injecting and melting. To achieve such a special function, Choose an item and have it activated, and then specify an output point (i.e. this function is output through Y22),and then set the action sequence [FH].

## 13. Temperature ParameterSetting Page

After entering thecorrect password, press Key 温 度 TEMP. to enterthe Temperature Parameter Setting Page. The following isdisplayed:




### function Description on setting parameters

(1) Ejector Function、1Segment、2Segment 、3Segment 、4Segment 、5Segment function、[Activated]or [Deactivated] can be chosen. If deactivated, the system will not execute inspectionand controlon this sequence.

(2) Oil Temperature Alarm: [Activated] or [Deactivated] can be chosen. If deactivated, once it is detected

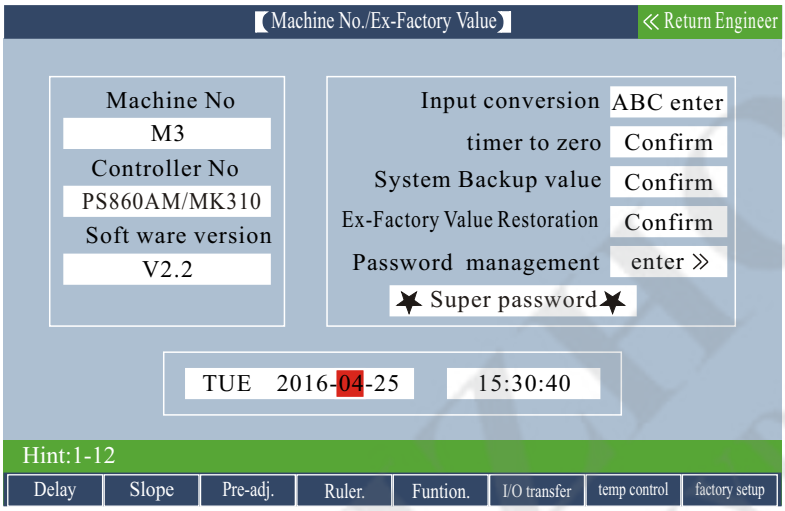
(3) Pd Setting: Pd has been set before ex-factory. It is recommended that the user should not revise this parameter under normal circumstance.

(4) Proportion control: proportion control is one of the simplest way for controlling, in which the input error signals are in proportion relation with output signals. There are steady-state errors when proportion control is the only way to be utilized.

(5) Different coefficient control: in different coefficient control, output error signals of controller form direct proportion relationship with input error signals of controller Fluctuation even destabilization may appear in automatic control system during the course of getting over and adjusting errors. The reason is: the existing heavier inert (links) or lagging assemblies can constrain errors, and its changing is always behind the changing of errors.The solution is to make the changing of errors constraint effect become advancing, i.e., the errors constraint effect should be zero when errors become close to zero. That is, it is notefficient enough to introduce proportion into controller merely. The function of Proportion can only enlarge the amplitude value oferrors. But at present time itis necessary toin crease different coefficient , which can forecast the changing directions of the errors. Thecontroller combined proportion with different coefficient can cause errors constraint effect to be zero, even to be negative,thereby severe over adjusting of proportion under controlling can be avoided. So for Assemblies under controlling with heavier inertia or lagging, PD controller can improve dynamic behaviors of system during adjustment.

## 14. Machine No./Ex-Factory Value/Time Setting Page

After entering the correct password, press Key 資 料 DATUM to enter the Machine No./Ex-Factory Value/ Time Setting Page. The following is displayed:




### Descriptions on setting parameters function mold

(1) Machine No: Thesystem is equipped with the function ofsetting NO.for the mould injection machine so that the manufacturer can setthe No. for easysales management and after-sales service record.

(2) Ex-Factory Value Restoration: During the modifying process of password pages, if normal operation cannot be achieved due to too much deviations of the modified parameters, press Key Enter and choose Confirm, and then all the contents and all the parameters will be restored to the standards values set before ex-factory.

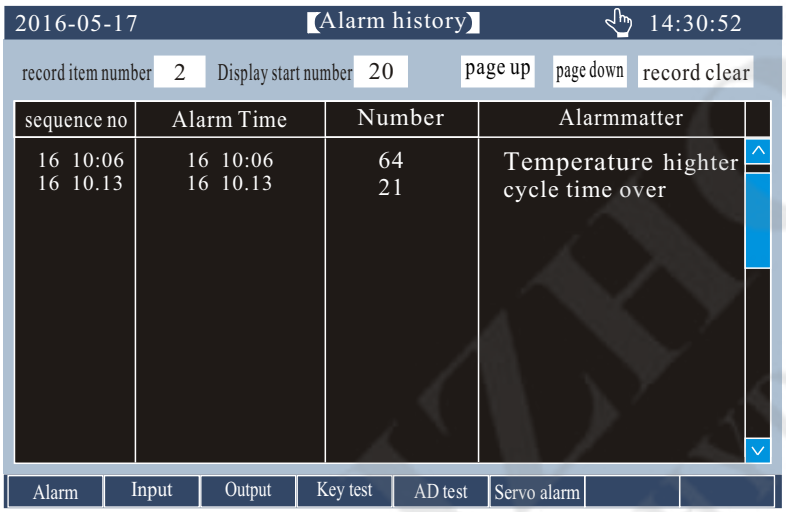
(3) System Backup value:standard values backup are provided for resetting when machines leave factory;

(4).Time setup: to setup the time, afterthe setup, press the[input] key,and then press [OK], the update is successfully set up.

# Chapter 6 Input/Output Mode Inspection

## 1. Alarm history page

Press 診斷 DIAGNOSE key , to enter the alarm history page, and it is as follows:



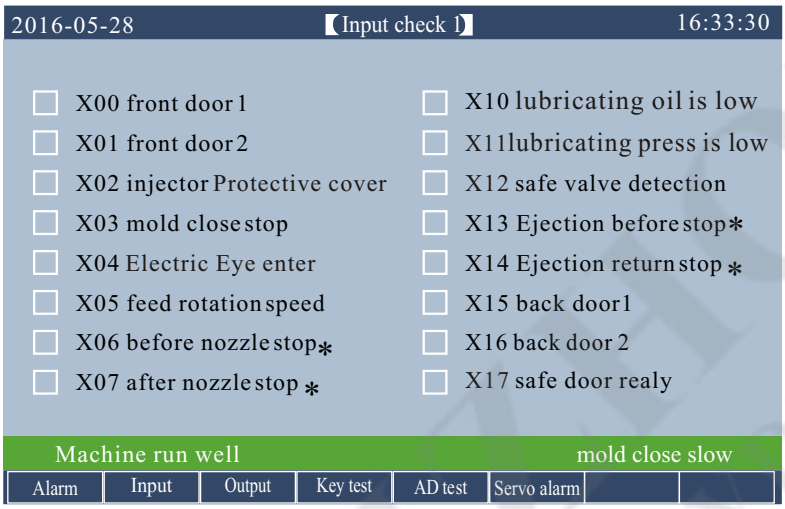

### Description on setting parameters

(1). Display: the system stores at most 999 pieces of alarm records for inspection, it will be helpful for the maintenance of the equipments.

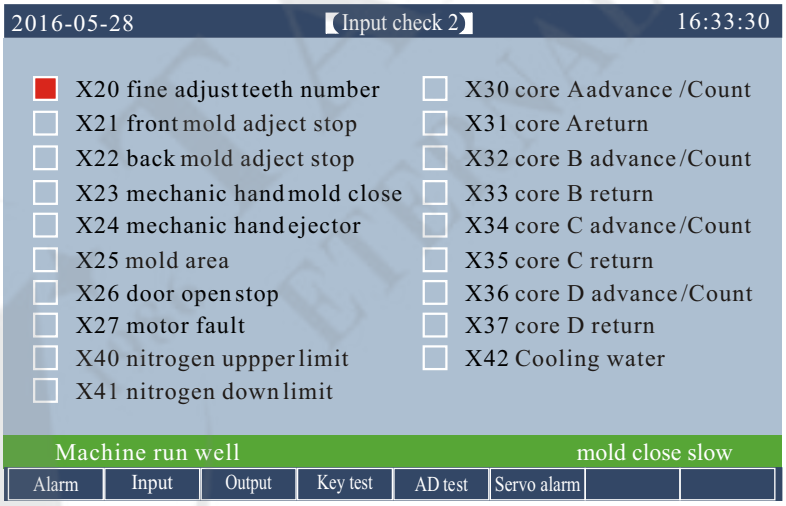
(2).View method：a：move cursor to theup and down button to view，b，[initial sequence no display]：to locate by initial sequence no.and then use the up and down key to view.

## 2. Input Inspection Page

(1) Press 2 VWX Key on the Main Page to enter Input Inspection Page 1 and the following will be displayed:

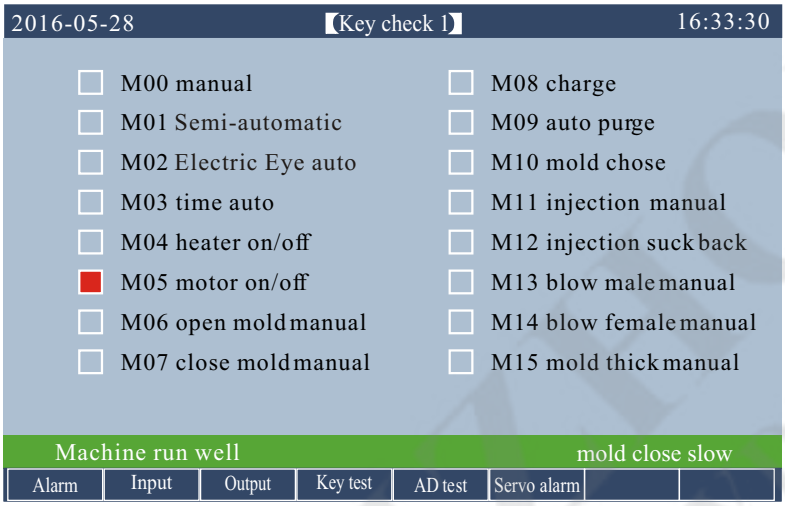



(2) Press 3 YZ Key on the Main Page to enter Input Inspection Page 2 and the following will be displayed:

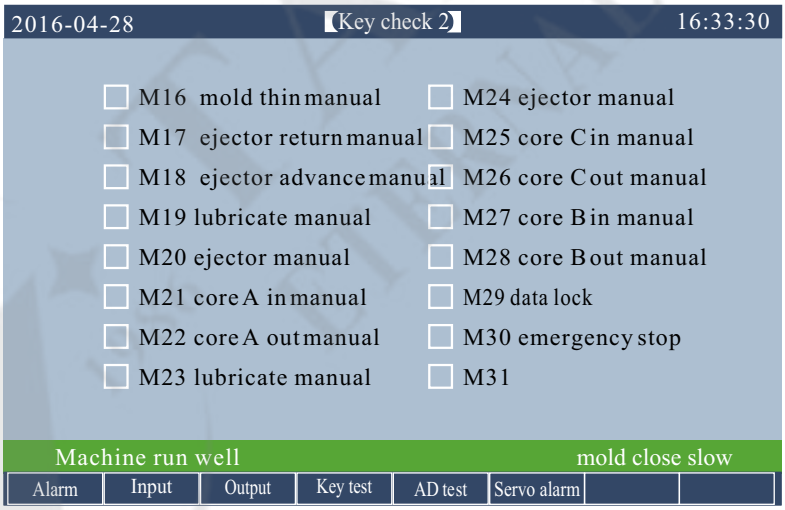


## 3. Key Inspection Page

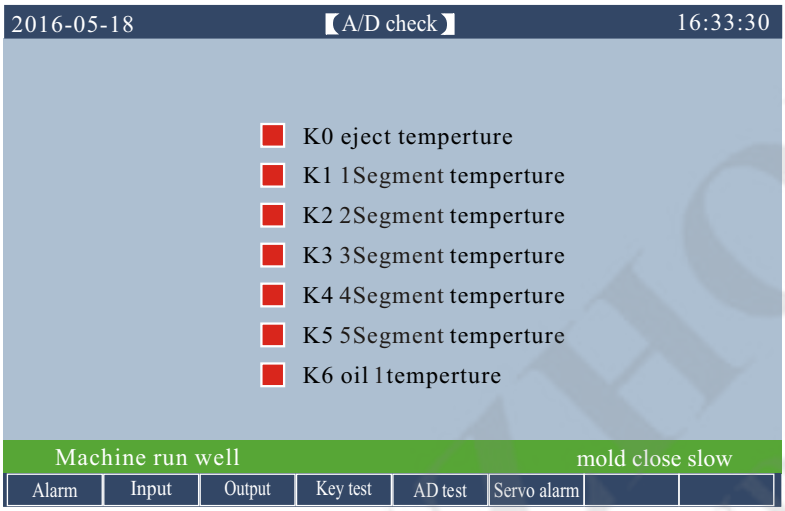
(1) Press 4 JKL Key on the Main Page to enter Key Inspection Page I and the following will bedisplayed:




(2) Press 5 MNO Key on the Main Page toenter Key Inspection Page 2 and thefollowing will be displayed:

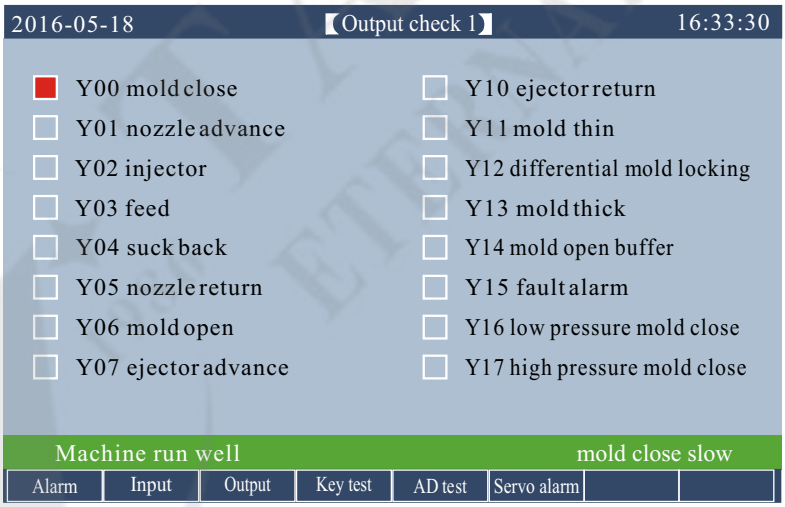


(3) Press 6 PQR Key on the Main Page enter A/Dcheck and the following will be displayed:

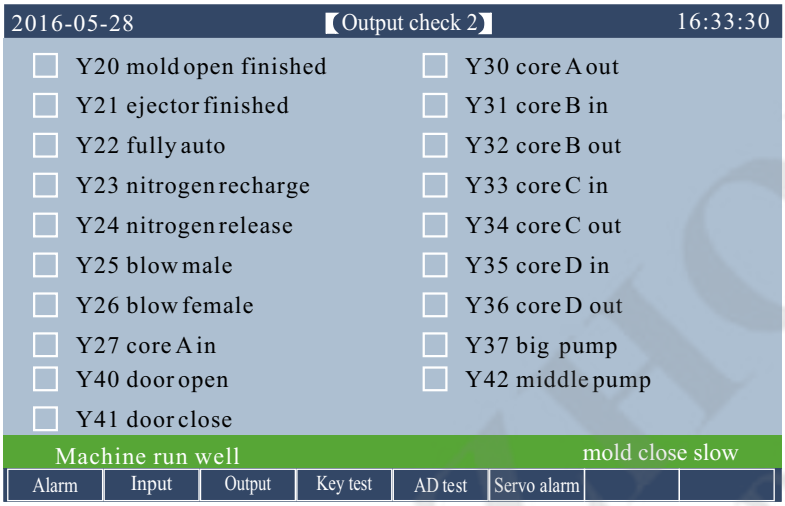



## 4. Output Inspection Page

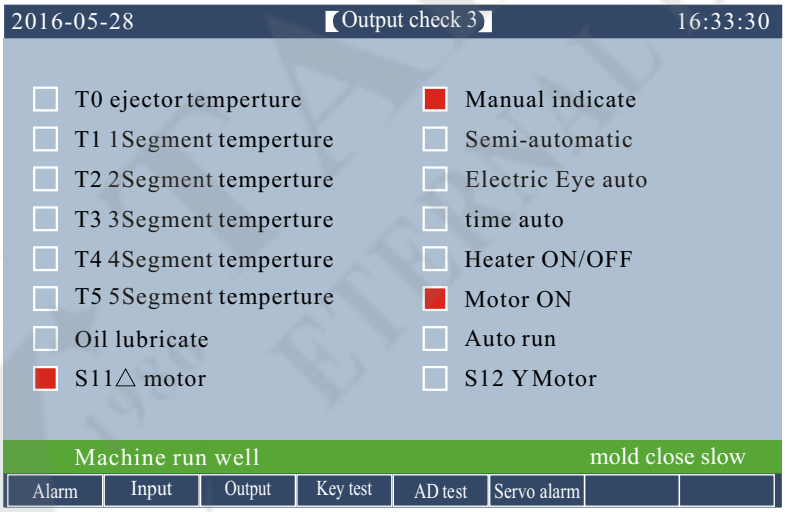
(1) Press 7 ABC Key on the Main Page to enter Output Inspection Page 1 and the following will be displayed:



(2) Press 8 DEF Key on the Main Page to enter Output Inspection Page 2 and the following will be displayed:




(3) Press 9 GHI Key on the Main Page to enter Output Inspection Page 3 and the following will be displayed:

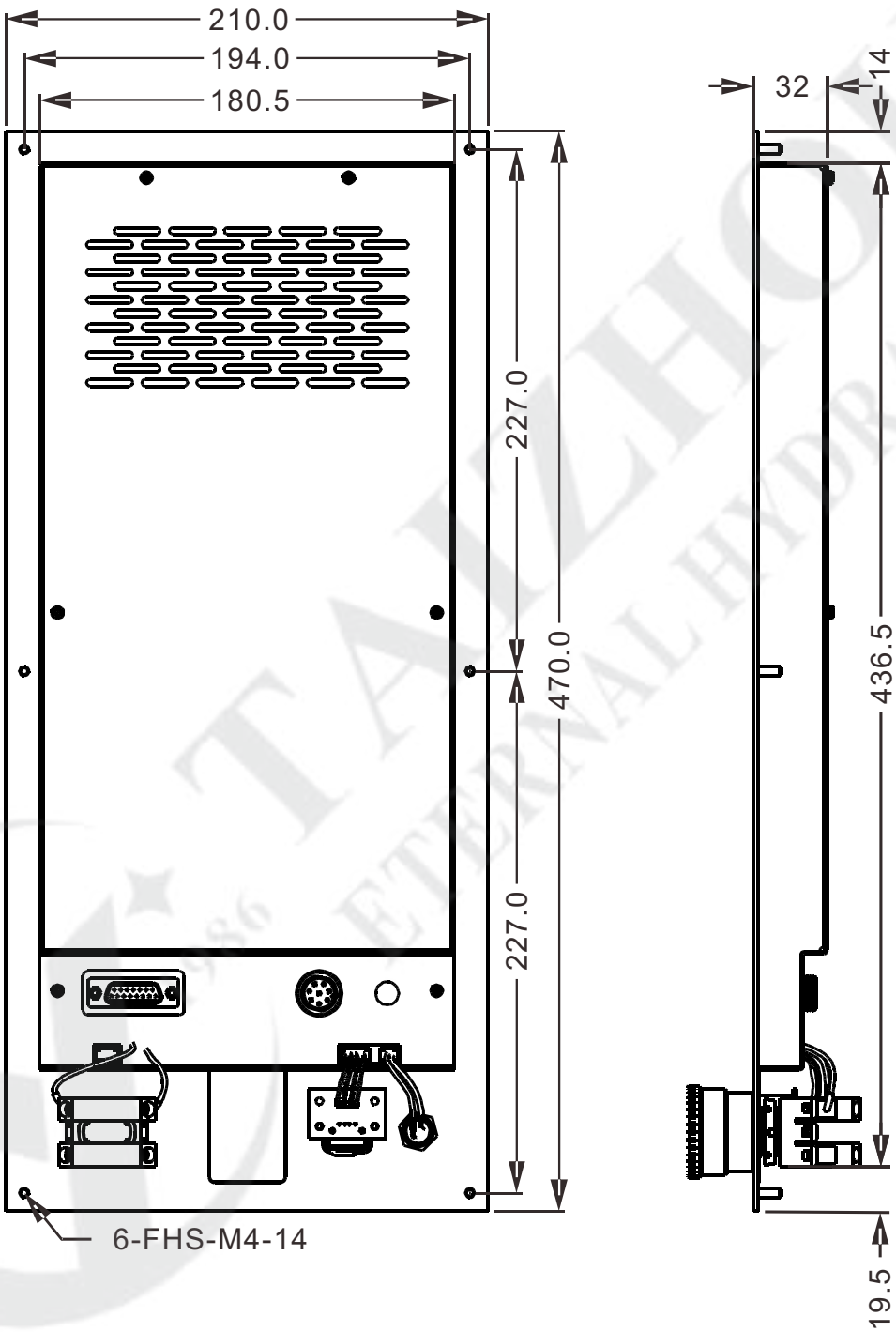



(6) Above delivery inspection pages are used for monitoring signals. If you want to inspect whether the delivery valve is ok or not manually without any actions, you can move the cursor to the delivery name which is waiting for your inspection, pressure enter button,then the delivery valve will come to work. Meanwhile the solid block in the scene shows the delivery of the signals.

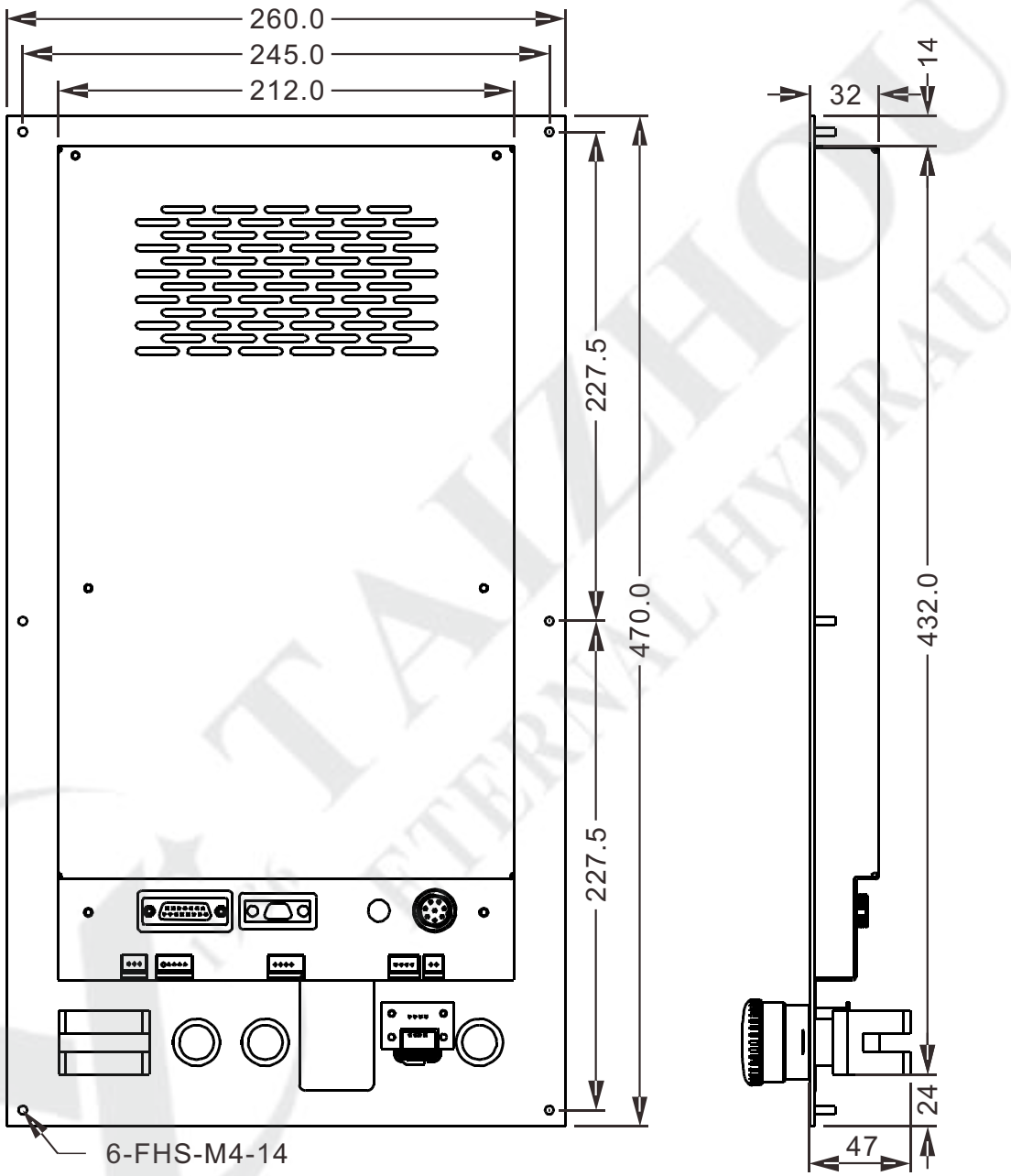
## ★Special explaination

All the input and output point pages in this instruction manual are subject to changes without notice. The inspection pages displayed on the computer should be correct and final.

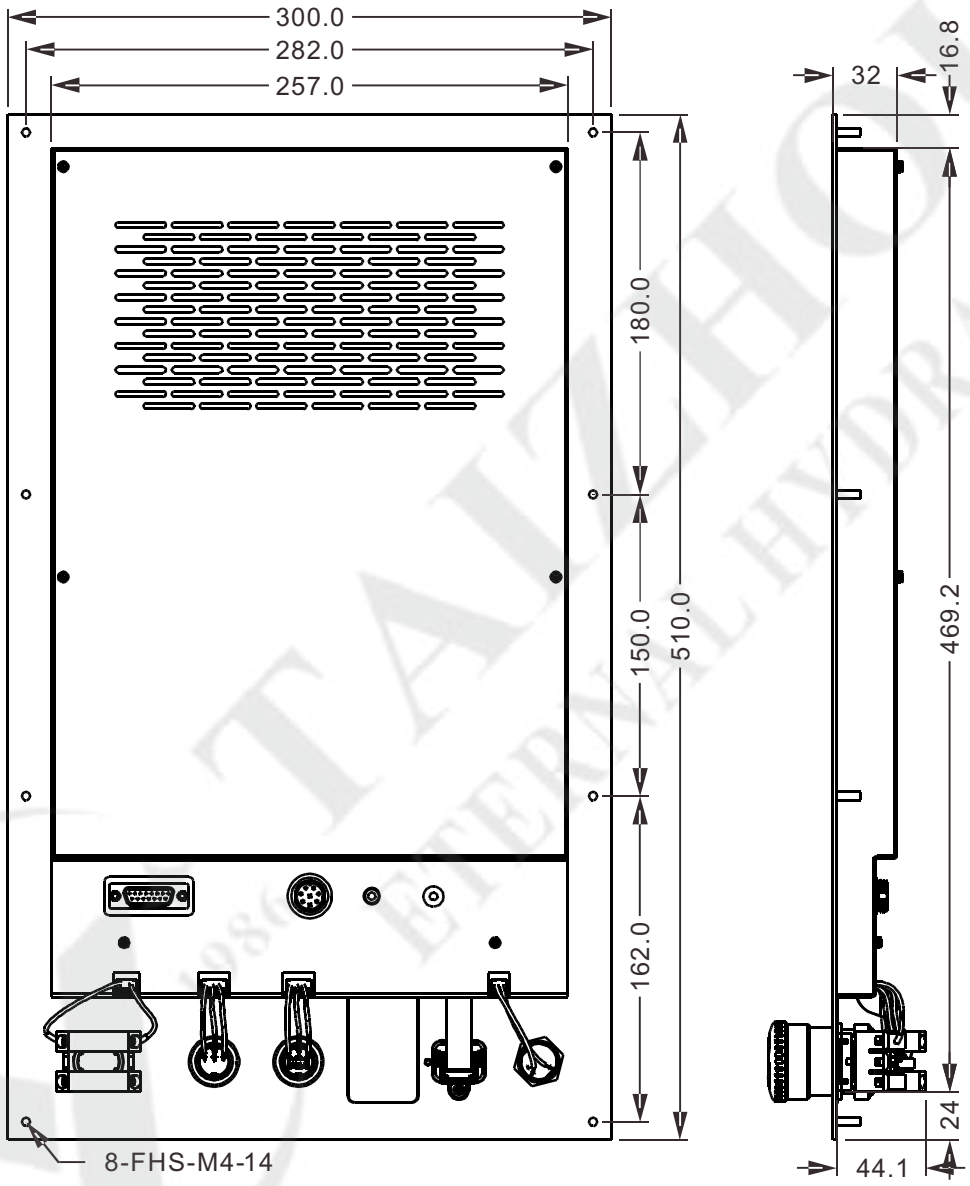
**Appendix 1:MS210 keyboard installation dimension Layout**



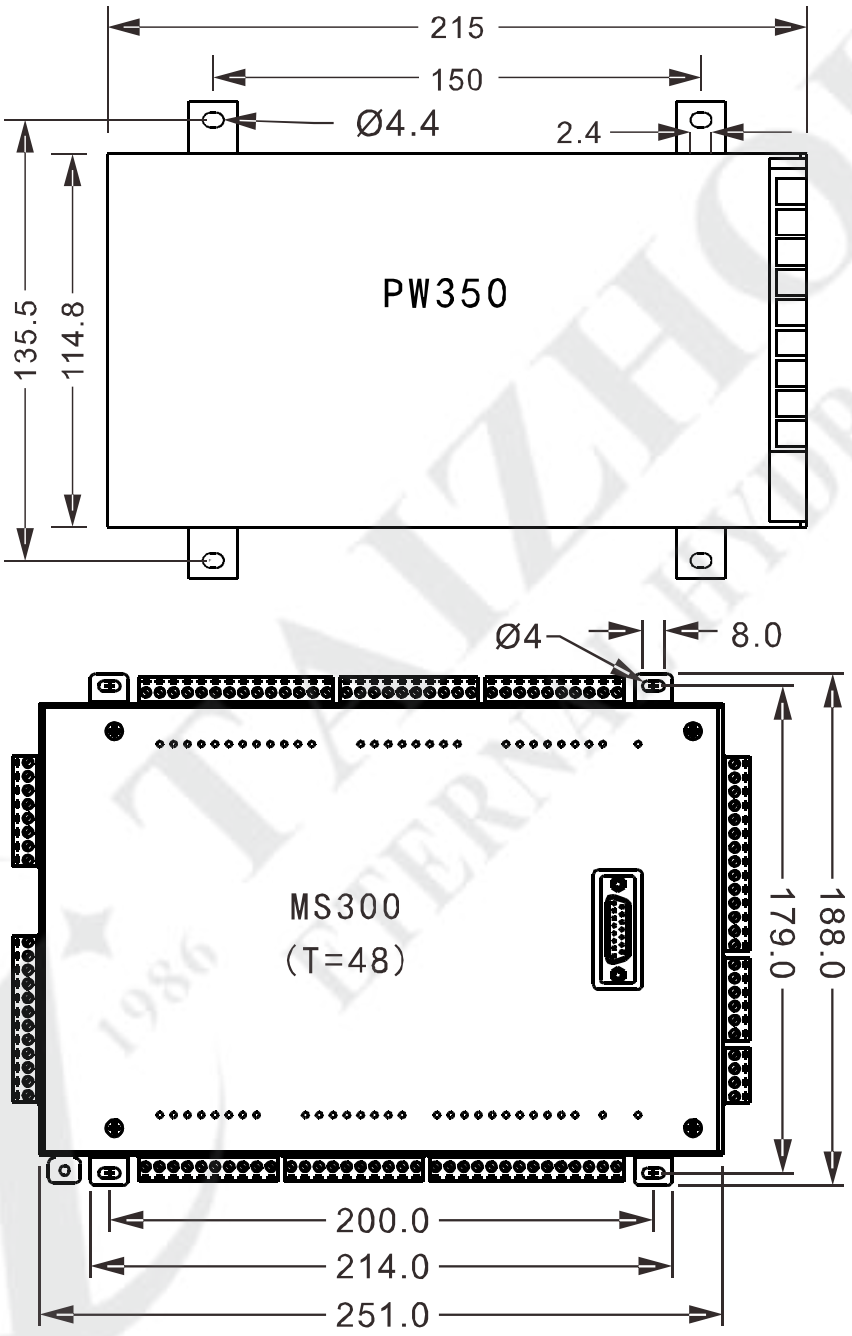
**Appendix 2:MS220/250 keyboard installation dimension Layout**



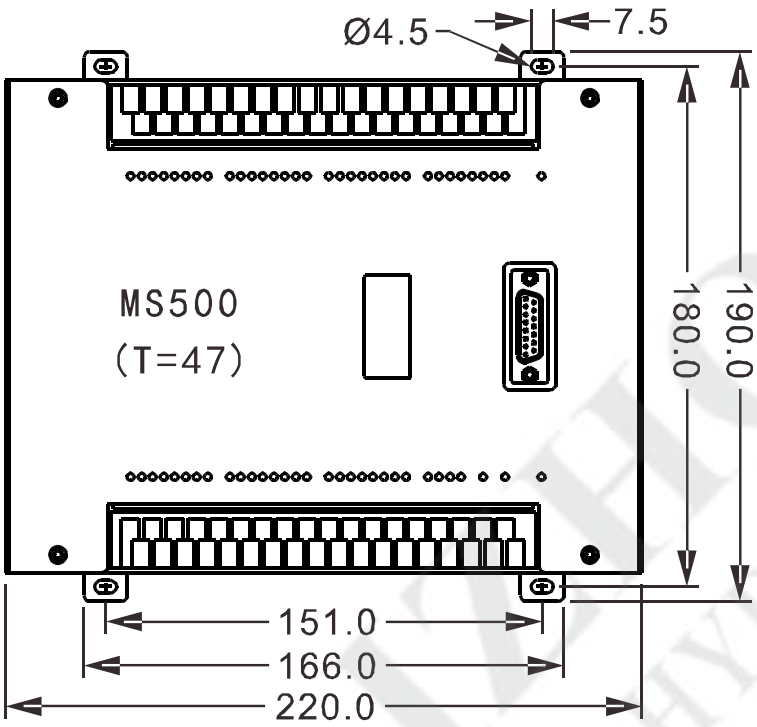
**Appendix 3:MS260 keyboard installation dimension Layout**

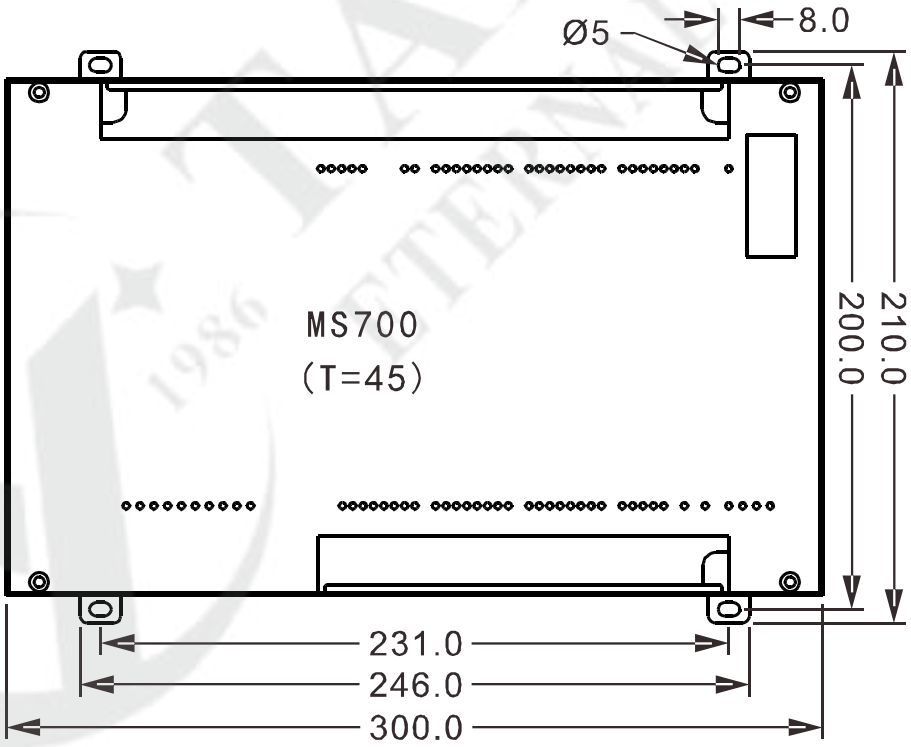


**Appendix 4:External dimensions for power supply case and transformer**

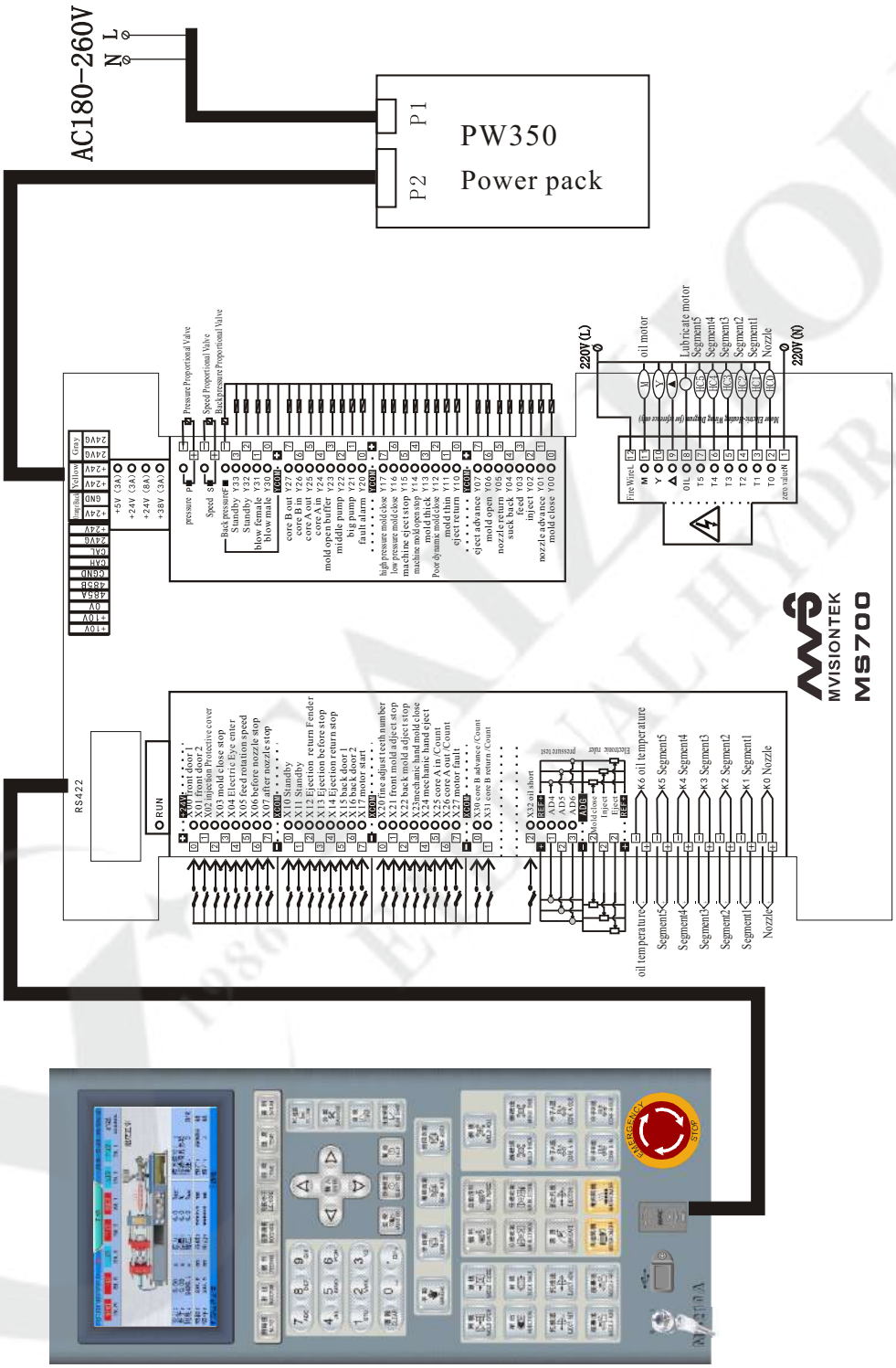



*Exterior dimensions and installation hole position drawings for main controller*

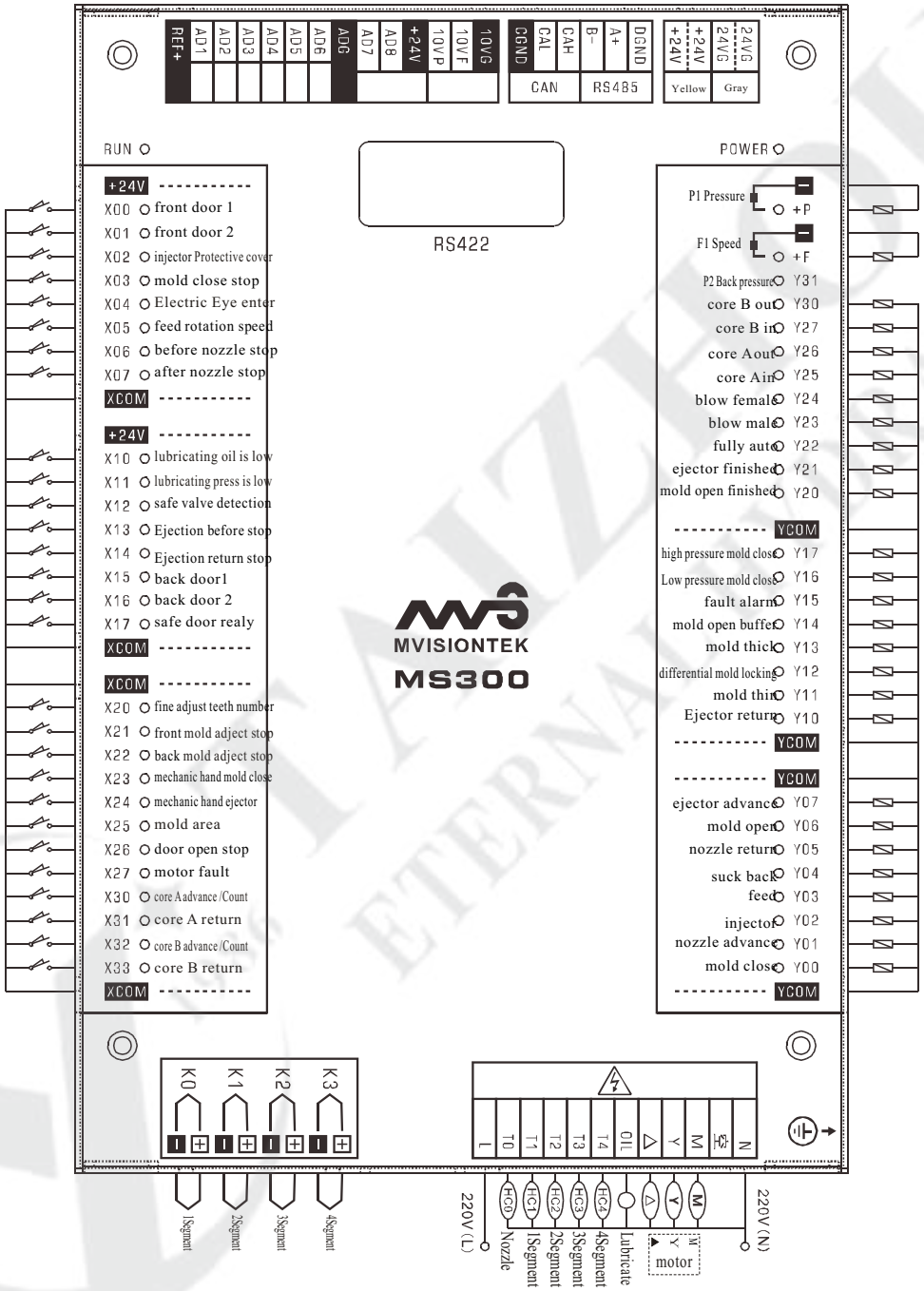

Ø4.5
7.5
MS500
(T=47)
180.0
190.0
151.0
166.0
220.0


Ø5
8.0
MS700
(T=45)
200.0
210.0
231.0
246.0
300.0

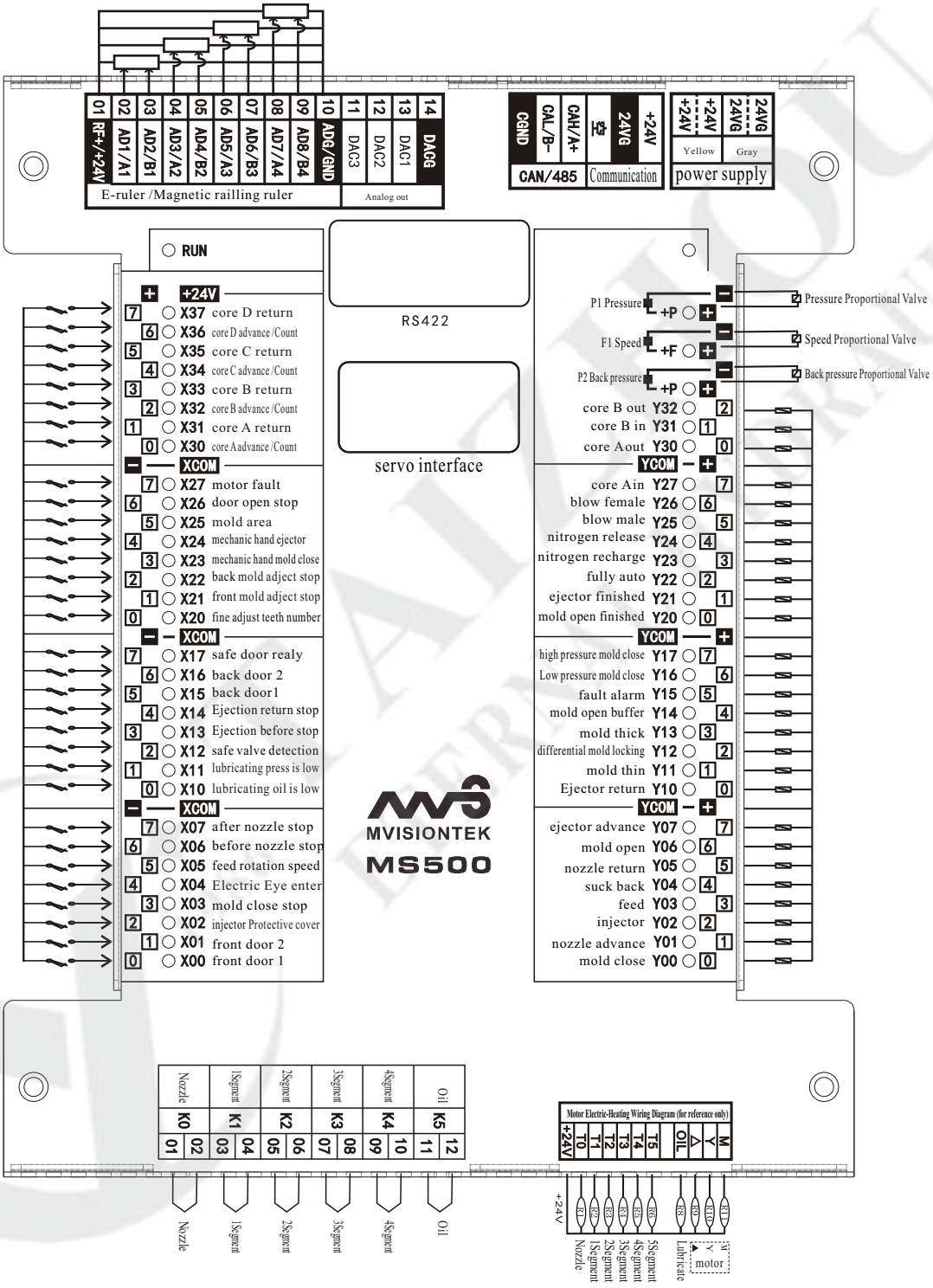
**Appendix 5:MS700 system drawing**



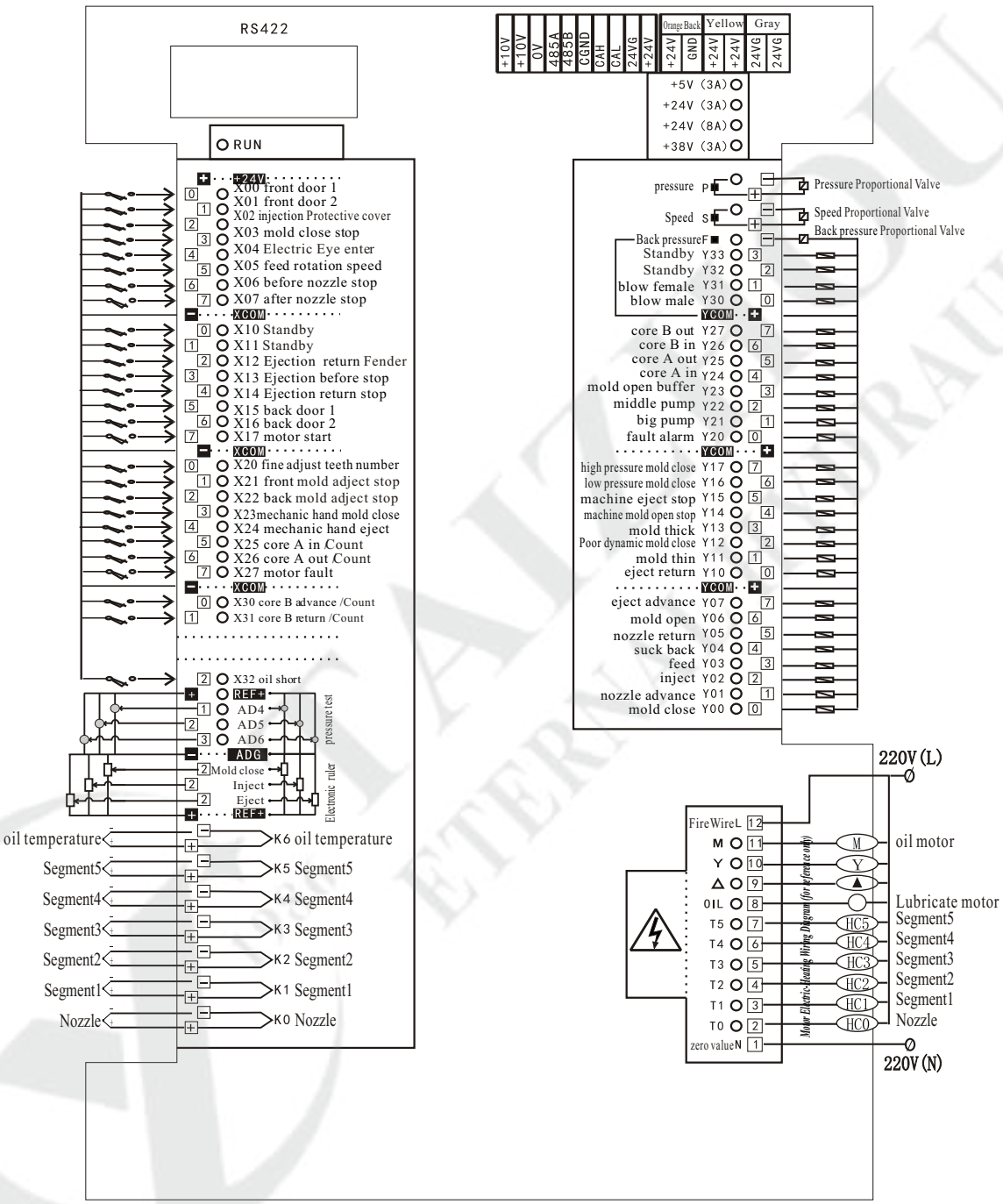
**Appendix 6:MS300 input and outputWiring Diagram**



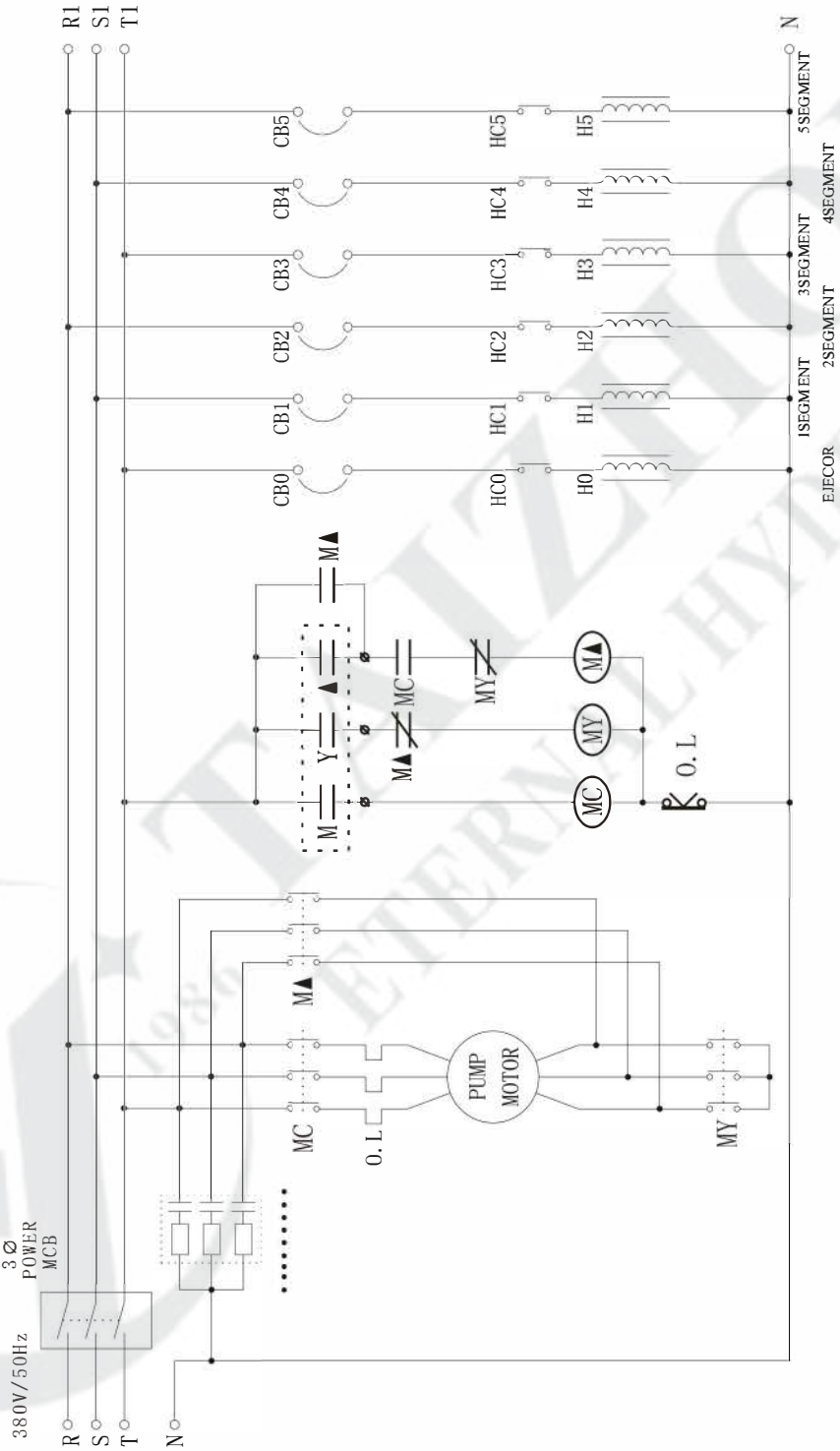
## Appendix 7:MS500 input and outputWiring Diagram



## Appendix 8 MS700 input and outputWiring Diagram

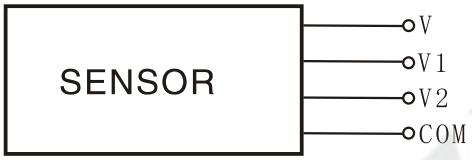


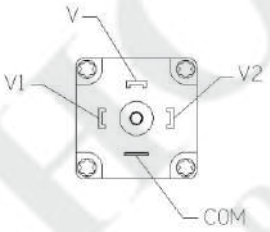
**Appendix 9:Motor Electric-Heating Wiring Diagram (for reference only)**



**Appendix 10:Introduction of new type of patent double channel compensation linear sensor**

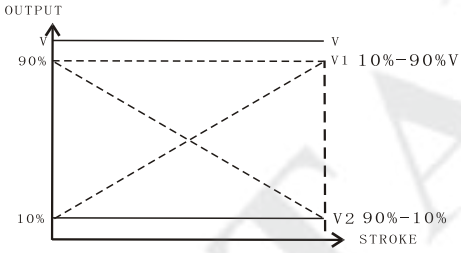
Linear sensor wiring diagram seechart1



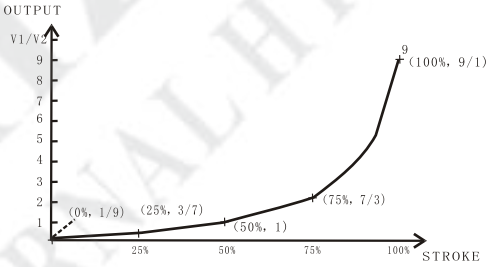

图一

Normal power supply ideal output situation， see chart 2




Linear precision of single channel is basis

Use V1V2 as output mark of this sensor ,see chart 2




Comprehensive linear precision is 0.01% higher than single channel.

## Features of double channel compensation linear transducer

The reason for digital bounce of traditional potentiometer type of displacement sensor is actual caused by fluctuations of supply voltage or measurement reference voltage or by these two elements.Traditional linear scale now can not solve the digital bounce problem generated by servo systems,but the double-path compensation type of displacement sensor is just designed for this prolem.

And when input voltage of displacement sensor is rised or falled,this v1/v2 value remain unchanged,namely this curve is unchanged.Then this curve which not change with voltage variation(in this example,voltage rise to 1 vdc or fall to 1vdc is still reliable) and this decides the displacement sensor's shift.Even in a situation like voltage change causing by interference,can still reach 0.015mm stability.(take 350mm stroke as example)when stroke reach 250mm,the stability can still reach 0.10mm.These performances are two order of magnitudes higher than traditional displacement sensor which is first choice for precision injection molding machine. Use the new type ofdisplacment sensor can solve once for all theproblems such as injection measurement not correct, inaccurate of mold opening position or even cause damage to machine.As injection molding machine manufacturer to adopt the new type of displacement sensor can greatly reduce frequences of malfunction and maintenance so as to lower maintenance service charge and to improve brand image.

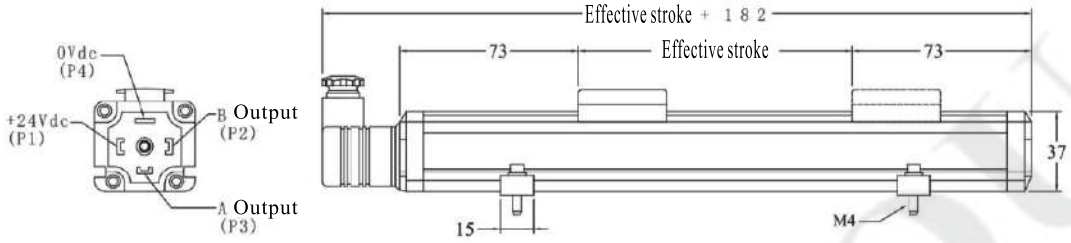
This patent displacement sensor is with analog sigmal, simple structure,mechanical compatibility,high reliability,cheap cost and good adoptive to power supply,strong anti-interference to servo system.

## Appendix 11:Magnetic suspension displacement sensor

Digital impulse output is the most economic can reach effect of anti-interference digital signal output.First controller will send start pulse to sensor.Sensor will issue stop pulse correspondingly based on magnetic pitch position,And controller can calculate the time difference between two groups pulses and then calculate the precision displacement value.

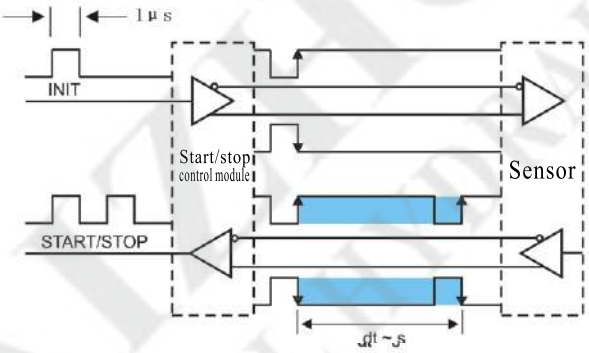
Installation of floating magnetic is very simple,Compare with captive magnetic, floating magnetic can demonstrate the advantage of non-contact sensing and eliminate wear of captive magnetic socket (Working distance between magnetic and working surface is 0.1--10mm)

| Specification | Technology parameter |
|---|---|
| Order No | 1830 |
| Output | Digital pulse output |
| Measurement data | Linear displacement |
| Resolution | 0.1/0.01/0.005mm |
| Power supply | +24Vdc(20.4-28.8Vdc) |
| Input protection | Polarity protection up to -30vdc, over voltage protection up to 36vdc. |
| Current consumption | 50-150mA(based on stroke) |
| Insulation strength | 500Vdc(DC ground to machine ground) |
| Repeatability | Full range<±0.005% |
| No-linearity | Full range<±0.01%(max +90 μm) |
| Update time | 0.5ms up to 1200mm 0.5ms up to 1200mm |
| | 2ms up to 4800mm 5.0ms up to 7600mm |
| Working temperature | -40-75℃ humility 90% non-condensing |
| Sealing | IP( with connector) |
| Vibration indicator | 15g/10-2000Hz/IEC 68-2-6 |
| EMC test | Radiation EN61000-6-3,anti-interferenceE N61000-6-2 |
| | E N61000-4-2/3/4/6 |




(See toward sensor outlet)Cable shield connects to connector shell and grounded at controller side。

| | |
|---|---|
| P1 | +24Vdc |
| P2 | B output |
| P3 | A output |
| P4 | +0Vdc |




## Order No

| 1 | 8 | 3 | 0 | X | X | X | X | X | X |
|---|---|---|---|---|---|---|---|---|---|

output
digital pulse output
(IP65 4pins connector)

mounting
1=42.5mm mounting
2=42.5mm isolation mounting
3=50mm mounting

Magnetic type
1=captive 3=die-casting
2=suspension 4=large suspension
effective stroke (mm)

| | | | | | | |
|---|---|---|---|---|---|---|
| 0100 | 0130 | 0150 | 0175 | 0200 | 0225 | 0250 |
| 0275 | 0300 | 0360 | 0400 | 0425 | 0450 | 0500 |
| 0525 | 0550 | 0600 | 0650 | 0700 | 0750 | 0800 |
| 0875 | 0900 | 0950 | 1000 | 1100 | 1250 | 1350 |
| 1500 | 1600 | 1750 | 2000 | 2250 | 2500 | 2750 |
| 3000 | 3250 | 3500 | 4000 | Accept custom | | |

Injection molding machine can use suspension type displacement transducer.

Installation of floating magnetic is very simple.Compare with captive magnetic，floating magnetic can demonstrate the advantage of non-contact sensing and eliminatewear of captive magnetic socket.Working distance between magnetic and working surface is 0.1--10mm.

**Appendix 12Product selection table**

## Mainframe selection chart

| Mainframe model specification | MS300 | MS500 | MS700 |
|---|---|---|---|
| Outline size | 166X251 | 170X220 | 190X300 |
| Input/output ports | 28/25 | 32/27 | 27/28 |
| Relay output ports | 9 | 10 | 10 |
| Temperature input | 4 | 6 | 7 |
| AD analog quantity input | 6 | 6 | 3 |
| AD analog quantity input | 2 | 2 | 3 |
| magnetic suspension ruler | 0 | 1 | 0 |
| DAC 0-1Aoutput | 3 | 3 | 3 |
| DAC 0-10Voutput | 2 | 2 | 4 |
| I/Oextension | 8/22 | 8/22 | 8/22 |
| Communication pattern | RS422/RS485/CAN | RS422/RS485/CAN | RS422/RS485/CAN |
| AD Sensor | 0 | 4 | 4 |

Notice:E-ruler,magnetic suspension ruler use same AD input,while use it for magnetic suspension ruler,the E-ruler can not be used,same to double-path ruler.

## Keyboard selection chart




| Outline size | MS210 | MS220 | MS250 | MS260 |
|---|---|---|---|---|
| Model specification | 210X470 | 260X470 | 260X470 | 300X510 |
| CPU specification | A8/300M | A8/300M | A8/300M | A8/800M |
| LCD screen | 7寸 800X480 | 7寸 800X480 | 8寸 1024X600 | 10寸 1024X600 |
| Communication interface | RS422 | RS422 | RS422 | RS422 |
| Working temperature | -10～50℃ | -10～50℃ | -10～50℃ | -10～50℃ |
| Ethernet interface | 100M | 100M | 100M | 100M |
| Storage interface | USB | USB | USB | USB |
| Key life | 200000times | 200000times | 200000times | 200000times |

**Appendix 14:Product Guarantee Terms**

# Product Guarantee Terms

I. Our guarantee services are provided by our after-sale service center of all offices all over China and cover all products sold by us.

II.Our products carry out one-month 3-R service and two-year (one year for LCD screen) free repair service. Except otherwise specified by both parties, these periods shall start as of the date where the products are sold.

III. Provided that they are used normally, in case of failures due to quality reason of the products, within the 3-R or free repair period, we will provide free repair or replacement for you.

IV. Within the 3-R or free repair period, in any of the following circumstances,you will not be able to enjoy the 3-R service and free repair service:

1.When the product is defective or damaged due to human factor or force majeure;

2.When the product is damaged due to the installation and operation not conforming to the related regulations;

3.When the product is damaged due to peripheral electric leakage or short during use;

4.When the product is damaged due to being bumped by external force during use;

5.When the product is repaired without permission or its bar code or serial number is tore or altered;

6.When the product is used in the environment with high temperature and humidity and thus it is burnt due to overheat or damaged due to high damp.

V. We undertake hereby that, if the domestic user needs after-sale services due to product quality, based on our service offices everywhere, we will repair the product within 24h if in the same city, within 48h if in the same province or not later than 72h if out of the same province to reach your place; if the overseas user needs such service, he can send the product back to us at its own cost and we will provide the desired repair.

VI.In order to satisfy the individualized demand of the user, our products can provide software development package for secondary development; however, the user should bear all risks therefrom.

VII. In case of failures during use,the user should inform us as soon as possible and then we will display our professional technicians for repair. It is not allowed to dismantle the product by the user without our permission; otherwise, it will be deemed that the user waives the right for free repair and any loss or product damage will be assumed by the user.

VIII. The repair out of the free maintenance period will be charged. The failure of the same feature can enjoy 3-month free maintenance as of the completion of the first maintenance; however, the six circumstances mentioned in IV above will be excluded for free maintenance.

IX. These Terms shall come into effect as of June 1, 2009. In the case where any terms before are inconsistent with these Terms, the latter shall prevail.

X. We reserve the final right to interpret these Terms.