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Roll forming machine manual

Roll forming equipment pay attention

1. Provide a reliable grounding at the power supply terminal, and connect the main motor and the pump motor ground to the grounding terminal of the control cabinet.
2. Please check the power supply voltage is stable, the required voltage range (three-phase 380V \pm 10%). Do not use this control cabinet if it is out of range or the power grid is unstable.
3. Do not place the control cabinet in direct sunlight. Do not use this control cabinet in air pollution areas such as dusty or corrosive gas. Keep the cabinet and the surroundings dry.
4. Encoders and other control lines should be separated from the power lines to avoid interference.
5. PLC use of ambient temperature: 0-55 °C, touch screen using the ambient temperature: 0-50 °C,
6. Inverter use of the ambient temperature: -10-50 °C (not frozen), above 1000 meters above sea level should be reduced to use (detailed consultation after-sales).
7. It is not allowed to drive a motor whose rated power is greater than or equal to half of it. Only when the rated current of the inverter matches the nameplate of the motor can it operate.
8. Non-professionals do not adjust the cabinet.
9. The frequency converter in the control cabinet is not suitable for "emergency stop" machine.
10. Power down the control cabinet and place all switches and buttons in the stop position during power failure or when there is no press plate.
11. When the unit is not in power outage but needs to be stopped temporarily, push the manual / automatic switch to the middle stop position and press the emergency stop button. To prevent the equipment caused by accidental action.
12. During maintenance, please refer to the above precautions to ensure safety, such as the need to run the equipment required for maintenance, there must be someone to operate the control cabinet, and during the maintenance shall not leave.
13. If equipment damage or personal injury caused by neglect of the above-mentioned causes is caused, the consequences shall be borne by itself.
14. Wiring inside the cabinet is subject to change without notice.

Second, Roller Forming line System functions

System main function:

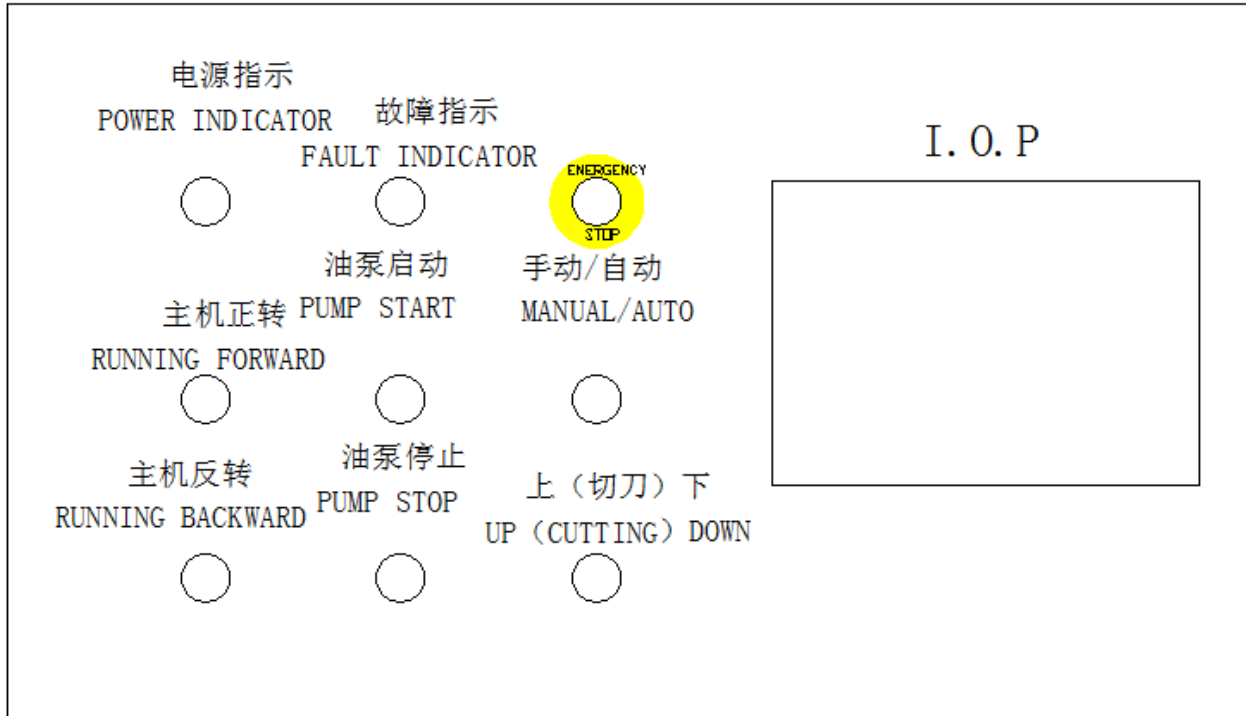
- 1) manual part of the manual debugging, production.
- 2) Automatic part can be set in the number of pieces, the length of the case of automatic production.
- 3) can be more than the number of plate production and length of the set.
- 4) Chinese, English, Polish operation display panel, the use of touch-type digital key input, easy to operate, easy to understand.
- 5) The running length of the steel plate is automatically tracked by the code counter.
- 6) The entire system running and cutting process automatically, and dynamic display on the display panel machine operation: such as lot number, the number of pieces and the length of the dynamic display, without human intervention.
- 7) can be individually controlled oil pump, cutter movements and machine operation.
- 8) power storage: memory power before the work batch number and cut board count, re-transmission, you can continue to run from the original working point.
- 9) The system can set the maximum number of cut plate 99, the maximum number of pieces per batch of 99999, the length of the range of 0.1 to 200 meters.

The main components of the system:

- 1) PLC: the core of the control system.
- 2) limit switch: the upper and lower limits on the cutter to control.
- 3) touch screen: automatic control of the control panel.
- 4) Encoder: Collect steel plate running length data.
- 5) inverter: control the motor running at different frequencies.

二、 ROLL FORMING MACHINE MANUAL OPERATION

(一). Operation button and manual operation



The layout of the control elements on the console

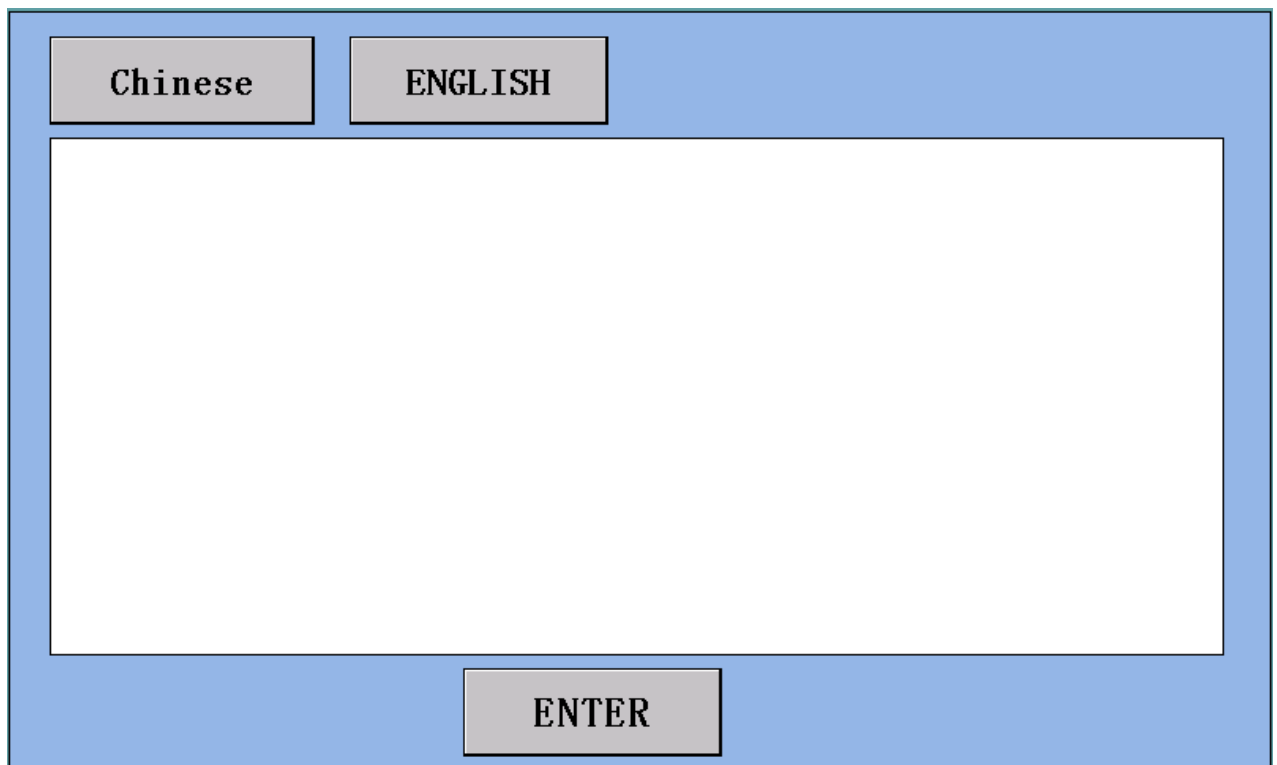
No.	Component name (symbol)	Component function	Remark
1	Touch Screen (IOP)	Used to set the data for automatic operation	
2	Power Supply Indication (H3)	Light On indicates that the power is on	
3	Fault indication (H2)	Light ON means the inverter or pump motor is faulty	
4	Emergency stop (SB1)	Press to indicate that the unit is in an emergency stop state and can not be operated. Release indicates that it can be operated	
5	Forward and direction (H4/SB2)	Press and lighting to indicate that the master is in the forward rotation state	
6	Reverse and Indication (H5/SB3)	Press and lighting to indicate that the host is in the reverse rotation state	
7	Pump start (SB5)	Press to start the pump	
8	Manual / Auto (SA1)	Manual on the left, automatic on the right, the middle stop	
9	Under the upper knife (SA2)	The left controls the cutter upper, the right controls the cutter lower, and is released in the middle position	
10	Pump stop (SB6)	Press the oil pump to stop running	

四, Roller Machinery Automatic operation

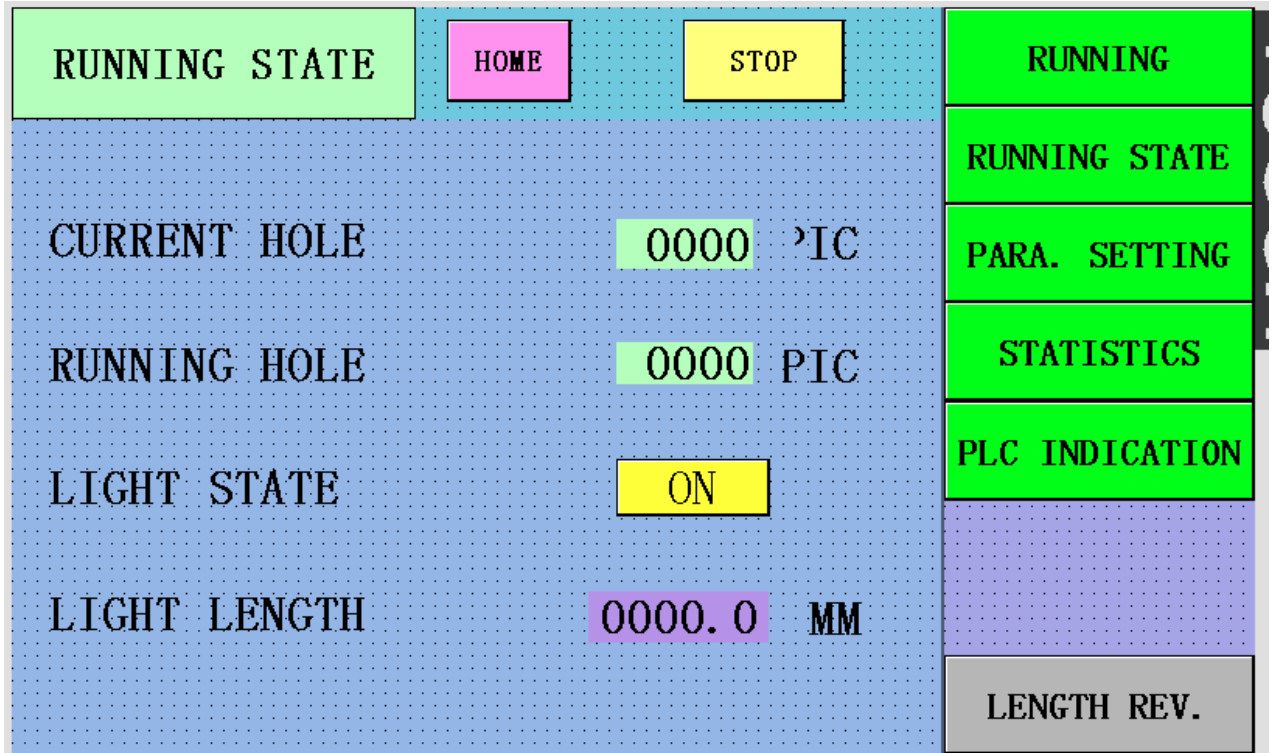
AUTOMATIC OPERATION Select automatic operation and start the pump during operation.

Automatic operation of the settings and operations are using the touch screen. The below detail for introduce how to use Automatic operation by touch screen .

(一). Into the production interface and the interface description



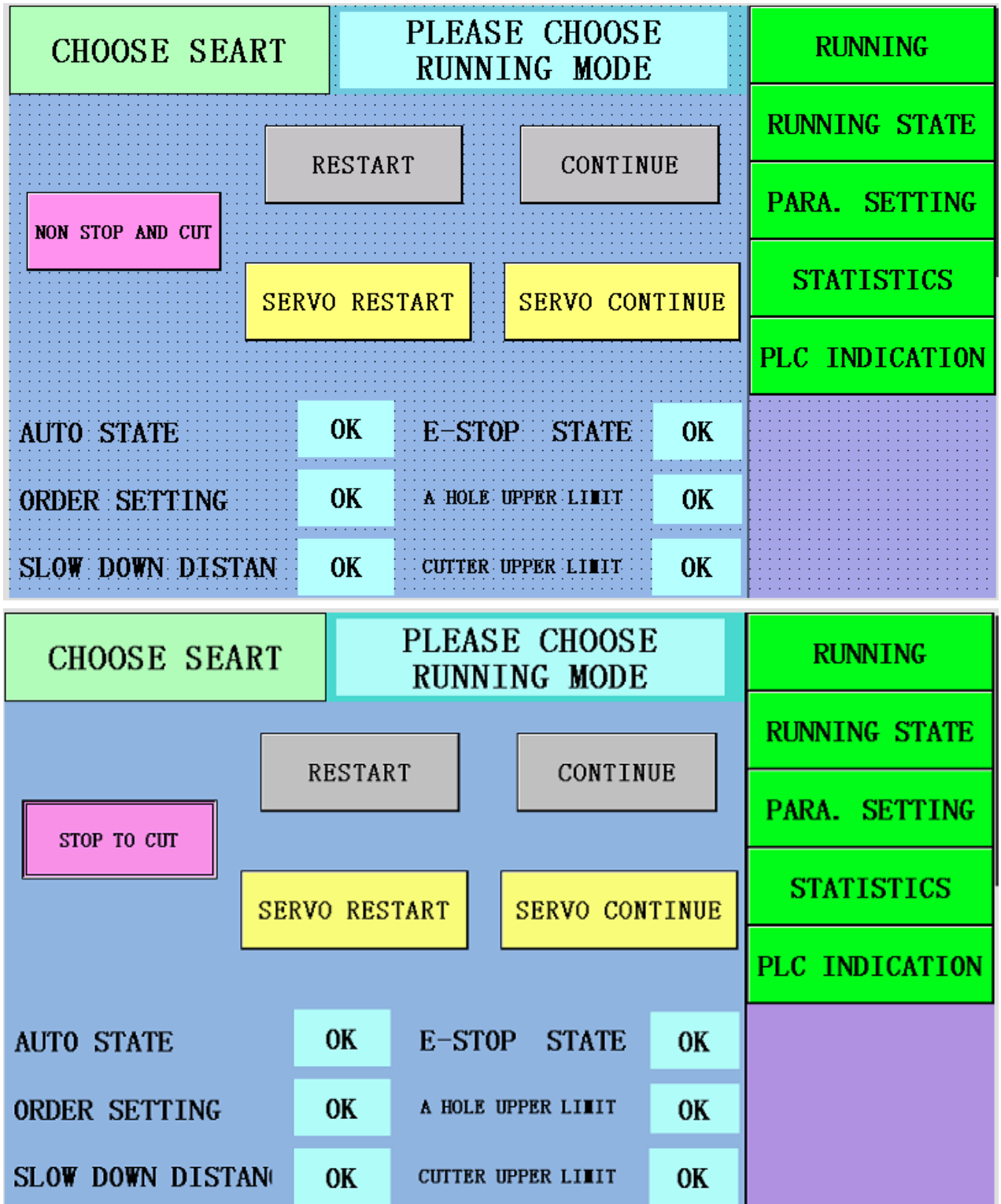
When the device is powered on, the touch screen will display the above interface. Press the "Enter" button to enter the production interface.

(二). Production interface

The production interface is used to display the current production of the order, for example, how many pieces are being produced and the length of the production.

"Length Clear/Length REV." button is used to clear the current length of the production has been mainly used for counting test, or has been cut after the length of manual reset,

(三). Automatic running



"Restart" button is used to reset the order after the run mode, when the bottom of the screen conditions are met, from the first set of the first piece of the length of 0 to run. Restart, press "SERVO RESTART", then press "RESTART".

"Continue" button is used to stop the machine in the middle, and then continue to run the next way, such as half-way version of the adjustment, such as half-way break. Continue to run

also need to meet the conditions below the screen to start. To continue, press "SERVO CONTINUE", then press "CONTINUE".



Used to change production mode: "STOP TO CUT" or "NON STOP AND CUT".

The following is a description of the Screen satisfaction of roll former conditions .

No.	Screen display menu	The meaning of the representative
1	Auto state	The "Manual / Auto" switch on the operator station is in the automatic position
2	E-Stop state	The "EMERGENCY STOP" button on the operator panel is not pressed
3	Order setting	The number and length of the order settings interface are greater than zero
4	A hole upper limit	The punched A die is in the upper limit position and is pressed to the upper limit switch
5	Slow down distance	The "Slow down distance" (High speed deceleration distance) setting in the parameter interface is greater than zero
6	Cutter upper limit	The cutter is in the upper position and is pressed to the upper limit switch

(四). Cold roll forming machine Parameter setting

PARA. SETTING			RUNNING
SLOW DOWN DIST	0000.0	MM	RUNNING STATE
LINER COMP.	000.0	MM	PARA. SETTING
LOCKUP COMP.	000.0	MM	STATISTICS
CUTTING DIST.	000.0	MM	PLC INDICATION
CUT. TO LIGHT DISTANCE	0000.0	MM	
NEXT PIC PAUSE TIME	00.0	S	
CUTTING RST TIME	00.0	S	
AUTO HI SPEED	000.0	MM	
AUTO LOW SPEED	000.0	MM	
MAN SPEED	000.0	MM	PARA 2

Parameter setting is used to set various parameters that can be adjusted during operation.

These parameters will affect the accuracy of running. Please pay attention to the setting.

The Parameter description as below

No.	Name	Use
1	SLOW DOWN DIST	When the automatic operation is started, the distance from the cutting position to decelerate is related to the inverter deceleration time and high speed. The setting is too small and the setting is too long. The production speed is slow.
2	LINER COMP. (meaning liner compensation)	Due to the precision of the counting wheel, the running plate will accumulate longer or shorter. For example, the circumference of the counting wheel is 200mm. Because the machining precision is 199mm, the running plate will be short 5mm. The length of the board will be short 10mm, this value is the linear error, with the length of the linear change in the error value. To be compensated by running the same length of the plate 3, if the length of each piece are the same, then the counter wheel does not slip or stuck phenomenon, this time to measure the actual board length, and the length set to do, by the formula For example, the actual board length is 1999mm and the board length is 2000mm, the linearity error is $(1999-2000) / 2 = -0.5\text{mm}$. The actual board length is set to the board length and the number of meters is set as the linearity error.
3	LOCKUP COMP. (meaning fixed compensation)	This value is fixed by the "current production length" in the production interface. When running to the cutting length, the machine will stop completely at the beginning of the stop. You can see that the display length is a few millimeters more or less than the set length. This value is a fixed error, which can be set to the compensation, when more should be set with negative (-) ,when less should be set with positive (+) .
4	CUTTING DIS.	No blanking Shearing is set to 0, with blanking shear set by knife thickness.
5	CUT TO LIGHT DISTANCE	When the cutter is cut to the lower limit position, the distance of the board backwards. Used to prevent cutting plate knife
6	NEXT PIC PAUSE TIME	The delay time for starting the next run after cutting (for lifting plate).

7	CUTTING RST TIME	The delay time of Tool holde back.
8	AUTO HI SPEED	The speed setting when the host is running at high speed automatically
9	AUTO LOW SPEED	The speed setting when the host is running at low speed automatically
10	MAN SPEED	The speed setting at which the host is running when set manually

PARA. SETTING 2		RUNNING
SERVO START SPEED	00000.0	RUNNING STATE
SERVO MAX SPEED	00000.0	PARA. SETTING
ACC/DEC TIMES	000.0	STATISTICS
SERVO FEEDING SPEED	00000.0	PLC INDICATION
PUNCH DELAY TIME	00 S	
Counter Wheel Circum	0000.0 MM	
Encoder P/R	00000	

Above metal forming parameter description

No.	Name	USE
1	SERVO START SPEED	Speed setting at servo start
2	SERVO MAX SPEED	The servo runs at maximum speed setting
3	ACC/DEC TIMES	Acceleration and deceleration time settings for servo operation
4	SERVO FEEDING SPEED	The speed setting of the servo production run
5	PUNCH DELAY TIME	This parameter can be automatically shut down to punch when the delay on the fuel tank to avoid premature action of the cylinder and

		not damage to the mold.
6	Cutter to the photoelectric distance	The distance between the photoelectric switch and the cutter
7	Counter Wheel circum	Set the perimeter of the counting wheel of the counting plate on the device by the diameter of the vernier caliper and multiply by π
8	Encoder P/R	The pulse value of the encoder installed on the counting wheel can be found by looking at the description of the encoder

(五). Order settings

STATISTICS			RUNNING		
SERVO HOLE 00 PCS			LENGTH SETTING		
NO. LENGTH			PIECE: 0000 PIC		
00	00000.00	M	LENGTH: 0000 PCS*17MM		
00	00000.00	M	= 000000 MM		
00	00000.00	M			
00	00000.00	M			
00	00000.00	M			
			PLC INDICATION		

The order setting is used to set the number of pieces required for production.

(六). Device status

PLC INDICATION			PLC INDICATION			RUNNING		
I0.0	I1.0	I2.0	Q0.0	Q1.0	Q1.0	RUNNING STATE		
I0.1	I1.1	I2.1	Q0.1	Q1.1	Q1.1	PARA. SETTING		
I0.2	I1.2	I2.2	Q0.2	Q2.0	Q2.0	STATISTICS		
I0.3	I1.3	I2.3	Q0.3	Q2.1	Q2.1	PLC INDICATION		
I0.4	I1.4	I2.4	Q0.4	Q2.2	Q2.2			
I0.5	I1.5	I2.5	Q0.5	Q2.3	Q2.3			
I0.6	I1.6	I2.6	Q0.6	Q2.4	Q2.4			
I0.7	I1.7	I2.7	Q0.7	Q2.5	Q2.5			
				Q2.5	Q2.5			

Device Status Displays the status of each input and output of the device PLC. When a lamp is lighting, it indicates that there is input (output) at this point.

These states and drawings can be used to determine the majority of the equipment failure.