Measurement Control Unit

ZM600

USER MANUAL

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In order to use the instrument safely, please follow the following instructions

[DANGER]

- Hazardous voltage can cause injury or death.
- Do NOT take out the covers unless there is qualified maintenance personnel.
- Please turn off the power switch and disconnect the power supply cable before taking outcovers.

[WARNINGS]

- Hydraulic cylinder can cause injury. when used, driving gage head forward (downward)
  or backward (upward) can cause injury. Please make sure the connected machine is not operating before touching the hydraulic cylinder.
- Driven contacts of gage head can cause injury. Please make sure the connected machine is not operating before touching the gage head contacts.

[CAUTIONS]

- Be sure not to operate this system when the gagging unit and/or control unit are in failure (such as when the READY signal has gone off).
- Heavy load or strong force can deform the covers of control unit.
- Do not stand or step on the cover of the unit.
- For the sake of safety, the grounding wire of the power supply and all parts must be grounded, and the outer shell of the controller is located at the screw above

  the output line socket.
- Operation conditions must be:

1. Operation temperature   0~40 ℃

2. Humidity   Less than 90%
3. Vibration   Least possible (less than 0.1G)
- Cleaning of the front panel:
1. The front panel is made from an acrylic resin pre-processed for non-glaring.
2. When the panel has smeared, dip a piece of soft cloth into liquid of neutral detergent or anti-static agent, and wipe the panel with the cloth lightly.
3. Please do NOT use organic solvents such as alcohol to clean the device.

[ABOUT CARRYING ABROAD]

Due to the various local rules, please inform us before taking this device out of China. Our company will not be responsible for any overseas accident if there is no declaration.

[WARRANTY DESCRIPTION]

1. This product warranty service is only valid under normal use.
2. Non product quality issues and malfunctions caused by abnormal use are not covered by warranty.

For example, malfunctions caused by the following circumstances, including but not limited to, are not covered by warranty:

(1) The display panel was shattered due to external impact.

(2) The user opened this product without authorization, which caused moisture and liquid ingress.

(3) The user's wiring error or abnormal power connection caused this product to malfunction.

CONTENTS

1、Introduction

ZM600 controller is based on the latest digital signal processing system, using the latest control technology designed for grinding machine processing on-line monitoring and control of the instrument.

This controller will be processed or after the size of the workpiece, with electric sensor for measurement, if the use of air momentum meter for measurement, it needs to be measured through the pneumatic probe and AE converter. The measurement results are displayed on the LCD touch screen, and the control signal is sent to the machine at the preset size. It has better man-machine effect and more intuitive measurement status display. Easy to operate, display more diversified.
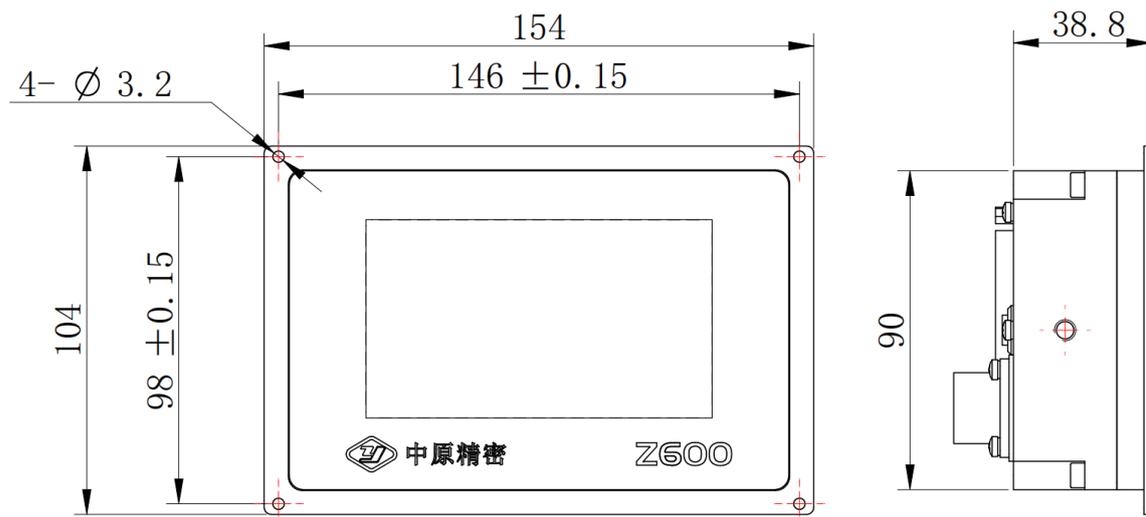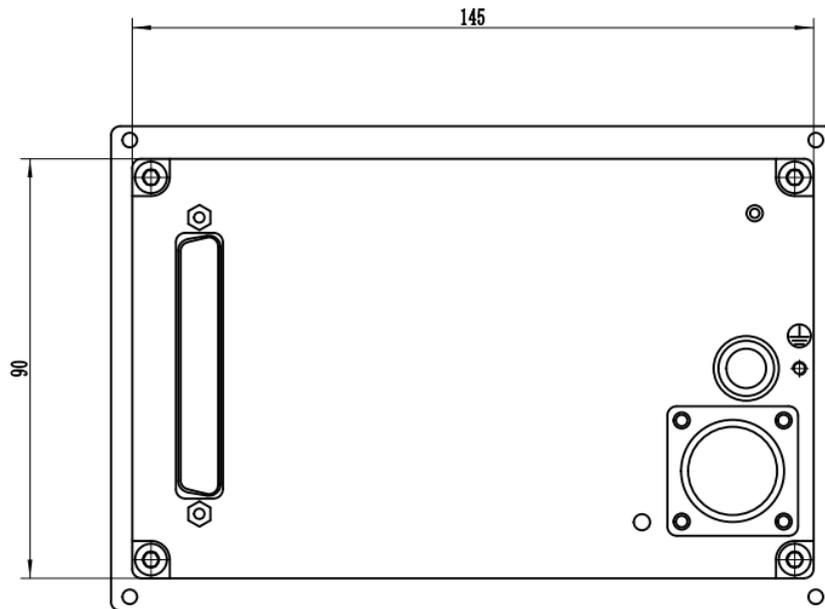
2、Features

1) Intelligent control：All kinds of calculation and correction can be carried out within the standard range, or the machining size correction can be completed automatically under the control of the machine tool. In the process or after the processing of the measurement process, display a variety of measurement results and judge the status of the point, while sending a signal to control the movement of the machine.

2)Convenient and compact：Using 4.3-inch TFT touch screen LCD display, embedded installation, low power design. Saving installation space, energy saving and environmental protection.

3)Good human interface：The display interface is more intuitive and clear,the display content is more rich and comprehensive, and the operation is simpler and faster.

4)Good compatibility：In addition to the improvement of control, display, operation, reliability and signal acquisition accuracy, the new meter is easy to install and maintain.

5)Optimized design, the whole machine can meet the industrial interference test.

3、 Extension Functions:

1)External compensation：The measured data are compensated according to external input signals.

2)Memory selection: In order to measure the discontinuous surface can set memory function, such as maximum memory.

3)BCD/ Binary: The digital interface to the machine tool.

4)Standard dual-channel sensor input.

4. Interface

Instructions：

ZM600 type active grinding measuring instrument is divided into three function Windows, measuring, setting and adjusting.The system defaults into the measurement module.

After turning on, the measurement interface shows 🔒 as locked, and clicking on other buttons at this time does not work

Reaction, you need to click this button again to change to [🔓] , which is now in the unlocked state, in order to operate normally.

Click the button [设置⚙] to enter the setting window.

Click the button [调整🔧] to enter the adjustment window.

4.1 Measuring the interface

Measurement interface

`Window functions:`The measured value of the measuring item is displayed, adjusted and displayed in digital form.

Instruction:

[40.9 μm]Displays the measured value of the measured item.

[P1]Display signal points.

[补调 1]Displays the adjustment value of the corresponding measurement item of the channel.（Adjustment range:±60μm）

 M1 adjusts sincrease。 M1 adjust decreases。 Click the

button switch to M2 add and subtract. Click the button

switch to M1 add and subtract.

 When there is a deviation between the actual size value and the

expected   measurement value, you can click the input deviation value to

correct.You can also click to correct it。

Such as:The measured workpiece size is Φ50.0（+0.02）， The theoretical

value of standard parts is Φ50.01，Because of manufacturing deviation,The

actual size of standard parts is Φ50.009，When the null position of M1 is set

with this standard component, the deviation between the actual value and the

theoretical value is -1μm, it is necessary to conduct supplementary

adjustment.Click ，Type "-1" or click M1 ， Set the tuning

value to -1 to compensate the standard parts.After setting M2 to zero, click

first switch to the M2 tuning interface, and click Type "-

1" or click M2 ， set the tuning value to -1 to compensate the standard

parts.

4.2 Setting interface

If you need to change the setting parameters, click the number section, and the keyboard pops up for setting.

Instruction：

P1 Signal points of rough grinding ；

P2 Signal points of fine grinding；

P3 Light grinding signal points；

P4 The signal point of retreating knife;

Signal point setting value: P1>P2>P3>P4

SCUT The reverse cut value；

M Measurement expression：Can choose G1 ,G2 ,G1+G2 ,G1-G2；

S Filter way：Can choose 0, 1，2，3，4，5. (This option is a special function and is only available when the user makes a special order.)

：M1/M2 setting interface toggle.

※ Special Function Page (valid only when equipped with special functions)

1. Enter the settings interface, click on the next page, and enter the second page of settings (dual measurement items in M2 interface).

2. Judgment start function

The timing is set to "judgment", and the extension time is set to the delay time (the delay time can be set to "1-6") when the control instrument sends out the output signal to the machine tool after the machine tool provides the judgment start signal.

3. The lock screen time is the automatic lock screen delay time after unlocking Set to "0" to disable the automatic screen lock function, and manually click the lock button on the measurement interface to lock it.

Set to "5", which means that after 5 seconds of no button operation, it will automatically return to the measurement interface and lock the screen. (The lock screen time can be set to "5-20")

4. Compensation equivalent

Set to 1, that is, adjust the "+" and "-" changes on the measurement interface to 1 μM.

Can be switched to "1", "0.5", "2".

4.3 Adjustment　interface

Instruction：

Display value: the value of the probe after processing;

Reset value: the compensation value of the probe by the system after resetting;

Multiplier: the probe amplification ratio can be set through the pop-up keyboard; (The factory has been set, the standard value is 1, the user does not need to adjust. Adjustment is required only when changing the length of measuring device or rod.)

Reset button: press once to reset the displayed value, press again to restore the original value;The upper and lower measuring rods of the double-channel device are G2 and G1 respectively.

5. I/O interface and connection

I/O parameters:

Power supply: 24V DC ± 20% (>10W)

Grounding: Connect the machine tool ground wire to the screw of the grounding terminal on the right side of the switch

Output signal: Optical relay 200mA 24VAC/DC

Input signal: Optocoupler 24V 5mA

The output line wiring table needs to be selected based on the number of output line cores provided.

19 core output line wiring table

The serial number	Color	I/O	A single measurement items	Two terms of measurement
1	Green	OUT-1	P1	M1-P1
2	Yellow	OUT-2	P2	M1-P2
3	Pink	OUT-3	P3	M1-P3
4	Blue	OUT-4	P4	M1-P4
5	Brown	OUT-5		M2-P1
6	Blue/Black	OUT-6		M2-P2
7	Green/Black	OUT-7		M2-P3
8	Red/White	OUT-8		M2-P4
9	Red	24V	24V	
10	Yellow/Blue	OUT-20	Receive OK signal	
11	Blue/White	COM-OUT		
12	Green/White	IN-1		Switch
13	Purple	IN-2	External adjustment+	
14	Red/Black	IN-3	External adjustment-	
15	Yellow/Black	IN-5	Start of judgment	Start of judgment -M1
16	Purple/White	IN-6		Start of judgment -M2
17	Grey	GND		
18	White	COM-IN		
19	Black	0V	0V	

37P communication socket

The serial number	Color	I/0	A single measurement items	Two terms of measurement	One terms of measurement BCD	Two terms of measurement BCD
1	Pink1	01	P1	M1P1	P1	M1P1
2	Pink2	02	P2	M1P2	P2	M1P2
3	Pink3	03	P3	M1P3	P3	M1P3
4	Pink4	04	P4	M1P4	P4	M1P4
5	Pink5	05		M2P1（+NG）		M2P1
6	Pink6	06		M2P2（+OK）		M2P2
7	Pink7	07		M2P3（OK）		M2P3
8	Pink8	08		M2P4（−OK）		M2P4
9	Pink9	09		M2（−NG）	BCD1	M1/M2BCD1
10	Pink10	010			BCD2	M1/M2BCD2
11	Yellow1	011			BCD4	M1/M2BCD4
12	Yellow2	012			BCD8	M1/M2BCD8
13	Yellow3	013			BCD1*10	M1/M2BCD1*10
14	Yellow4	014			BCD2*10	M1/M2BCD2*10
15	Yellow5	015			BCD4*10	M1/M2BCD4*10
16	Yellow6	016			BCD8*10	M1/M2BCD8*10
17	Yellow7	017			BCD1*100	M1/M2BCD1*100

18	Yellow8	018			BCD2*100	M1/M2BCD2*100
19	Yellow9	24V				
20	Yellow10	019			BCD4*100	M1/M2BCD4*100
21	Green1	020	confirm actuating		BCD8*100	M1/M2BCD8*100
22	Green2	021			Output is negative	Output is negative
23	Green3	RES	—			
24	Green4	SWD	—			
25	Green5	SWC	—			
26	Green6	485A				
27	Green7	485B				
28	Green8	COM OUT				
29	Green9	I1		According to switch		Display/output switch
30	Green10	I2		Adjust+		
31	Gray1	I3		Adjust−		
32	Gray2	I4				
33	Gray3	I5		Determine start M1		
34	Gray4	I6		Determine start M2		

35	Gray5	GND				
36	Gray6	COMIN				
37	Gray7	0V				

6、WSD-100A External Retraction Device

WSD-100A external retraction device	
Terminal number	ZHD-1140BC（ZHS-173DC）
1	AC 220V
2	AC 0V
3	Red line
4	Yellow line
5	Black line COM
6	Retraction input (switch signal)
7	Retraction input (switch signal) COM

7.Method Of Use

7.1Adjustment method for standard double rod single chann el sensor（ZHD-1070BC\1090BC\1080BC）

Enter the boot screen and press the button above the screen

[M1 +] or [M1 −] set the display value after compensation to 0.

Adjust the upper and lower contacts away from the measuring surface.Click [调整], the system enters the adjustment window, the interface displays G1, records the size of the display value, adjusts the lower contact , makes the display value change to about half of the initial value, locks the lower contact, and then continues to adjust the upper contact ,Change the display value to about 0 (within ±30),lock the upper contact. At this point,click [清零], the display value changes to 0, the probe compensation value enters the reset value, and the adjustment is over.Click [返回], enter the measurement interface.

7.2Standard Single Channel Sensor Adjustment Method (ZHS series)

Enter the boot screen and press the button below the screen
M1 ➕ or M1 ➖ set the display value after compensation to 0.

Adjust the contact away from the measuring surface.Click 调整, the system enters the adjustment window, the interface displays G1, records the display value, adjusts the contact to make the display value change to about 0 (the value is within ±30), and locks the contact. At this point,click 清零, the display value becomes 0, the probe compensation value enters the resetting value, and the adjustment ends.Click 返回, enter the measurement interface.

7.3Standard dual-channel sensor adjustment method（ZHD、ZHF series,except ZHD-1070BC\1090BC\1080BC）

Enter the boot screen and press the button below the screen
M1 ➕ or M1 ➖ set the display value after compensation to 0.

Adjust the contact away from the measuring surface.Click 调整 the system enters the adjustment window, the interface displays G1, records the display value, adjusts the lower contact to make the display value change to about 0 (the value is within ±30), and locks the contact. At this point,click 清零, the display value becomes 0, the probe compensation value enters the resetting value, and the lower probe adjustment ends. Display G2 on the interface, record the size of the display value, adjust the upper contact to make the display value change to about 0 (within ±30), and lock the upper contact. At this point, click 清零, the display value becomes 0, the probe compensation value enters the resetting value, and the adjustment ends. Click 返回, enter the measurement interface.

7.4Adjustment method for standard pneumatic sensors（ZHS-AH series）

Enter the boot screen and press the button below the screen ![M1+] or![M1−] set the display value after compensation to 0. Click ![调整], the system enters the adjustment window, the interface displays G1, records the size of the display value, adjusts the throttle valve of the sensor, makes the display value change to about 0 (the value is within $\pm$ 30), and locks. At this point, click![清零], the display value changes to 0, the probe compensation value enters the resetting value, and the sensor adjustment ends. Click![返回], enter the measurement interface.

7.5Multiplier adjustment method

During the use of the meter, the ratio should be adjusted when changing the length of the measuring device or measuring rod.

Adjust the upper and lower contact away from the measuring surface. Click![调整], the system enters the adjustment window, and the interface displays G1. Adjust the lower contact so that the display value is about 0 (value within $\pm$30).Click![清零], the display value is 0. Insert a 0.05mm feeler between the contact and the measuring surface and record the display value.Click![倍率], Jump out of the keyboard, according to the actual value and display value of the multiple relationship, directly input the corresponding value. Repeat the process three times. The adjustment ends when the displayed value is consistent with the actual value of the feeler. G2 is tuned the same as G1. Factory default setting is 1.00 (except ZHS-AH series).

The meter has been accurately adjusted according to the standard when leaving the factory. There is no need to adjust the scaling rate during normal use.

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