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9440-DP

MULTI CHANNEL AIR GAUGE DISPLAYS
Instruction Manual

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VIDEO

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1. Overview

9440-DP× Intelligent Pneumatic Measuring Instrument is a general-purpose multi-channel measuring electric box, with touch screen as the operation input, intuitive and simple buttons to realize the measurement function, the measurement data as well as all the parameter settings are displayed through the screen.

The main board adopts industrial grade Cortex A8 600MHz CPU and 128MB memory with high reliability and stability, RS232 communication. It can handle multiple inductive signals or electrical signals after gas-electricity conversion at the same time.

2. Specification

Code	9440-DP1	9440-DP2	9440-DP3	9440-DP4	9440-DP5	9440-DP6	9440-DP7	9440-DP8
Number of channels	1	2	3	4	5	6	7	8
Display screen	7" TFT LCD touch screen display				10" TFT LCD touch screen display			
Display mode	graphic display, digital display							
Range	10μm, 20μm, 50μm, 100μm (adjustable)							
accuracy	0.2μm (range 10μm)							
	0.4μm (range 20μm)							
	1μm (range 50μm)							
	3μm (range 100μm)							
Resolution	0.1μm							
Unit	mm							
Air supply	dry and clean, 0.4~0.7MPa							
Data interface	RS232/USB*							
Operation temperature	-10~55°C							
Power supply	220V, 50/60Hz							
Dimension (LxWxH)	240×230×230mm				320×145×325mm			
Weight	5.6kg				11.2kg			

3. Preparation before use

1. Connect the various measuring devices according to the measurement requirements.
2. Insert the power cord plug into the AC220V/50Hz power outlet.

★ For the safety of using the instrument and the need of anti-interference, the power supply of the instrument requires a reliable earth wire and ensure that it is reliably connected to the instrument.

3. Turn on the power switch. The system automatically guides and enters the measurement state.
4. When the use is finished, turn off the power switch directly.

4. Intelligent pneumatic measuring instrument use details

4.1 main interface

After powering on, it displays the welcome interface (Fig. (4-1-1)) and enters the measurement interface after staying for 2s.

Figure 4-1-1 user interface

The software interface takes the windows XP-like page as the main body, which is divided into 7 function buttons, the status display area and the main window, and the software takes the measurement interface as the main interface (Figure (4-1-1)). After power on, it enters into the measurement interface, enters into different function selection interface through 7 buttons, and returns to the main interface after completing the corresponding function setting.

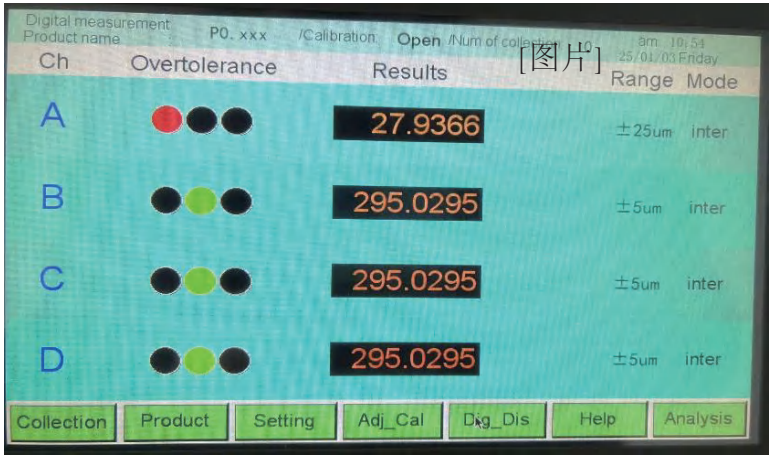

Figure 4-1-1 Digital display

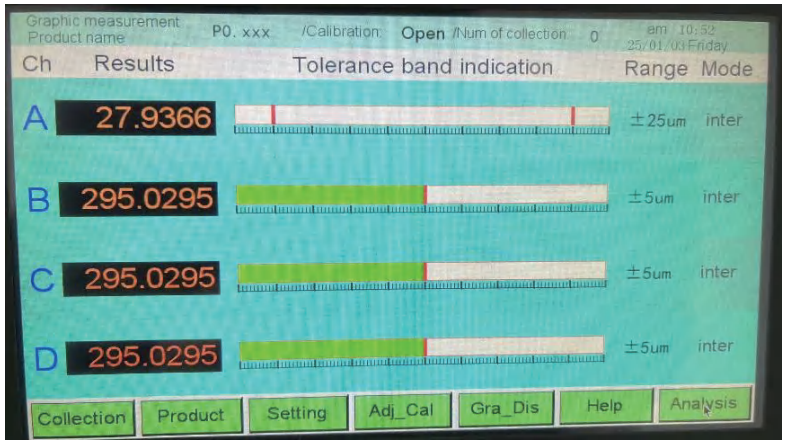

Figure 4-1-2 graphical symbolism

The graphic and digital displays are the two main measurement interface displays. The graphic display focuses on the actual workpiece to illustrate the measurement results of each dimension, while the digital display shows the measurement results in the form of an analog light bar.

4.2 Parameters and Settings

4.2.1 Data acquisition

Click in the measurement state Collection to save the data (save it to the internal storage of the machine, the saved data can be exported to query through the USB flash disk, and also can be queried accordingly in the “Statistical Analysis” function).

Note: The data collection time should be more than 2S interval.

4.2.2 Replacement products

You can pre-set 10 different sets of measurement parameters, click Product , the product selection interface pops up, quickly switch the program specifications. When the product is selected, the subsequent related operations are for the current product, such as measurement display and data analysis.

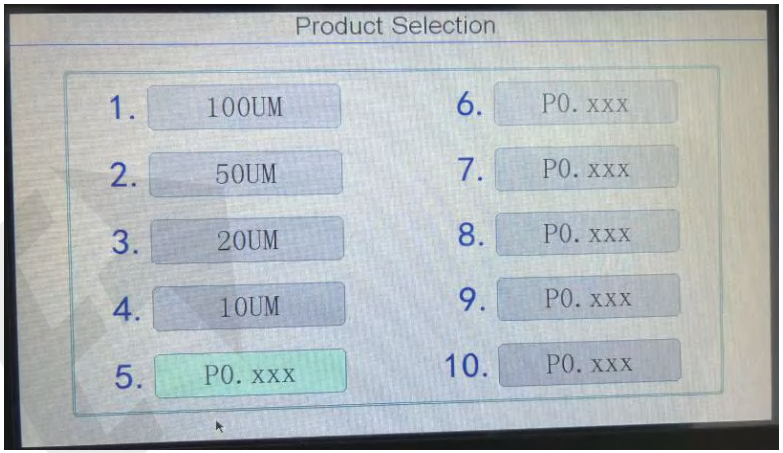

Figure 4-2-1 Product Selection

4.2.3 parameterization

Parameter setting is the basic parameter setting of the system, including the tolerance parameter setting required for measurement, communication setting, instrument number, factory setting and calibration cycle setting. Click “Parameter Setting” to pop up the password input box.

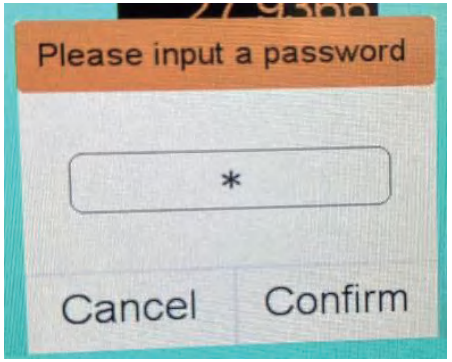

Figure 4-2-2

According to the different users, there are corresponding operating privileges, the initial password of the operator is 1111, and the password of the instrument administrator is 333333. Enter the correct password to enter the parameter setting interface. Password input error prompt

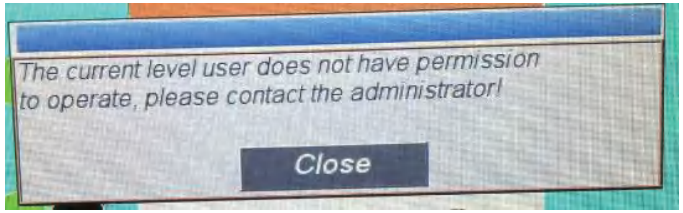

Figure 4-2-3

Enter the login password and enter the system parameter setting interface.Figure 4-2-4

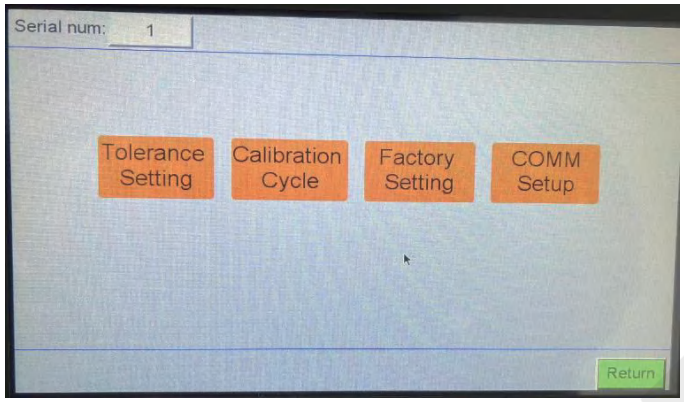

Figure 4-2-4 Parameter setting interface

Instrument number: The number should not be repeated for different instruments. It is used to distinguish different gauges when there are more than one gauge on site, and it will be used in occasions where data networking is needed.

Tolerance Setting: Click it to pop up the tolerance parameter setting interface.

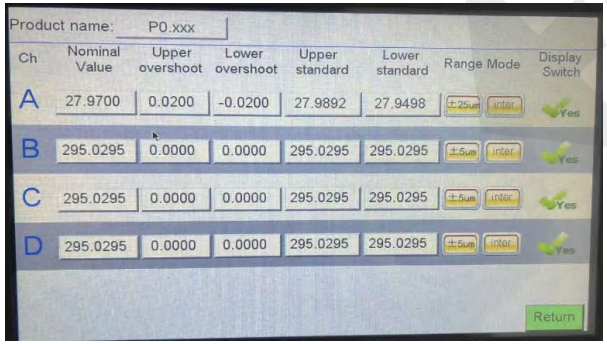

Figure 4-2-5 Tolerance Setting Interface

Work with the analog keyboard to enter the appropriate content.

Figure 4-2-6 Virtual Input Keyboard

Communication Setup: Includes setting up 232/485, wireless modules and Ethernet (customizable).

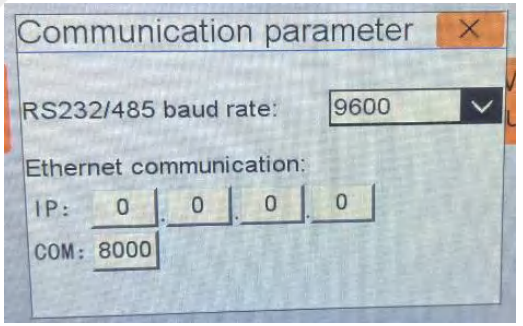

Figure 4-2-7 Communication Parameter Setting

Factory Settings: Restore the factory configuration, including the settings of each parameter.

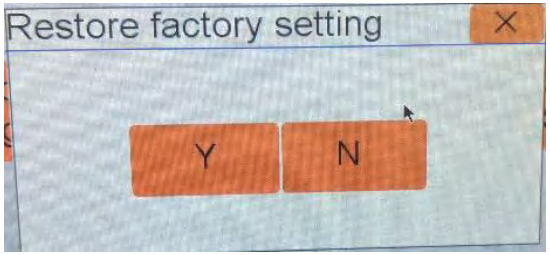

Figure 4-2-8 Restoring Factory Settings

Calibration Period: Click to select whether to use this function or not. When this function is active (“ √ ” appears in the box), the calibration period can be set. For example, the time set in the figure is 120 minutes, which means that the interval between two calibrations is 120 minutes. When the measuring time reaches the calibration period, a pop-up window will appear on the measuring screen, requesting calibration with a standard gauge.

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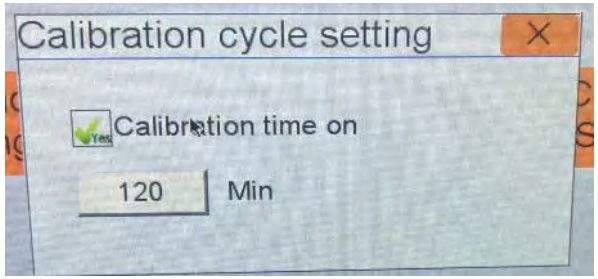


Figure 4-2-10 Proofreading Period Setting

Figure 4-2-11 Calibration Tip

4.2.4 Using Help

Use the help to display the operation instructions on the screen in the form of pictures. Toggle between the different contents by clicking on the left and right borders of the screen.

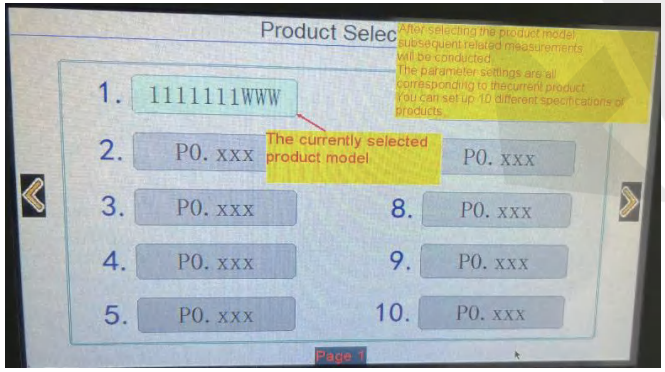


Figure 4-2-12 Using Help

4.2.5 Adjustment Calibration

Adjust the calibration, you can calibrate each channel individually, or you can calibrate with one click.

Click on the corresponding channel to select or cancel the operation of the corresponding channel, the color of the corresponding channel will change after selection.

4-2-13 Adjusting the calibration screen

Magnification Adjustment Function

During normal use, the magnification changes very little, so there is no need to adjust it frequently. Manual adjustment of magnification is required only in the following cases.

1. When using for the first time
2. When the air probe is worn out
3. When changing to a different type of probe
4. When the instrument is used after a long period of storage.

Under this function, the unit is μm. the upper and lower limits of the standard are indicated by two cursors in the light column, and the range display range of the light column is doubled for easy debugging.

The specific steps are as follows:

①Internal dimension mode:

1: Put in the lower limit standard parts.

2：Press the “Zero Setting Key” to place the column in the lower limit cursor position.

3：Put in the upper limit standard parts, observe the light column.

4：If the light column indicates near the upper limit cursor, the adjustment is complete. If the light column is not near the upper limit cursor, adjust the multiplier knob, adjust to: upper limit value + insufficient amount X2 in case of insufficiency, and adjust to: upper limit value - excess amount X2 in case of

excess. multiplier increases in clockwise direction; multiplier decreases in counterclockwise direction.

5: Repeat the operation from step 1 to step 4, repeat the debugging until the light column in the upper limit of the cursor near the upper limit, generally slightly larger than the upper limit, but do not exceed the upper limit of the cursor 4 light column. Finally, tighten the locking screw to lock the magnification screw.

② Outer size mode:

1：First put in the upper limit standard parts.

2：Press the “Zero Setting Key” to set the cursor to the upper limit cursor position.

3：Put in the lower limit standard part and observe the light column.

4：If the light column indicates that it is near the lower limit cursor, the adjustment is complete. If the light column is not near the lower limit cursor, adjust the multiplier knob, adjust to: lower limit value - insufficient amount of X2 when insufficient, and adjust to: lower limit value + exceeding the amount of X2 when exceeding the amount of X2. Clockwise direction multiplier increases the light column down; counterclockwise direction multiplier decreases the light column upward.

5: Repeat the operation of step 1 to step 4, repeated debugging until the lower limit standard parts into the lower limit cursor column in the lower limit cursor near the general than the lower limit cursor is slightly smaller (light column in the lower limit cursor below), but do not exceed the lower limit cursor 4 light column. Finally, tighten the locking screw to lock the multiplier screw.

Standard Parts Calibration Function

For gas measurement items, generally use the upper and lower limit standards to correct the multiplier, and take the lower limit standard as the zero standard. Note that the value of the standard parts in the parameter setting must be corresponding, otherwise the measurement result will have error, the standard parts with small size are the lower limit standard parts.

The unit is μm.

The specific steps are as follows:

Place the lower limit standard in the measuring station, wait for the display value to stabilize, and then click “Calibrate Lower Limit”.

Take out the lower limit standard, put the upper limit standard on the measuring station, wait for the display value to stabilize, and then click “Calibrate Upper Limit”.

Note: If the display value is far away from the upper or lower limit during calibration, you need to adjust the multiplier first. See the manual multiplier adjustment function.

4.2.6 Measurement

To switch between 

digital display and 

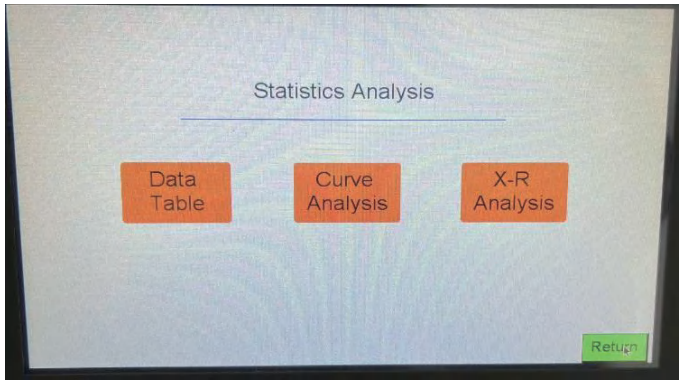
graphic display, click and to switch between digital display and graphic display in the

measurement status. See the main measurement interface (Figure (3-2-2) Graphic display and digital display measurement interface).

It can satisfy the measurement of general geometric dimensions and form and position errors, and can calculate the results of form and position errors such as coaxiality, ellipticity, runout, cylindricity, flatness, perpendicularity and so on by using all kinds of mathematical models in combination with the measuring device; the measurement results can be grouped and have the function of alarming for exceeding deviation (the setting of tolerance band is required). In “digital display” mode, the first three round graphic boxes of each group display from left to right indicate the lower exceedance, pass and lower exceedance respectively; red color indicates exceedance; green color indicates pass. In the “Graphic” mode, the light bar in each group of display represents over-abrasion and pass in red and green respectively, and the red indicator bar represents the upper and lower over-abrasion bits. When the measurement data of a channel is out of tolerance, the corresponding output digital interface of the channel will give an alarm signal. The data communication function can make more than one measuring instrument on site form a network, and form SPC statistical charts through special software to realize on-site online quality management.

4.2.7 Statistical functions

Statistical function, with the industrial production and processing more and more sophisticated, the data collected on the production line, through the statistical analysis of the approach to find abnormalities in production, take preventive measures in advance, can reduce the error rate, reduce rework and waste, reduce costs, improve product quality, prevent quality accidents, improve labor productivity.



4-2-14 Statistical analysis interface

SPC emphasizes the whole process of monitoring, system-wide participation, and emphasizes the use of scientific methods (mainly statistical techniques) to ensure that the whole process of prevention. It is this full participation in the

management of quality thinking, the implementation of SPC can help enterprises in quality control to really make “beforehand” prevention and control, SPC can:

-Reliable assessment of the process;

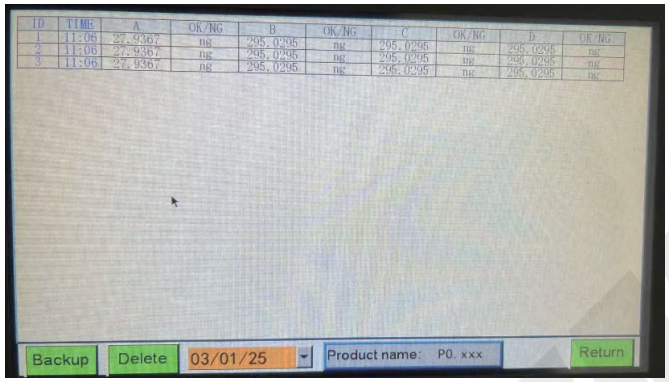
-Determine the process of statistical control boundaries, determine whether the process is out of control and whether the ability;

-Provide an early warning system for the process, timely monitoring of the process to prevent the occurrence of scrap;

-Reduce dependence on routine inspection, timed observations, and systematic measurement methods replace a great deal of testing and validation work;

Data table:

Displays measurement results for each channel.



4-2-15 Data Forms Interface

Data Backup: When you need to save the measurement data, connect the storage device to the USB port, and the dialog box in Figure 4-2-16 will pop up, click Cancel; then click Backup , and the measurement data saved inside the machine will be backed up to the USB flash drive (the storage format is: Data[Device Address]/ datalog/Data[Product Serial No./YearMonthDay.csv).

Data Selection: You can click the date drop-down checkbox to view the daily data records.

Data Delete: Deletes the data records for the selected date.

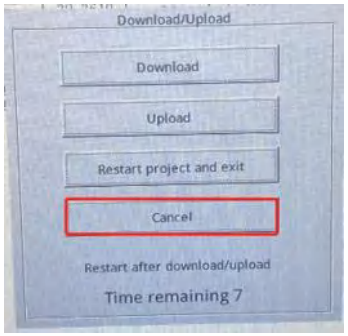
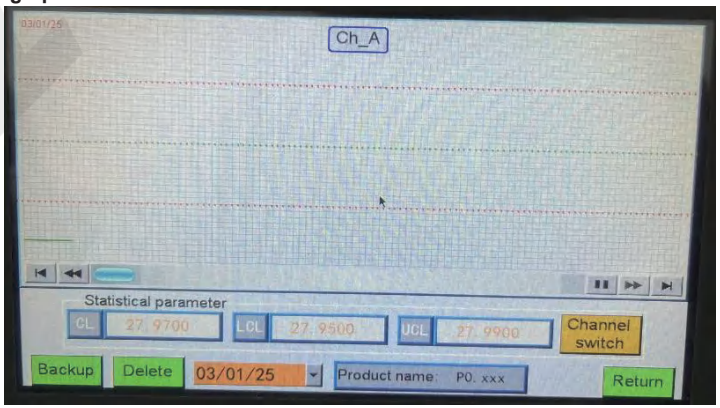


Figure 4-2-16 Dialog Box

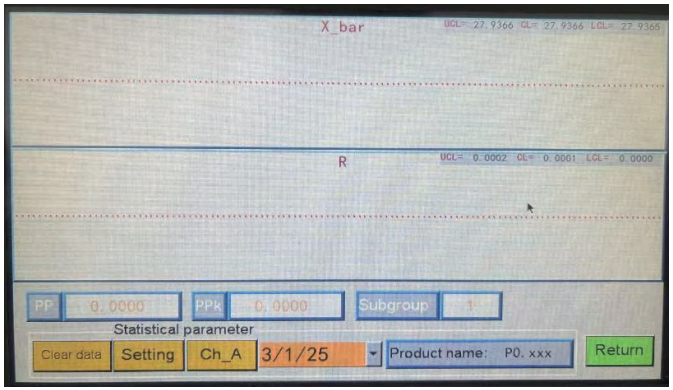
line graph：



4-2-16 Curve Graph Display Interface

The graph shows the distribution of the measured values of the workpiece in the form of traced points.

Xbar_R **figure：**



4-2-17 Xbar_Rgraphical interface

The mean-variance plot is the most commonly used and basic SPC measurement control chart, and its wide range of application and high sensitivity are incomparable to other SPC control charts.R reacts to the variation within each subgroup, which reflects the variation that occurs in the process during the time period when the data is collected, so it represents the inherent variation within the group; Xbar_R reflects the trend of the mean of each subgroup, so it reflects the variation between the groups. The Xbar_R plot reflects the trend of the mean value of each subgroup, so it reflects the variation between groups. When the intra-group variation is acceptable, it indicates that the grouping is reasonable; when there is no special reason for the inter-group variation, it indicates that our management of the process over a period of time is effective and acceptable.

5. Common faults and precautions

1) There is no display when the power is turned on, please check whether the power connection is normal or not, and whether the fuse is normal or not.

2) Under the adjustment function, no indication of upper or lower limit position can be found, it may be that the nominal size or standard parts value is set incorrectly.

3) The reading is abnormally unstable and the measured value is very large, it

is possible that the standard calibration has not been carried out, and it will be normal after carrying out the standard calibration.

4) The power supply grounding wire must be grounded, otherwise it will cause the instrument to work abnormally or cause personal injury. Be sure to cut off the power supply before unplugging the power connection plug and opening the shell.

5) The gas source pressure is in the range of 0.40~0.70MPa, and the general pressure is adjusted to 0.50MPa. If the gas source pressure <0.40MPa its reading will be unstable.

(6) The air source needs to be equipped with air filters in the front stage.

(7) multiplier adjustment must be tightened after the locking screw will be multiplier knob lock, otherwise it will reduce the stability of the instrument.

(8) If the multiplier knob has been adjusted to the limit, the multiplier is still insufficient, is the initial clearance of the probe is too large, can be replaced with a larger range, if not, it is necessary to replace the probe. It is strictly prohibited to mobilize the internal working air pressure of the instrument, otherwise the instrument will be damaged and will not be warranted.

(9) When the air probe is used for a long time and worn, the initial gap becomes large, as long as the position error allows, and then manually adjust the magnification and standard parts calibration after the measurement is still correct. This advantage greatly improves the service life of the air probe.

(10) Instrument display part of the LCD touch screen, belongs to the glass products, very fragile, in the use of metal is prohibited to knock the touch screen.