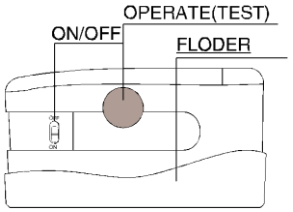
PRODUCT MANUAL

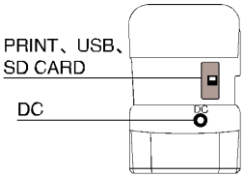
Multi angle gloss meter

多角度光泽度仪

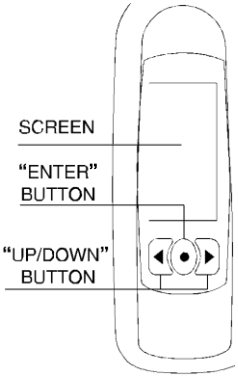
PRODUCT DRAWING



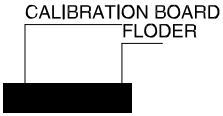
Lateral view



Back view



Top view



Bottom view

CATALOGUE

1、OVERVIEW

Please read this manual seriously before using

1、The “Gloss meter” in this manual means mirror gloss or relative specular gloss。

2、The “ calibration board ” mentioned in this manual is mating with gloss meter, used for calibration .

3、Keep away from the electromagnetic radiation when the instrument is working.

Restrictive maintenance and technical support

The warranty period of restrictive maintenance starts at the time purchasing this product. If your instrument needs to be serviced, please contact the local dealers (http://www.chinaspec.net) to maintenance.

We can offer accessories to customers or dealers. The accessories include calibration board, power adapter, USB cable, etc.

In order to avoid precision decrease or other damage, please do not disassemble the instrument. If the instrument is damaged because of disassembling without authorization, we take no responsibility.

Design Criterion：

1、ISO2813，ISO7668

2、ASTM D523，ASTM D2457，

3、GB/T 9754，GB/T13891，GB/T7706，GB/T8807

The technical parameters conform to JJG696–2002.The gloss values can be traced to those of the National Primary Standards in SIMT in the P.R. China.

Multi-angle gloss-meter is widely used in decorative materials, such as marble, granite, polishing brick, ceramic, mould industry. All kinds of coating and surfaces, such as paints, varnishes, printing ink, automaker, leather craft, woodenware, plastic, paper, etc.

Specifications	Unit	Multi-angle gloss-meter
Measuring angle	Angle	20° 60° 85°
Measuring Range	GU	Gs (20°) : 0~2000 Gs (60°) : 0~1000 Gs (85°) : 0~160
Measuring Spot	mm	Gs (20°) : 10x10 Gs (60°) : 9X15 Gs (85°) : 5X18
Resolution	GU	(0-100)0.1 (>100)1
Repeatability	GU	0-100:0.2 >100:0.2%
Deviation	GU	0-100: ± 1.5 >100: ± 1.5%
Zero-point Deviation	GU	0.2
Operating Temperature	℃	10° ~40°
Storage Temperature	℃	-10° ~70°
Relative Humidity		Up to 85%, no moisture condensation,
Power Supply		Four AAA-sized alkaline cell USB/DC Adapter
Volume	mm	163.8x58.1x88.3
Weight	g	520

Instrument has the main functions below:

1、One key to get multi angle gloss values in one measurement, The incident angle of light conforms to ISO 2813 in order. Three incidents Angle are 20° 、60° and 85° .
2、Multi Angle mode: Measuring angles or Angles combination are optional
3、Humanism design, friendly graphical user interface.
4、10000 test records storage, data storage structure: 100 samples and it can save 100 group data for each sample.
5、Data browse fuction.
6、Signs for low battery and full memory.
7、USB communication and Bluetooth communication function.
8、SD card storage function.
9、It can print the result by connecting with micro printer.
10、PC data analysis and management software.

Accessory list:

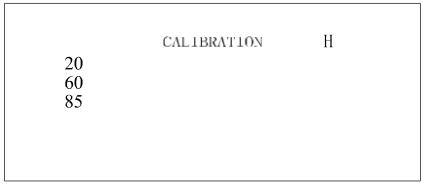
1、Power supply: Instrument needs only 5V power supply. No-load voltage is 5.3V.
2、Holder with Calibration Board.
3、USB Cable.
4、CD: It contains the PC software and the instruction manual.

Optional accessory:

1、SD card: SD card is provided as an optional accessory.
2、Micro printer: Print the test result.

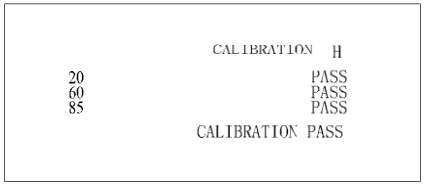
2、Menu

2.1 Start、Measurement and Mode Introduction



◄ Figure1

Confirm the gloss meter has been rested on the base, and then move the POWER button to "ON" position. The instrument will calibrate automatically, as is shown in Figure 1, "H" means the type of this instrument is high gloss.



◄ Figure2

If the screen appears as Figure 2, it means the calibration has passed. Then the user can do the next two operations:

1、Press "TEST" button, enter the test page, as is shown in Figure 3.

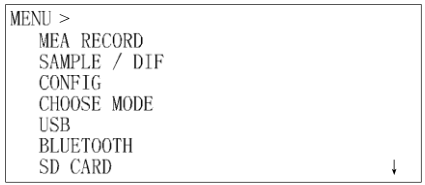
2、Press "ENTER" button, enter "MENU", as is shown in Figure 4.

◄ Figure3

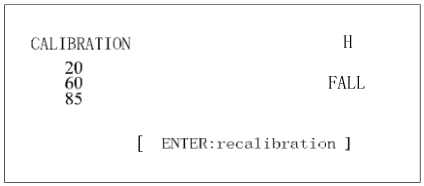
Explanation:

1、The mode of the measurement is determined by the setting last time before power off. If the gloss meter starts after "RESET CONFIG" operation, it will automatically goes into "BASIC MODE" page, as is shown in Figure 3.

2、As is shown in Figure3, "GU" means the current measurement unit is for gloss, "REF" means the current unit is for reflectance.



◄ Figure4



◄ Figure5

If the screen appears as figure 5, it means the calibration fails. Press "ENTER" button to redo the calibration after make sure:

1、Calibration board is clean.

2、The instrument is correctly rested on the base.

2.2 Menu

Move cursor to "MENU" and press "ENTER" button turn to the measurement page

Move cursor to "MEA RECORD" and press "ENTER" button turn to "MEASURE RECORD "page, in this page user can browse statistical measurement records of specific sample.

Move cursor to "SAMPLE/DIF" and press "ENTER" button turn to "SAMPLE/DIF " page, in this page user can select sample and set its difference.

Move cursor to "CONFIG" and press "ENTER" button turn to "CONFIG" page, in this page user can set the parameters of system.

Move cursor to "CHOOSE MODE" and press "ENTER" button turn to "CHOOSE MODE" page, in this page user can choose one mode from "BASIC", " SAMPLE ", "STATISTIC" and " CONTINUOUS".

Move cursor to "USB" and press "ENTER" button turn to "USB" page, in this page user can transmit data to PC by USB.

Move cursor to "BLUETOOTH" and press "ENTER" button turn to "Bluetooth" page, in this page user can transmit data to PC by Bluetooth.

Move cursor to "SD CARD" and press "ENTER" button turn to "SD CARD" page, in this page user can store the test data into SD card.

Move cursor to "VERSION" and press "ENTER" button turn to "VERSION" page, in this page user can check the version of this instrument.

2.3 Config

In menu page, press "UP" and "DOWN" button to choose "CONFIG ", and press "ENTER" button turn to "CONFIG" page. There are several operations in the configuration page: DATE/TIME, CALIBRATION, FORMAT, RESET CONFIG, MODE CONFIG, UNIT, BACK LIGHT, and AUTO OFF, as is shown in Figure 6. By pressing "UP" and "DOWN" button, choose and press "ENTER" button turn to the specific page.

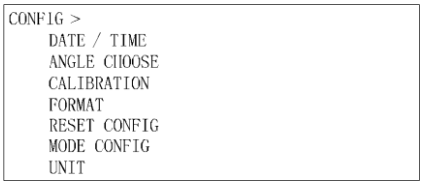


Figure6

2.3.1 Date/Time Config

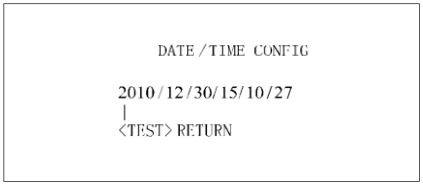


Figure7

In the page of Date/time Config , as is shown in Figure 7.Press "UP" and "DOWN" button to move "|" to the right position, then press "ENTER" button to modify the number, press "UP" and "DOWN" button to the right number. After modification press "TEST" button to save.As is shown in Figure 8.

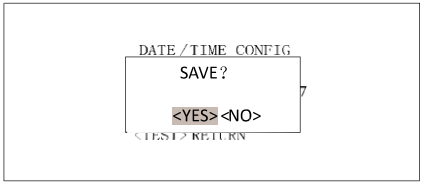


Figure8

2.3.2 Angle Choose

Figure9

In the page of angle choose, there are six combinations optional as is shown in figure 9. User can choose one by press "UP" and "DOWN" button and press "ENTER" button to confirm the combination angle of the sample. It appears "#" after angle combination choose. As is shown in Figure 10, save the change or not.

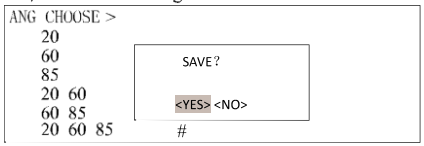


Figure10

2.3.3 Calibration

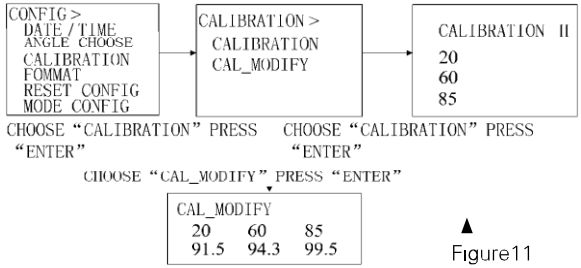


Figure11

Figure 11 is calibration flow chart.

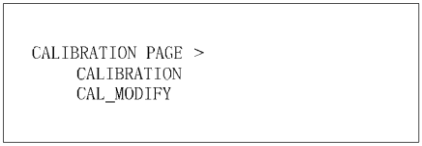


Figure12

In the calibration page, as is shown in Figure 12, press "UP" an "DOWN" button to choose "CALIBRATION", then press "ENTER" button , system will do the calibration automatically. If everything is normal, the calibration will pass. As is shown in Figure13, press "ENTER" button return to the calibration page.

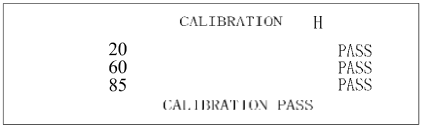


Figure13

If not pass, please redo the calibration. Refer to "2.1 Start、Measurement and Mode Introduction".

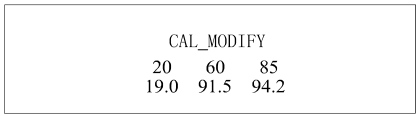


Figure14

If the calibration board has been replaced,, users have to modify the calibration data in the "CAL_MODIFY" page .. In the page of "CAL_MODIFY", as is shown in Figure 14, the method to modify the calibration refers to "2.3.1 Date/time Config".

2.3.4 Format

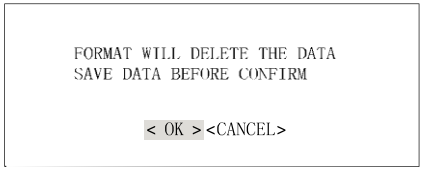


Figure15

In the page of format, as is shown in Figure 15, move cursor to "OK" to delete the data, as is shown in Figure 16.

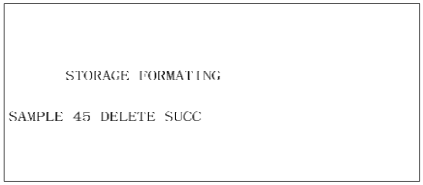


Figure16

2.3.5 Reset Configuration

Figure17

In the page of reset configuration, as is shown in Figure 17, press "UP" and "DOWN" button to move cursor and choose "OK" to confirm reset.

2.3.6 Mode Config

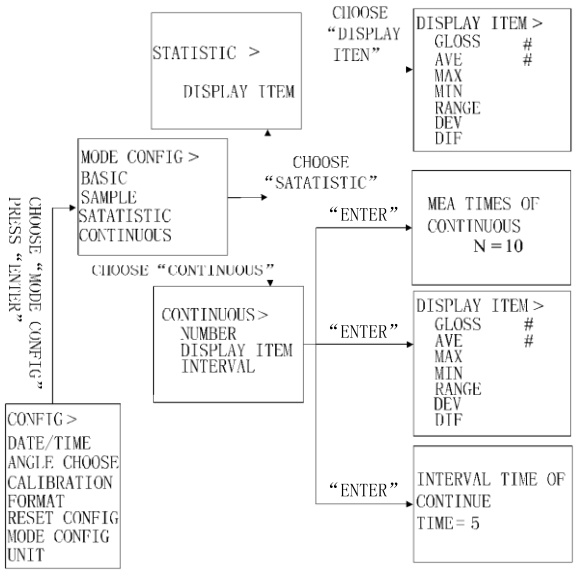


Figure18

There are no functions in "BASIC" and "SAMPLE" setting. When choose "BASIC" and "SAMPLE", it will shows as Figure 19.

Figure19

Figure20

In the page of "DISPLAY ITEM" under "STATISTIC", there are several options: GLOSS,AVE,MAX,MIN,RANGE ,DEV,DIF and PASS/FAIL. As is shown in Figure 20, no more than three options can be chosen.

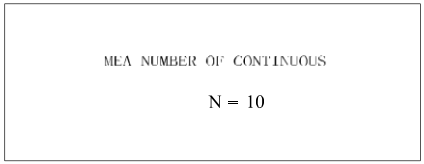


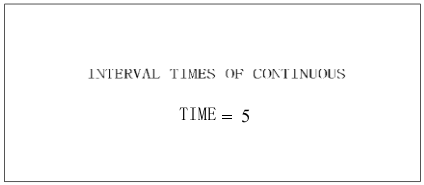
Figure21

In the page of "CONTINUOUS", choose "NUMBER", as is shown in Figure 21; press "UP" and "DOWN" button to modify the number. Press "TEST" button to the page of save, choose "YES" or "NO" to decide save it or not.

Explanation:

The default value is 10; adjustable range is 10 to 99.

In the page of "DISPLAY ITEM" under "CONTINUOUS", there are several options: GLOSS AVE MAX MIN, RANGE, DEV,DIF and PASS/FAIL. As is shown in Figure 20, no more than three options can be chosen.



◄ Figure22

In the page of "CONTINUOUS", choose "NUMBER", as is shown in Figure 22; press "UP" and "DOWN" button to modify the number. Press "TEST" button to the page of save, choose" YES" or "NO" to decide save it or not.

Explanation:

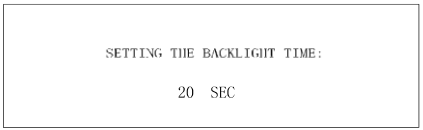
The default value is 10; adjustable range is 10 to 99.

In the page of "ITEM DISPLAY" under "CONTINUOUS", there are several options: GLOSS,AVE,MAX,MIN, RANGE,DEV,DIF and PASS/FAIL. As is shown in Figure 20, no more than three options can be chosen.

2.3.7 Unit

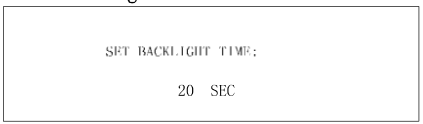
◄ Figure23

In the page of "UNIT", as is shown in Figure 21, press "UP" and "DOWN" button to choose one unit and press "ENTER", button then the page of Figure 22 appears, press "TEST" button to the page of save, choose" YES" or "NO" to decide save it or not.



◄ Figure24

2.3.8 Back Light



◄ Figure25

In the page of "BACK LIGHT", as is shown in Figure 25, press "UP" and "DOWN" button to set the back light time. Adjustable range is 5 to 60, then press "TEST" button to the page of save, choose" YES" or "NO" to decide save it or not.After the time set passes if no more operation is done,the back light will extinguish automatically.

Explanation:

The default back light time is 20 seconds

2.3.9 Auto Off

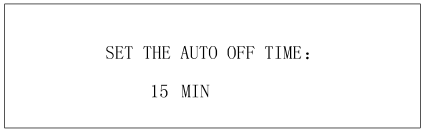


Figure26

In the page of "AUTO OFF", as is shown in Figure 26, press "UP" and "DOWN" button to modify the auto off time. Adjustable range is 1 to 60, then press "TEST" button to the page of save, choose "YES" or "NO" to decide save it or not.After the time set passes if no more operation is done,the instrument will turn off automatically.

Explanation:

The default auto off time is 15 minutes.

2.4 Choose Mode

Figure27

There are four test modes in the page of choose mode: Basic; Sample; Statistic; Continuous. The following is the function of each mode.

"BASIC": It is the simple and practical test mode, no preservation and statistical functions in this mode.

"SAMPLE": It is the standard sample collection mode. User has to enter "Sample" to collect sample before testing

under "STATISTIC" and "CONTINUOUS". After ensuring the standard sample and difference, the user can go into "STATISTIC" and "CONTINUOUS".

"STATISTIC": Standard sample should be chosen and difference should be set before testing in "STATISTIC". This mode have preservation and statistical functions .The instrument can display the measured value of sample, the statistical data of the difference, the most and the scope of measured value.

CONTINUOUS: Standard sample should be chosen and difference should be set before testing in "CONTINUOUS". The difference between continue mode and statistic mode is that the measured value can't be saved. The number of measurement times and the measurement interval can be set, the unit of measurement interval is second, the default value is 5 seconds ,as is shown Figure19、20.Press"ENTER" button into one mode and there will display "#" behind it。As is shown in Figure 27, the current measurement mode is "STATISTIC".

This instrument can be connected with micro printer, in the "BASIC" "SAMPLE" "STATISTIC", it can print the measured value. When the instrument gets measurement result, the user can press "DOWN" botton to print the result.

2.5 Basic Mode Measurement

In the page of menu, press "UP" and "DOWN" button to choose "CHOOSE MODE", press "ENTER" button to enter the page of "CHOOSE MODE". Press "UP" and "DOWN" button to choose "BASIC", press "ENTER" button to enter "BASIC", press "TEST" button to save this configuration. The cursor return to the main menu, then press "ENTER" button to enter measurement page under basic mode.

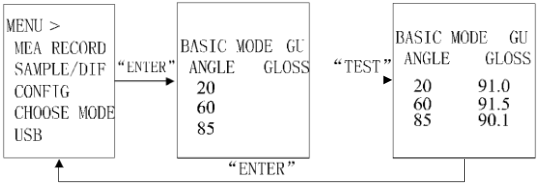


Figure28 ▲

Basic mode is a common measurement mode; it is also the default measurement mode. This measurement mode does not need to set any parameters, but the results can't be saved, specific operation as is shown in Figure 28.

2.6 Sample Mode Measurement

2.6.1 The flow chart of Sample

In the page of menu, press "UP" and "DOWN" button to choose mode, press "ENTER" button to enter the page of "CHOOSE MODE". Press "UP" and "DOWN" button to choose "SAMPLE", Press "ENTER" button to enter "SAMPLE", press "TEST" button to enter savepage. The cursor return

to the page of menu, and then press "ENTER" button, user can turn to measurement page under sample mode. The flow chat of sample is shown in Figure 29.

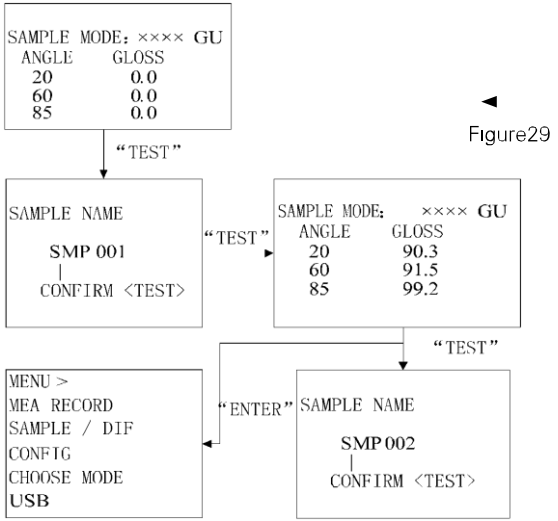


Figure29 ◄

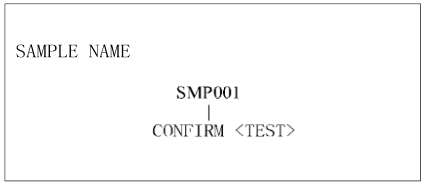


Figure30 ◄

After pressing "TEST", it shows sample name page, as is shown in Figure 30. Set the sample name: First three letters of the name is English letters with default value "SMP", press "UP" and "DOWN" button to switch letters; the last three letters is number with default value "001". Move "|" to the positions need to be modified, and press "ENTER" , the modification can be done by pressing "UP" "DOWN" button .Press "TEST" button to save,

Explanation:

In the sample mode, User has to name the sample.

2.6.2 Measure Recorc

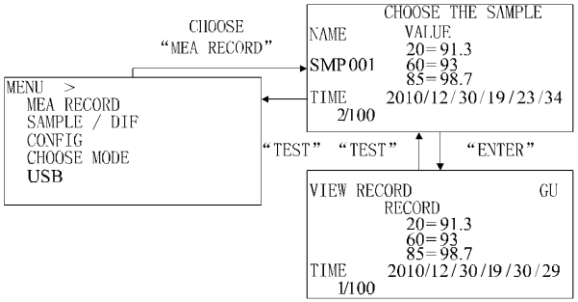


Figure31

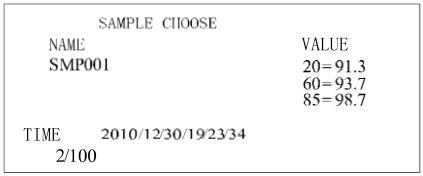


Figure32

Choose "MEA RECORD" in the page of menu, press "UP" and "DOWN" button to choose sample. "2/100" in the bottom means it is the second sample of 100, as is shown in Figure 32. Press "ENTER" button to choose this sample, the Figure 33 appears, by pressing "UP" and "DOWN" button to view records, clear all records, delete sample, back and exit.

Explanation:

1.VIEW RECORD: User can view the records of this sample.

2.DELETE ALL RECORDS: User can clear all the records of samples and it can save

Data browse fuction. user can delete this sample.

4.BACK: Back to the page of sample.

EXIT: Back to "MENU" .

Figure33

Choose "VIEW RECORD" to enter to the page of view record.

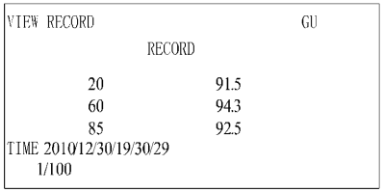


Figure34

In the page of view record, press "UP" and "DOWN" button to choose record. "1/100" in the bottom means it's the first record of all the 100 records.

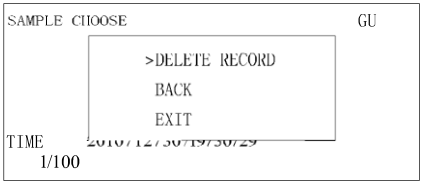


Figure35

Press "ENTER" button, the user can delete record, back, and exit.

Explanation:

1 DELETE RECORD: User can delete this record.

2 BACK: Back to the page of sample

3 EXIT: Back to "MENU"

2.7 Statistic Mode Measurement

2.7.1 Sample select and difference setting

Explanation: Before measurement in statistic and continuous mode, please choose sample and set difference of this sample, setting relevant parameter with specific conditions.

As is shown in Figure 36, the following is the method of sample choosing and difference setting.

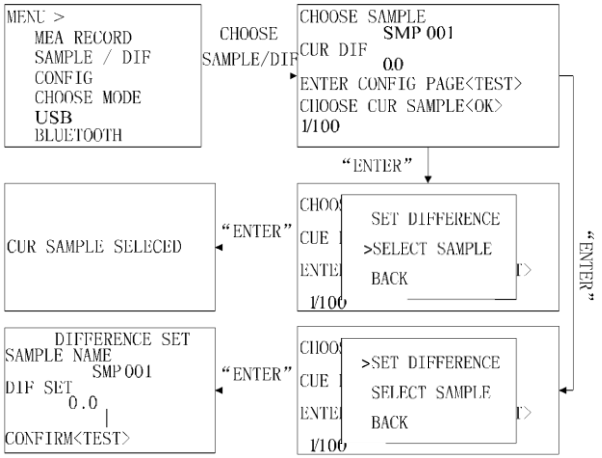


Figure36

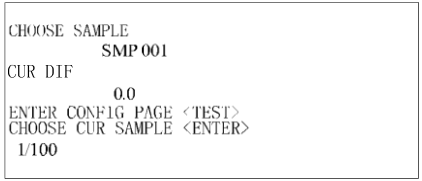


Figure37

In the page of "CHOOSE SAMPLE", as is shown in Figure 37, press button "UP" and "DOWN" button to find the sample, press "ENTER" button to enter the page of setting.

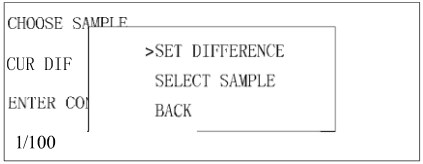


Figure38

In the page of setting, there are "SET DIFFERENCE", "CHOOSE SAMPLE", "BACK", and "EXIT".

Explanation:

1、SET DIFFERENCE : set difference of this sample

2、CHOOSE SAMPLE: choose this sample as the sample of subsequent "statistic" and "continuous" measurement.

3、BACK: return to the page of this sample.

4、EXIT: return to the page of menu.

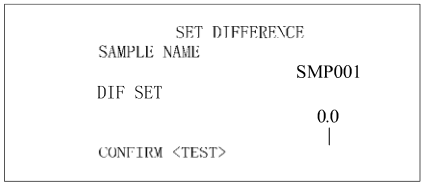


Figure39

In the page of "choose sample", as is shown in Figure 37, press "UP" and "DOWN" button to find the sample needed , then press "ENTER" button to enter the page of setting, press "UP" and "DOWN" button to move cursor to "SET DIFFERENCE", press "ENTER" button to enter. In the page of set difference, as is shown in Figure 39, press

"UP" and "DOWN" button to move "|" to the number need be modified , press "ENTER" button to adjust this number, press "UP" and "DOWN" button to change , press " TEST" button to save , until now the setting of sample difference is done.

Explanation:

1、The sample can be measured under "SAMPLE", the default value of difference is 0.0.

2、In the page of "CHOOSE SAMPLE" and "SET DIFFERENCE": User can set every sample difference first, then choose the sample needed, or choose sample first, then set difference of this sample.

2.7.2 Statistic Mode Measurement

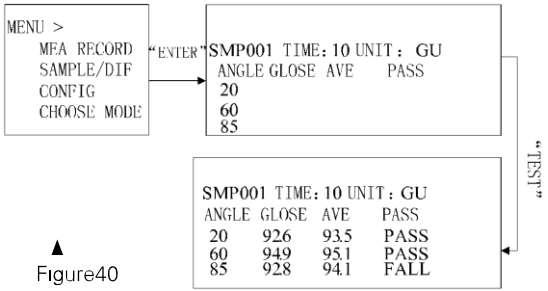


Figure40

The operational method of statistic measurement is shown in Figure 40.

Before measurement ,please select sample and set difference of this sample , as is shown in " Sample select and difference setting" , then choose statistic, press "ENTER" button to choose "STATISTIC" , press

"TEST" button to save and return to "MENU", press "ENTER" button to enter the page of "STATISTIC", then press "TEST" button to measure, as is shown in Figure 41.

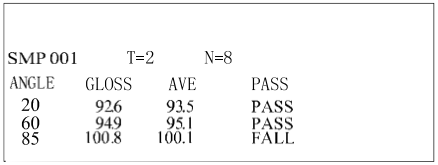


Figure41

After measurement, test data can be found in sample record, as is shown in "2.6.2 measure record".

2.8 Continuous Mode Measurement

Before measurement, please select sample and set difference of this sample, then select "CONTINUOUS" in the page off choose mode, press "ENTER" button to turn to continue, press "TEST" button to save and return to the page of menu, then press "ENTER" button turn to the page of continuous, this instrument will go on to measure automatically, as is shown in Figure 42.

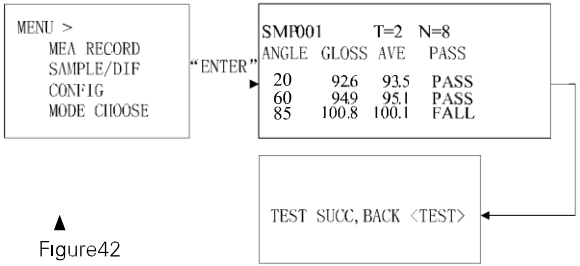


Figure42

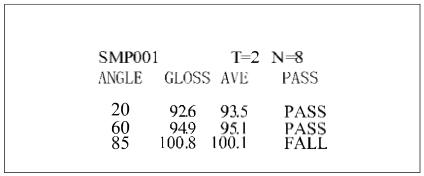


Figure43

As is shown in figure 43, in the page of continuous mode, the measurement result is shown. The specific explanation is as following:

1、"SMP001" is the selected sample.

2、The number after "T" is time of measurement.

3、The number after "N" is surplus measurement times.

2.9 USB and Bluetooth

2.9.1 Application of USB

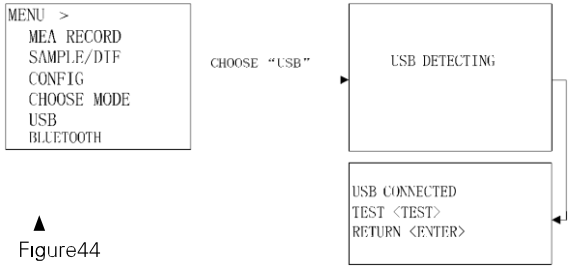


Figure44

As is shown in Figure 44, it the operational flow chart of USB connection.

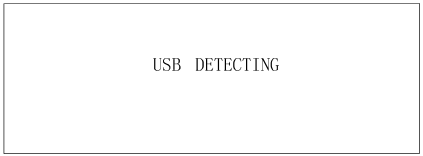


Figure45

Choose "USB" in the page of menu, press "ENTER" button to the page of "USB detecting", as is shown in Figure 45.

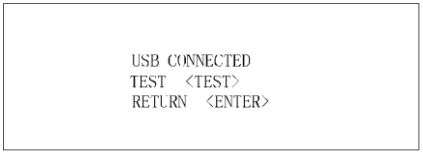


Figure46

If the connection between USB and computer is done, it will display as Figure 46.

Explanation:

The computer must set up USB driver of this instrument. The specific operation is introduced in the PC software manual.

2.9.2 Application of Bluetooth

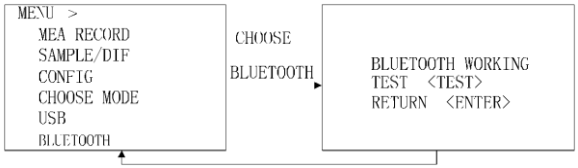


Figure47 ▲

The specific operation of Bluetooth transmission is shown as Figure 47. Choose "Bluetooth" in the page of menu, press "ENTER" button to the page of Bluetooth, press "TEST "button to start. The user can transmit measurement results to PC by Bluetooth, press "ENTER" button to return to "MENU".

Explanation:

The computer must set up Bluetooth dongle and Bluetooth driver. The specific operation is introduced in the PC software manual.

2.10 SD Card

Figure48

In the page of "SD card", as is shown in Figure 48, once SD card is found, system will transmit measurement data into SD card automatically, as is shown in Figure 49.

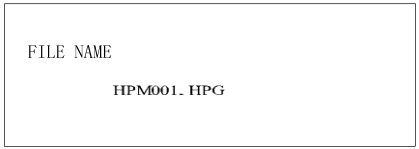


Figure49

System will create a file name corresponding to current page in SD card.

Explanation:

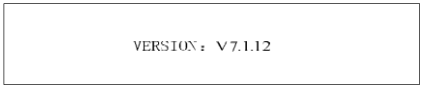
1、"HPM001.HPG" is the file already created.

Naming rule: "HPM" is multi angle gloss ,

"001" is the number given by instrument automatically, it increases one every time, "HPG" is expanded name of this file, system will create a file with expanded name is "HPG" .

2、Press "TEST" button to save file name ,after the name is saved , system will write sample data into SD card automatically.

3、After file is saved ,it returns to "MENU" automatically.



◄

Figure50

As is shown in Figure 50, move cursor to "VERSION", then press "ENTER" button to the page of version check, then the user can see the version of this instrument. Then press "ENTER" button to enter to "MENU".(If the version number of the subject to change without prior notice)

3 Abnormal condition Handling

The following is the reference solution to exceptional situation

Abnormal condition	handling
Measurement data is wrong or deviating from normal	1 Please test more to make sure the accuracy; 2 Please check standard base is clean or not, then put instrument on the base and test once more;
In the mode of Statistics mode or Continue mode ,this instrument does not work	1 Please check sample data is collected or not. 2 Please check sample is selected or not. 3 Please check the number of sample data more than 100 groups or not.
USB connection failed	1 Please check USB connector is normal or not. 2 Please check computer set up USB driver or not.
Bluetooth connection fail	1 Please check this instrument and computer open Bluetooth or not 2 Please check the distance between this instrument and computer.