# *KSJ*®

**Series 2**

# GLOSSMETER

## USER's MANUAL
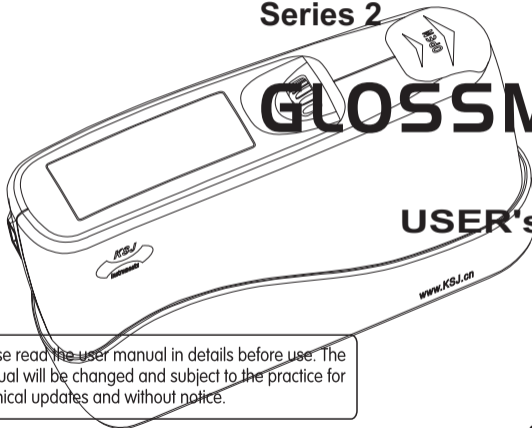
Please read the user manual in details before use. The manual will be changed and subject to the practice for technical updates and without notice.

CE
**RoHS**
**ISO-2813**
**20° / 60° /85° GLOSS**

Made in China

**KSJ**®    *Hidea*®

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# Contents

⚠ The working temperature of the meter is ranged from 5℃ to 45℃ with the relative humidity less than 85%. The meter might fail to work properly in condensation.

⚠ Strong electromagnetic interference sources should be avoided during the meter use.

⚠ The plane of the measurement aperture as the reference plane for measuring should be kept intact from adhering any foreign objects to it and away from being deformed.

⚠ If there is a large temperature difference between the meter and an environment, please wait for a temperature balance, and then recalibrate the meter for a measurement.

⚠ To prevent battery leaks from corroding the meter, high−quality batteries are highly recommended. Used batteries should be collected and disposed by regulations, avoiding environment contamination.

⚠ The meter should be stored in a dry place and kept away from heat and corrosives. The storage temperature should be ranged from −10 ℃ to 60℃.

⚠ When stored remove a battery from the meter.

⚠ The meter is guaranteed for two years. The company will be responsible for repairing any failures occurring at the normal use within the warranty period at no charge.

◆Model: MG XXX – F2

Product type and serial number (type F, series 2)
Measurement angles (single: X, dual: XX, treble: XXX)
Short for Micro-Glossmeter

☆Note: XXX is Arabic numbers; of which, 2, 6, and 8 indicate 20°,60° and 85° respectively.

◆Four models in production: MG268-F2, MG26-F2, MG68-F2, MG6-F2.

☆Kind reminder: Please note that this manual is compiled with the tri-angle meter as an example. Different models might be varied.

◆The "glossmeter" mentioned in this manual refers to specular gloss meters that are also known as "gloss meters".

◆The definition of "Haze" in this manual is quoted from ASTM D4039.

◆A gloss value is presented by Gs(X), of which, X in brackets is 20°,60° or 85°, and the gloss unit is GU.

Exanple: Gs(60°) =78GU, means that the gloss measured by an incident beam of measuring light at 60° is 78 gloss unit.

☆Note: The complete expressions of "gloss" and "reflectivity" should be related to corresponding measurement angles.

Thank you for choosing the KSJ glossmeter!

The glossmeter is a gloss measuring meter that is designed in accordance with the ISO 2813 and GB/ T 9754, Technical parameters of the meter also conform to stipulations in ASTM D523, ASTM D2457,GB/ T 13891, GB/ T 7706, and GB/ T 8807. The definition of haze is equivalent to that of ASTM D4039.

All performance parameters reach requirements of the first–class working glossmeter stipulated in JJG 696–2015 "Specular Gloss Meters and Gloss Plates".

The gloss values derived from the meter can be traced to the those of the National Primary Standards in SIMT in China.

■ Main Applications:

◆ All kinds of coating and finishing surfaces, such as paints, varnishes, printing ink, etc.

◆ Decorative materials, such as marble, granite, polishing brick, ceramic tile and so on.

◆ The other kinds of materials and objects, such as plastic, woodenware, paper, etc.

| Specifications | Unit | The glossmeters of the series 2 | |
|---|---|---|---|
| Measuring Range | GU | Gs（20°）: 0.0 ~ 119.9<br>Gs（60°）: 0.0 ~ 119.9<br>Gs（85°）: 0.0 ~ 119.9 | Gs（20°）: 120 ~ 2000<br>Gs（60°）: 120 ~ 1000<br>Gs（85°）: 120 ~ 160 |
| Resolution | GU | 0.1 | 1 |
| Repeatability | GU | ≤ 0.2 | ≤ 0.2% |
| Reproducibility | GU | ≤ 0.5 | ≤ 0.5% |
| Deviation | GU | ± 1.5 | ± 1.5% |
| Zero−point Deviation | GU | ≤ 0.2 | |
| Operating Environment | | Temperature: 5 ℃ to 45 ℃; humidity: less than 85% RH, no moisture condensation. | |

| Specifications | Unit | The glossmeters of the series 2 |
|---|---|---|
| Storage Temperature | | −10℃ ~ +60℃ |
| Measuring Spot | | Gs(20°): 9x10        Gs(60°): 9x16        Gs(85°): 5x39 |
| Measurement Aperture | mm$^2$ | MG268 and MG68: 12x60 , MG6 and MG26: 12x28 |
| Power Supply | | One AA−sized battery, 1.2V ~ 1.5V, Rechargeable or alkaline. |
| Power Consumption | | More than 15,000 measurements can be conducted with an alkaline dry battery. It may be different to battery types. |
| Volume | mm$^3$ | 155 × 48 × 75 ( without a holder) |
| Weight | g | 400 ( with a battery and a holder) |

☆ Note: GU is short for Gloss Unit.

■ The meter is equipped with the following functions:

◆ Multi−language display: Eight languages including Chinese, English, French, German, Spanish, Portuguese, Italian and Russian can be selected as the display language in the meter menu and the software.

◆ One−key measurement: Measurements can be done at the same time with just one−key operation and saved immediately to the meter.

◆ Starting−up self−diagnosis: It can promptly detect problems such as system errors, the abnormal surface state of a calibrating standard and an improper operation, etc., and give a prompting message.

◆ Menu options presetting: Standby time, the size of the measuring group, etc. can be preset.

◆ Instant deletion of invalid measurement: Press and hold on the measuring key ( for about 2 seconds ) to delete the last measurement data, invalid data usually due to mis−operation, in the current measurement group.

◆ Mass storage of the meter: 20,000 measured data or 999 groups of data can be stored cumulatively in this meter.

◆ Low energy consumption: A single AA (LR6) battery, either alkaline or rechargeable battery is used for power supply. An alkaline battery can stand more than 15,000 measurements.

◆ The unit of measurement is GU by default, which can also be converted to the percentage reflectivity (%).

◆ Local data browsing: Measuring data of any groups can be browsed by specifying the group number.

◆ Prompts for operation: The meter is provided with functions such as prompt for storage full, self–diagnosis error and low battery.

◆ Bluetooth connection is provided for easy connection between the meter and a computer or the mobile device, not only extending functions, but also implementing intelligent measurement operation and production automation.

◆ The gloss data processing software (Win version) is provided for free. With the software, users can preset parameters of the meter easily. Meanwhile, measured data stored in the meter can be uploaded to a computer for storage and processing, etc.

◆ Free mobile software ( incl. Android version and iOS version ). With the software, the meter can be operated cooperatively with the mobile for online measurement, setting and data uploading, etc.

■ Glossmeter With Holder



Display Window

Menu Wheel

Front Cover

Rear Cover

Holder

Battery Cabin Cover
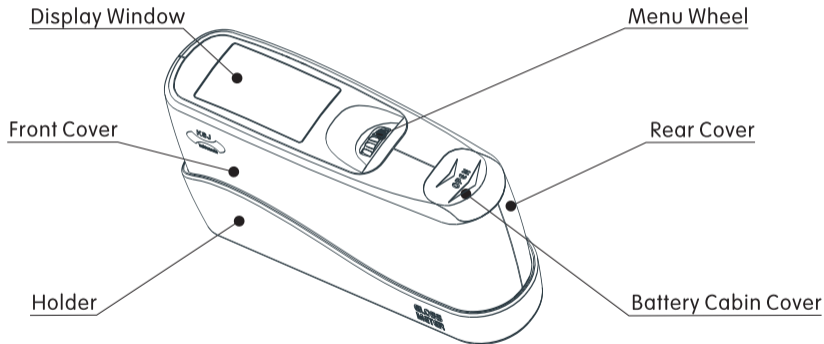
■ Main Device and USB Cable



Measurement Button

Rear Cover

Mini–5pin Socket

mini–5pin Plug

Mark for Location &
Incidence Direction

Cable

Front Cover

Label

Measurement Aperture

USB Plug
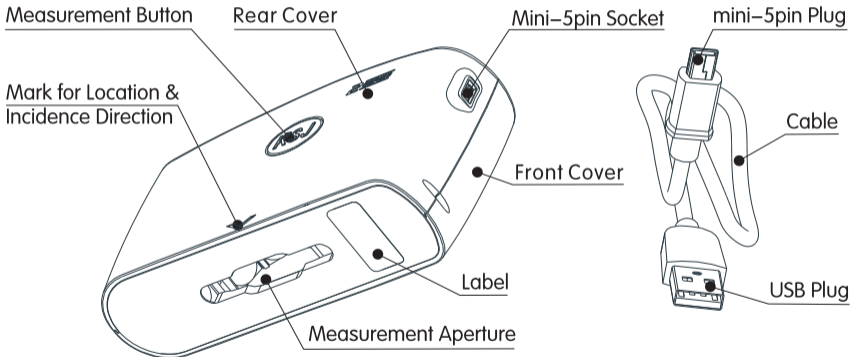
■ Holder With Calibrating Standard

Calibrating Standard

Label of Gloss Values

Holder

■ Battery in Position

Battery Cabin Cover

Battery, Positive Pole Up!
AA or LR6, Alkaline or Rechargeable.

Rear Cover

Front Cover
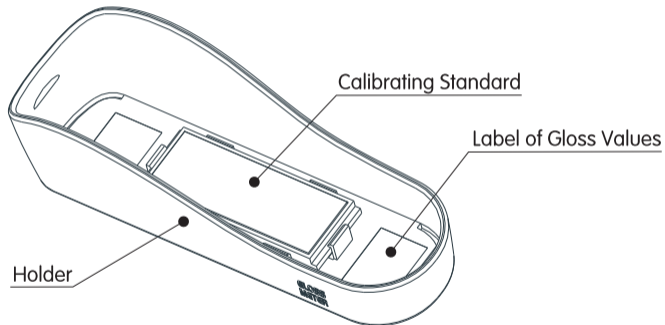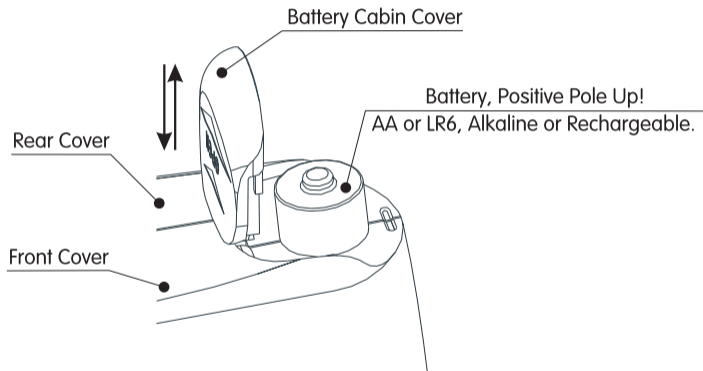
■ Start–up

After the meter is buckled into the holder, the meter starts up by pressing the Menu Wheel with the meter model and ID displaying on the screen. And then, self–diagnosis should be performed. Normally, "PASS" displayed at all angles. Measurement can be conducted upon accessing to the measurement interface. And "FAIL" will be displayed with the following tips when some problems is detected in self–diagnosis.

```
Please
  Clean STD
  Reset Holder
```

At this point, please note:

1. Face towards the light and check whether the surface of the Calibrating Standard dirty or not. If dirty, clean it up.
2. Make sure that the meter is placed properly on the Holder.

After the above operations are done, please press the Menu Wheel to calibrate the meter.

☆ Explanation:

1. You can also enter the Calibration menu to calibrate the meter (refer to relevant contents on page 18 and from page 33 to page 34) if necessary.
2. If the meter is not placed into the Holder, it will enter the measurement interface directly without any self–diagnosis.

■ Measurement

When the Measurement Aperture is positioned at the measured position after removing the Holder, by pressing the Measurement Button, the meter will automatically complete measurement and data storage within 2 seconds and display the results. The display format is presented as follows:

| | 008/ | 03/05 |
|---|---|---|
| | × | x̄ |
| 20° | 87.4 | 87.5 |
| 60° | 91.9 | 91.8 |
| 85° | 98.8 | 98.7 |

☆ Explanation:

1. 008/03/05 indicates the third of the five measurements set in the eighth group.
2. The first, the second (x) and the third (x̄) columns list the measurement angles, the current values measured, and the averages of the group respectively.

■ Deleting an invalid measurement

Press and hold on the Measurement Button to delete a last measurement.

☆ Explanation: This operation is designed for deleting a last measurement only in the current group usually due to a mis–operations. Repeated operations can delete all measurements in this group. However, the data in the completed group cannot be deleted.

■ Shutdown
The meter will shut down automatically for the preset standby time, or after long pressing the Menu Wheel. Please refer to "Standby Time" on page 19 for setting.

☆ Explanation: When the meter is shut down, it is provided with trickle current by the battery, and energy consumption is small. However, if the meter is not used for a long time, it is recommended to remove the battery from the meter.

■ Precautions for Basic Operation
1. Do not remove the battery cover for powering off when the meter executes an operation instruction.
2. The meter should be properly buckled into the Holder before starting up the meter, so as to ensure that the meter can perform the self–diagnosis smoothly upon starting up the meter. If the meter is not correctly placed into the Holder, the meter might enter the measurement interface directly without self–diagnostics
3. The Holder should be placed upside–down in a safe and clean place upon being removed from the meter to ensure that the Calibrating Standard is away from being broken or stained.

4. Do not stick and adhere foreign objects to the surface of the Measurement Aperture of the meter, so as not to affect the measuring accuracy.

5. When the ambient temperature is changed significantly, for example , take the meter to another environment, don't make any measurements until its temperature approaches to the new ambient temperature and no condensation is found on the surfaces of the lenses in the Measurement Aperture and the Calibrating Standard on the Holder.

6. If a meter works for a long time, it is recommended to recalibrate it in time. Please refer to "Calibration" in Menu Operations on page 18 for more details.

7. If the memory of the meter is filled up with measured data during a measurement, it will prompts "Memory is Full". In that case, it is recommended to clear the meter memory after uploading data to a computer.

8. "Low Power" is displayed in the case of dead battery. Please change it with a new one.

9. The surface of the Calibrating Standard is important and should be carefully maintained. If foreign matters such as dirt, spray, dust, and water vapor are attached, please wipe it gently with a lens paper or a soft cloth dipped with absolute ethanol (or a 1:1 mixture of absolute ethanol and absolute ether).

■ Menu interface

  Press the menu wheel in the measurement interface to enter the interface of menu, shown as the figure on the right.

■ Menu selection

  Scroll through the Menu Wheel to select a menu item. Press the Menu Wheel to confirm the option, or enter the sub–menu or return to the previous menu. Meanings of marked symbols are shown as follows:

| Main Menu | ◀ |
|---|---|
| Data | ▶ |
| Calibration | ▶ |
| Angle Mode | ▶ |
| Group | ▶ |
| Language | ▶ |
| Setup | ▶ |
| Information | ▶ |
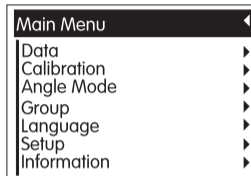
  ▶  Execute or enter the next menu

  ▴▾  There are still items upwards and downwards

  ◀  Return to the previous menu

  ✓  Current setting entry

☆ Hint: It will return to the measurement interface upon pressing the Measurement Button in most of the menu interfaces.

■ Data submenu

  ◆ Browse: Browse the data contained in a group by entering a group number.

  ◆ Delete All: In this operation, all measured data stored in the meter's memory will be cleared permanently. Please operate it with caution!

■ Calibration submenu

◆ Modify Value: Set or modify verified gloss values of the Calibrating Standard on the Holder.

☆ Note: Normally, the values of the Calibrating Standard stored in the meter are consistent with the values marked on the Holder, which are the bases for calibrating the meter and can not be changed arbitrarily. The operation will only be implemented when the Calibrating Standard is re-evaluated after checking or a new one is used.

☆ Hint: The operation is disabled when the reflectivity is used as a unit.

◆ Calibration: It's an operation for calibrating the meter.

☆ Note: The meter must be properly placed in the Holder before calibration, otherwise illegal calibration might be caused.

☆ Hint: When the use environment is changed, or the working time lasts too long, e.g. One hour or above, or precision measurement is required, the meter must be recalibrated.

■ Angle Mode submenu
Regarding the selection of measurement angle and its combination, there are six options for the full-function model.

☆ Hint: Only when a combination includes 20° and 60°, haze measurements are available.

■ Group submenu
The number of measurements to be accommodated in each group is set here with the valid setting range from 1 to 99.

■ Language submenu
Chinese, English, French, German, Spanish, Portuguese, Italian and Russian can be selected as the display language of the meter.

■ Setup submenu

◆ Haze: Turn on/ off the displaying of haze values on measurement Interface.

☆ Hint: The definition of "Haze" in this manual is quoted from ASTM D4039.

◆ Average: Turn on/ off the displaying of group averages on measurement Interface.

◆ Bluetooth: Turn on/ off the Bluetooth. When the function is on, the Bluetooth mark is displayed on the measurement interface.

☆ Hints: 1. When Bluetooth is on, you can start the Bluetooth search of the mobile software or pair with a Bluetooth adapter on the computer to establish a connection for function expansion. See page 22 and page 27 for more details.
   2. More energy will be consumed when the Bluetooth is on. Therefore, please turn it off when not in use!

◆ Unit: The meter is operated with GU as the unit of measurement by default. Besides, reflectivity can be also selected for measurement with the unit of percentage %.

☆ Hint: The letter "R" is generally added in front of the measurement angles of the measurement interface in the reflectance measuring mode.

◆ Standby Time: Time interval for automatic shutdown without operation is set. There are four options.

☆ Hint: If you select "OFF", the meter won't be off automatically. The meter will be off by long pressing the Menu Wheel. Please process it with caution!

◆ Factory Setup: When the meter settings are disordered, or some failures occur, you can restore factory settings by selecting this option.

☆ Hints:
   1. Since selecting this option it indicates that all measured data are cleared, please back up your data before any operations.
   2. Please recalibrate the meter after restoring factory settings.

■ Information

   The software and hardware version numbers of the meter are recorded in this part for easy management and maintenance of the meter.

This meter can be used with the KSJ Data Operator (data processing software) on the mobile end, making the measurement more convenient, data storage and processing simpler! The software on the mobile end is briefed below. For detailed instructions, please refer to the software help.

■ Getting software

User can find the software versions for different ends on the USB disk provided with the meter or scan QR code below as per different ends to get the software, or search and download it in a mainstream application store.

■ Instructions of the software

1. The storage permissions are required for accessing measurement data when the software is installed on the mobile end.
2. You can get help from the Help menu during the use of the software. Moreover, you can also get technical support by contacting with our company via contact information mentioned in the manual or on the Internet.


Android


iOS

3. This meter belongs to series 2 produced by our company. The software is effective in the following operations:

A. Online measurement and data upload are implemented between the meter and the software via Bluetooth connection.

B. The Calibrating Standard values and the standby time, etc. of the meter can be modified on the mobile end.

C. Look up the online measurement and historical data uploaded on the mobile end and export it as an Excel file (data export cannot be implemented in iOS versions due to access restriction).

☆ Explanation: During online measurement, data are uploaded to the mobile end immediately, and no data is saved on the meter end!

■ Bluetooth connection

1. Turn on the meter and open the mobile software;
2. Turn on the Bluetooth on the meter end: Main menu > Settings > Bluetooth (see page 19);
3. Click the Bluetooth symbol of the software, and then click "Search Device".
4. Select the name of the device searched to implement Bluetooth connection. And then, the Bluetooth status on the meter is connected. The Bluetooth symbol on the software end is changed from ⚹ to ⚹).

☆ Explanation: Only one meter can be connected via the Bluetooth, even though several meters turn on the Bluetooth at the same time.

■ Online measurement

After connecting to Bluetooth, click " ⋮ " on the pull–down menu in the upper right corner and click "Online" . The software interface is shown on the right.

◆Measure: Measured data of the meter are saved in the software immediately; besides, the function can be also implemented through pressing the Measurement Button of the meter end.

◆New group: A new group is created for measurement. At this time, the number of measurements included in each group can be set. When the group is filled up with data, a new group is created automatically.

◆Delete: Delete the measurement data saved newly.

■ Setup

Click " ⋮ " on the pull–down menu in the upper right corner and click "Setup" for presetting. The interface settings are described as follows:

◆Language: Set the software display language. There are eight languages to choose from.

◆Acceptable Range:  Any data beyond the limit are highlighted in red upon setting.

| Online | | GU |
|---|---|---|
| 009 | 3 / 5 | 2020-09-09 11:38:17 |
| 20° | 60° | 85° |
| 125 | 103.5 | 105.9 |
| Haze | | - |

Measure

New Group    Delete
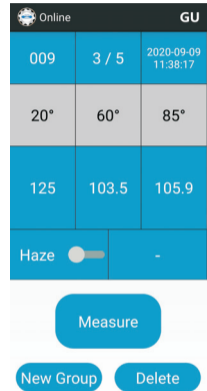
◆ Clear All: Clear data stored in the software. Please use it with caution!

◆ Factory Settings: Restore initial settings of the software.

■ Meter Settings

After connecting to Bluetooth, click " ⋮ " on the pull−down menu in the upper right corner and click "Meter Settings" for setting the meter end. The software interface is shown on the right.

☆ Explanation: All options in rectangular boxes are disabled for the current model.

◆ Angle mode: There are six options to be chosen for this model.

◆ Group Size: The valid value is ranged from 1 to 99.

◆ Verified Values: Refer to "Modify Value" on page 18.

◆ Standby Time: Refer to "Standby Time" on page 20.

◆ Clear Memory: Refer to "Delete All" on page 17.

◆ Language: There are eight language options for setting the menu display language in the meter end.

Angle Mode

Group Size

Verified Values

Standby Time

Clear Memory

Language

Time Syn

LCD Backlighting

■ Export data

 After connecting to Bluetooth, click " ⋮ " on the pull–down menu in the upper right corner and click "Export" to export data in the current data area to the KSJDATA folder in the mobile memory area in the format of Excel file.

■ Data search

The software can be used with multiple glossmeters manufactured by our company, which can also receive and store measured data from multiple meters. Therefore, the meter serial number ( 2 for this series, refer to the contents on page 3 ) and the hardware number should be specified for querying. To be sure, data can be also queried with the additional time and group name.

◆ Press " 🔍 " to open the search tool;

◆ Search by Time: It's off by default. By clicking the "Off" key to open it, the start and end time can be set for query.

◆ Group Name: Enter the group name or group number.

■ Introduction to KSJ Data Operator

KSJ Data Operator (computer end, only Windows version is currently available) is a type of software that can assist and expand functions of the glossmeter. Communication between the meter and a computer can be implemented with the software. In that case, it can set measurement parameters of the device, clear stored data, upload measured data, and query, delete, save, and export measured data on the computer end. Moreover, convenience and creativity can be witnessed in a variety of application scenarios thanks to online measurement.

☆Hint: This software can run on Windows 7 or above versions. Please refer to the software help for detailed usage.

■ Acquisition, installation of KSJ Data Operator

You can find the software on the USB disk provided with the meter, or scan the QR code on the right and log in to the company's website for software download.

The installing and uninstalling process of the software is similar to that of the general software, just following the hints. During installation, the installation path can be changed.

☆Hint: Please back up the database file KDO.mdb in the installation directory on a regular basis to prevent data loss.

■ Driver installation
  After the software is installed, please find the file of PL2303_DriverInstaller.exe in the U disk provided with the meter and run it to install a driver for communication.

■ Use of USB cable
  After the driver is installed, the meter can be connected to the computer with the USB cable coming with the meter to establish communication.

☆ Hint: When the computer is connected to the Internet, and a meter is also connected to it, the driver Installation can be also conducted by enabling the system to automatically search for a matching driver.

■ Use of Bluetooth adapter
  Before using the Bluetooth adapter, a driver for it should be installed correctly. To do this, please refer to the file of Guide for installation of BT Adapter Driver on the USB disk.

  After the driver is installed, turn on the Bluetooth on the meter end (see page 19), then plug the adapter into a USB port of the computer for automatic search, pairing and connection.

☆ Hints:
  1. If you prefer to use Bluetooth instead of a cable to connect a computer, an optional Bluetooth adapter should be purchased during meter ordering.
  2. Certainly, a computer with the Bluetooth function may also be used for searching and pairing the meter Bluetooth.

■ Software interface

Upload interface (default)

Menu Bar

Tab Bar

Function Key Area

Data Display Area
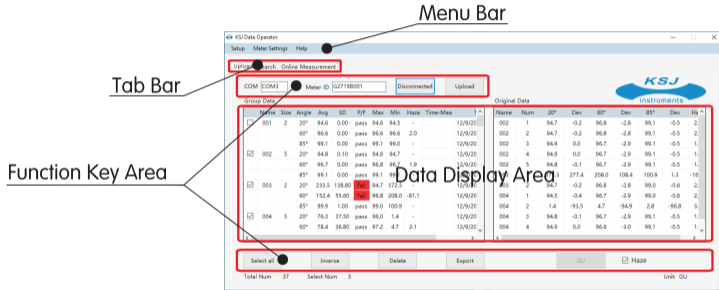


☆ Explanation: "Upload", "Search" and "Online Measurement" are three tabs on the software interface, which are used for switching among the three interfaces. As they are similar, the others are ignored.

■ Setup menu group

◆ Language: Eight languages can be selected as the software display language.

◆ Reference: Here allow you to create, edit, delete or apply a set of reference values, The set of reference values is used for comparing with the measured values, judging whether it is beyond the range of control or not, and displaying the deviation of measured values from the reference values in the Data Display Area.

☆ Hint: When a set of reference values is set as currently−effective by checking the group name and applying, it is highlighted in blue in the reference value dialog box.

■ Meter Settings menu group

◆ Angle Mode: There are six options for this model.

◆ Group Size: An optional number is among 1 and 99.

◆ Verified Values: Set or modify the verified values of the Calibrating Standard on the Holder.

☆ Note: Normally, the values of the Calibrating Standard stored in the meter are consistent with the values marked on the Holder, which is the basis for calibrating the meter and can not be changed arbitrarily. The operation will only be implemented when the Calibrating Standard is re−evaluated after checking or a new one is used.

◆ Standby Time:  Set a time interval for automatic shutdown without operation.

☆ Note: When "off" is selected, the meter can only be shut down by long pressing the "Menu Wheel". Otherwise, the meter is not shut down until the battery runs out. Please choose it with caution!

◆ Clear Memory: Clear all measured data stored in the meter. Before this operation it is best to upload and backup all the data.

☆ Explanation: The functions of dim items are not available.

■ Help menu group

◆ User Guide: Guide for this sofeware.

◆ About KSJ Data Operator: Information about the software and the developer.

◆ Meter Information: Information about the connecting meter.

■ Connection and Upload tab
Operate the KSJ Data Operator after starting up the meter. Press the "Connect" key upon connecting the meter and the computer with the USB cable that comes with the meter. In this way, communication connection is established between the meter and the software to identify the meter number. At last, press the "upload" key to upload data from a meter.

■ Search tab

This software can receive and manage data uploaded from multiple meters. After clicking the "Search" key in the "Search" tab, a search dialog box pops up for data searching. At this time, you can select the serial number (2 for this series, please refer to Page 3) and the hardware number, and set search conditions to search the data.

◆ Select all: All data groups listed in the data display area are selected.

☆ Hint: Check or uncheck the box of the group name in the Group Data area to select or deselect the group of data. Measured data contained in the selected group are displayed in the Original Data area on the right.

◆ Inverse: The selected is deselected, while the unselected is selected.

◆ Delete: One or more sets of data selected in the data display area are deleted. It will be deleted permanently. Please use it with caution!

◆ Export: The selected group data are exported and saved in the Excel format. If none is selected, all the data displayed is exported.

■ Online Measurement tab

After communication between the meter and the software is established, the meter end will be automatically switched to the online measurement interface by click the "Online" tab, and then click the "Start" button. At this moment, online measurement can be conducted by pressing the measurement button on both of the meter end and the software end.

◆ New Group: Create a new group.    ◆ End: Terminate online measurement.

☆ Hint: Online measured data are uploaded to the software simultaneously and won't be saved on the meter!

■ Group Data area

This area displays group data, including name, size, measurement angle, average, standard deviation, P/F, maximum, minimum, and upload time. Of which, "P/F" is used for determining whether the average of this group is within maximum and minimum values set by the active set of reference values, displaying with "pass" or "fail".

☆ Note: No time stamp is provided in this meter. "Time Measurement" is disabled!

■ Original Data area

After checking the box before a group name, the original data of the group can be displayed in this area, which consists of group name, measured value and deviation of each measurement angle. Specifically, "deviation" refers to the difference between the measured value and the preset reference value.

■ Solutions to self–diagnosis errors

If the meter fails to complete the self–diagnosis when it is turned on, the display window will prompt as shown on the right. In this case, please perform troubleshooting and processing in the following order:

> Please
>  Clean STD
>  Reset Holder

1. Wipe clean the Calibrating Standard.

Observe the surface of the STD against the light to check whether it clean or not. If fingerprints, dust, water vapor and other stains are found, please gently wiped with lens paper or soft cloth dipped in absolute ethanol or a mixture of absolute ethanol and ether half by half. If it is severely scratched or cracked, its gloss value bearing function will be taken out. In such a situation, please contact the manufacturer for reconfiguration.

☆Hint: If the meter is idle for a long time, a layer of mist will be generally formed on the surface of the Calibrating Standard, resulting in errors in self–diagnosis.

2. Place the meter into the Holder correctly: Place the meter into the Holder again, and make sure that the bottom plane of the meter just against the surface of the Calibrating Standard.

☆Hint: If the above two cases are excluded, it may be caused by errors in the last calibration. For instance, calibration is still conducted even though the surface is dirty. In this case, please make another calibration. Refer to the "Calibration" on page 18.

■ The meter failing to start up or it's interrupted suddenly while starting up

In order to protect the chip, voltage detection is set during the meter starting up. If the battery is under voltage, the meter won't start up. In this case, please start up the meter after changing a new battery.

■ Condensation processing

Large temperature differences often result in condensation. The meter cannot be operated normally once any condensates occur on the surfaces of the lenses and the calibrating Standard, generating measurement errors. If this happens, wait for the condensation to evaporate after the meter temperature tends to be balanced with the ambient temperature. After that, measurement can be conducted again.

☆Note: Please use the meter at the specified temperature and humidity ranges.

■ Battery leakage processing

Batteries over–discharged or in poor quality can result in leakage that corrodes electrodes and internal components of the meter, causing that the meter is unable to work or even permanently damaged. Once this occurs, please replace a new battery after wiping the dirt on the electrode with a cotton swab dipped in absolute ethanol. If the meter still fails to work properly after that, please contact the manufacturer for repair.

■ About measurement interface

The following three different measurement interfaces might be switched as per different settings. It's a normal situation. Please refer to page 19 and 20.

| | 008/ 03/05 | |
|---|---|---|
| | ✕ | x̄ |
| 20° | 87.4 | 87.5 |
| 60° | 91.9 | 91.8 |
| 85° | 98.8 | 98.7 |

Gloss Interface

| | 008/ 02/05 | |
|---|---|---|
| | ✕ | x̄ |
| 20° | 95.0 | 53.2 |
| 60° | 96.7 | 74.2 |
| 85° | 99.3 | 94.1 |
| Haze | 1.7 | 21.0 |

Haze Interface

| | 008/ 03/05 | |
|---|---|---|
| | ✕ | x̄ |
| R20° | 4.6 | 3.3 |
| R60° | 9.7 | 8.2 |
| R85° | 61.5 | 59.3 |

Reflectance Interface

■ Troubleshooting with computer communication

In general, data transmission and all communication operations can be implemented smoothly with a data cable. Failures might be caused by the following situation. Please check one by one:

1. The data cable is not properly connected to the computer or the connection with the computer is poor;
2. It fails to click the "Connect" key on the upload interface to establish a communication connection;
3. The meter is off or no data is stored in the meter;
4. The driver is not (correctly) installed.

☆ Special prompt: Please refer to the installation of the drive program in page 26 and 27.

◆ The meter is warranted for two years. Please contact the dealer or our company for troubleshooting once there is any problem to the meter.

◆ We always provides users with spare parts and life–long maintenance services.

◆ We provides users with meter calibration services for free.

◆ We provides technical consultation at no charge.

◆ We provides the design and customization of gloss measuring meters in special specifications and applications.

☆ Notes:
1. Disassembly might affect the measuring accuracy of the meter and lead to maintenance difficulties.
2. Free warranty is not guaranteed for improper use or disassembly during the warranty period.
3. The warranty card is an evidence for maintaining. Please verify the information on your warranty card to protect your own rights and interests!

◆ One unit of the main device, the model is

MG268–F2 ☐         MG6–F2 ☐         MG26–F2 ☐         MG68–F2 ☐

◆ Calibrating STD with Holder            One
◆ USB cable                              One
◆ USB disk with KDO software and files   One
◆ Meter bag                              One
◆ User manual                            One
◆ Certification                          One
◆ Warranty card                          One

◆Optional Accessory: Bluetooth Adapter            ☐

☆ Hint: The Bluetooth adapter and the meter are specially paired, so that it should be bought separately during the meter ordering.

| Date | Maintenance items | Maintained by |
|------|-------------------|---------------|
|      |                   |               |
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