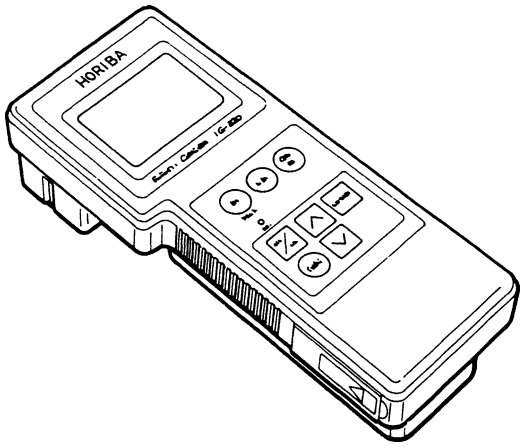
HORIBA

Gloss Checker

IG-320

Instructions for Use



Features

- Compact, lightweight, and easy to operate.
- Suitable for a variety of applications (field use, single-handed operation, etc.)
- Provides accurate measurement results unaffected by color or ambient light.

HORIBA, Ltd.

ABQINDUSTRIAL
PRECISION. RELIABILITY. QUALITY.

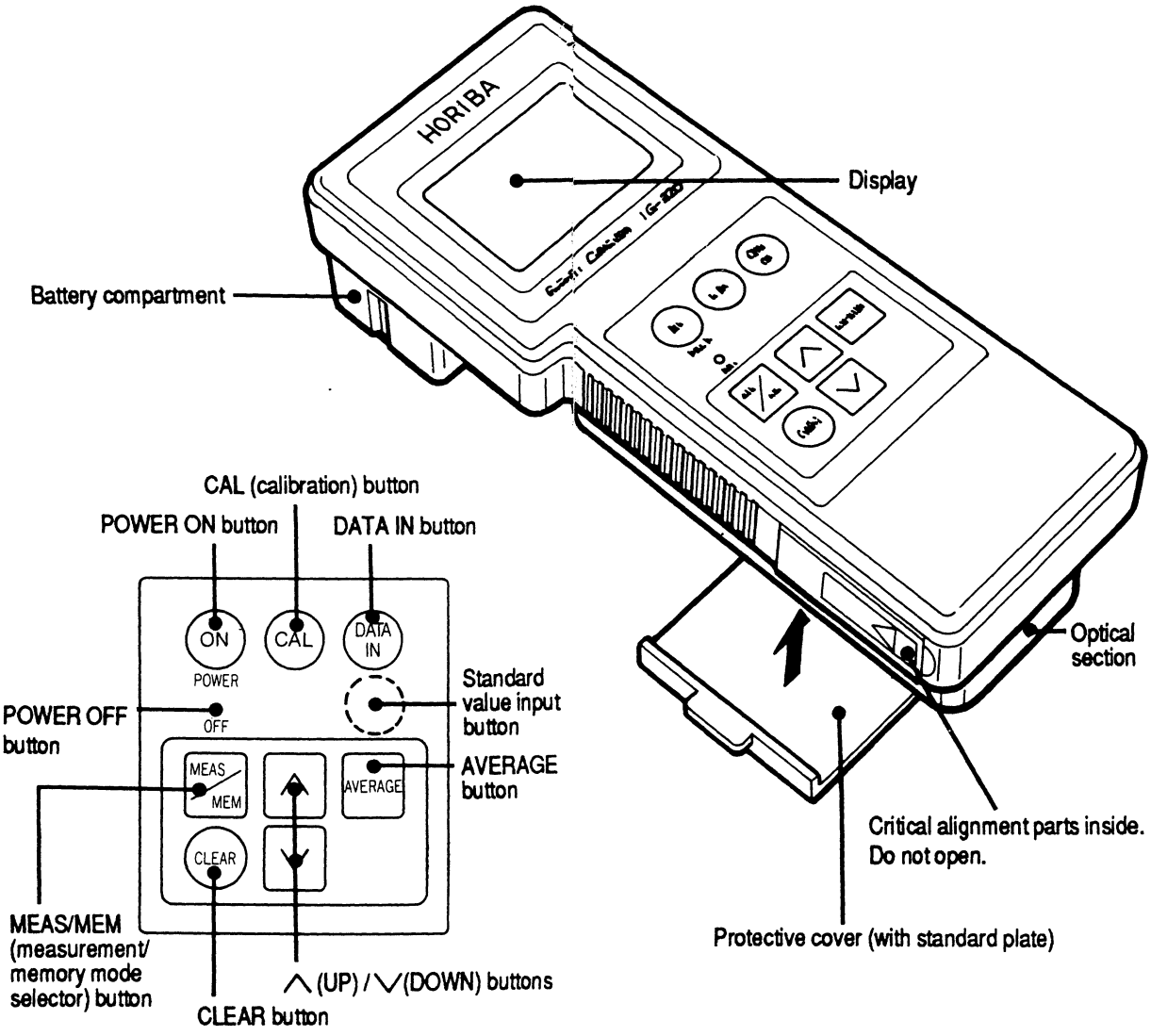
Distributed by: ABQ Industrial LP USA
Tel: +1 (281) 516-9292 / (888) 275-5772 **eFax:** +1 (866) 234-0451
Web: https://www.abqindustrial.net **E-mail:** info@abqindustrial.net

Contents

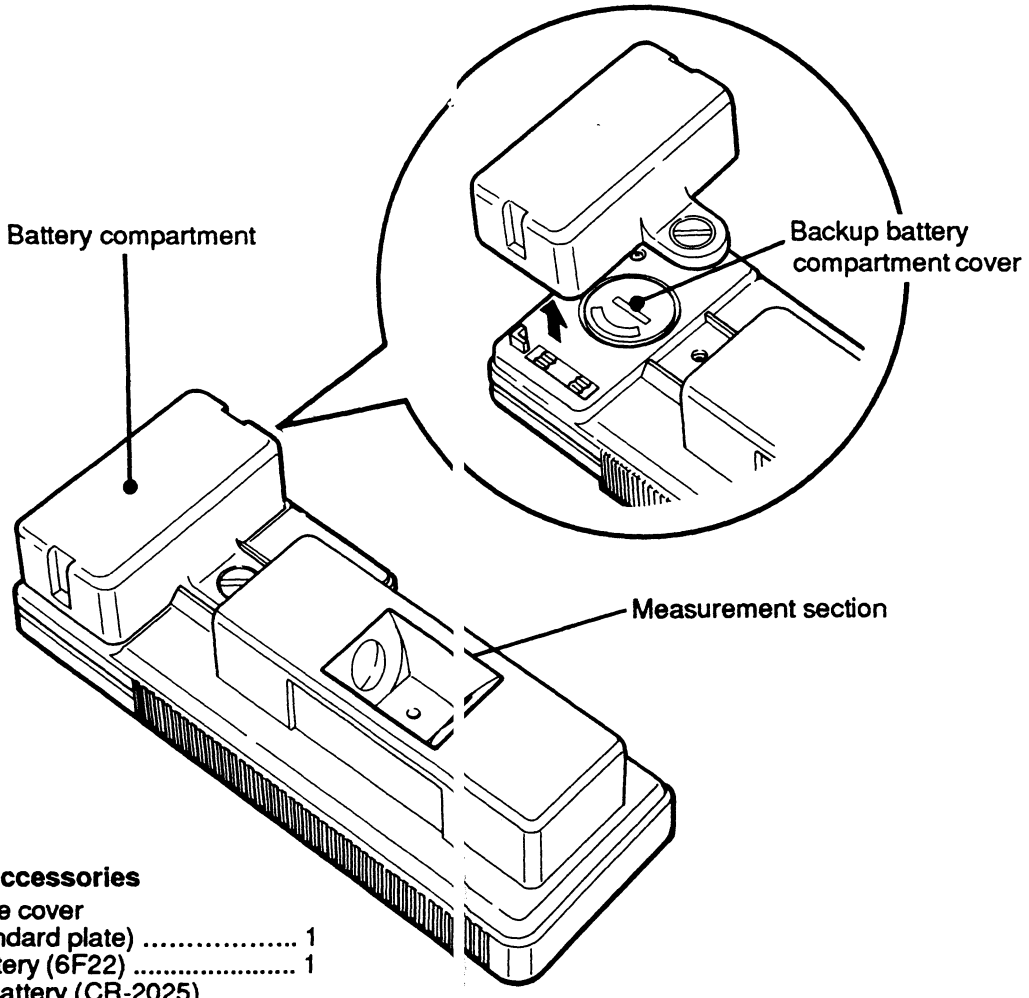
Precautions

- The IG-320 is a precision instrument. Protect the unit and especially the optical section from shocks, friction, excessive pressure, and scratches.
- Do not touch the lens on the unit or the standard plate in the protective cover with bare hands or with a contaminated object.
- If the standard plate or the lens are dirty, accurate measurements are not possible. Keep these parts always clean by wiping them with a soft cloth if required.
- Do not expose the unit to direct sunlight for extended periods.
- Do not store the unit in locations subject to excessive dust or humidity.

Top Panel


HORIBA
Display
Battery compartment
CAL (calibration) button
POWER ON button
DATA IN button
ON
CAL
DATA IN
POWER
OFF
POWER OFF button
Standard value input button
AVERAGE button
MEAS
MEM
AVERAGE
CLEAR
MEAS/MEM (measurement/ memory mode selector) button
∧(UP) / ∨(DOWN) buttons
CLEAR button
Optical section
Critical alignment parts inside. Do not open.
Protective cover (with standard plate)

Bottom Panel



Supplied Accessories

- Protective cover (with standard plate) 1
- Main battery (6F22) 1
- Lithium battery (CR-2025) for memory backup 1
- Lens cloth 1
- Soft carrying case 1

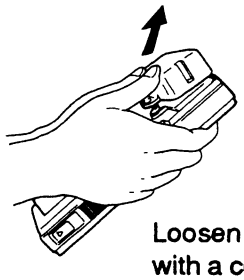
Battery Insertion and Replacement

This unit uses two batteries, a 9-V battery for normal operation and a coin-sized lithium battery for data storage and memory backup. When the following display appears, replace the respective battery.

"BATTERY" lights up	"No." and "BATTERY" blinked
Replace main battery (6F22).	Replace lithium battery (CR-2025) for memory backup.

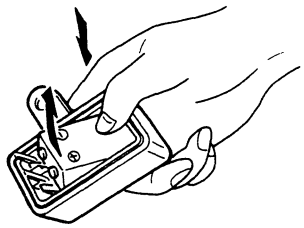
Replacing the main battery

1 Remove the battery compartment.

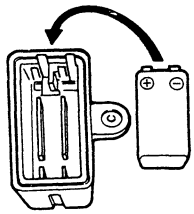


Loosen the fastening screw with a coin or the like.

2 Remove the old battery, if inserted.

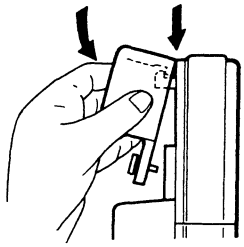


3 Insert the new battery.



Observe correct polarity.

4 Reattach the battery compartment.



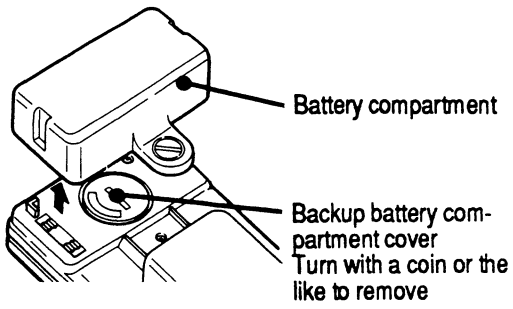
Securely snap in the catch and fasten the screw.

Replacing the backup battery

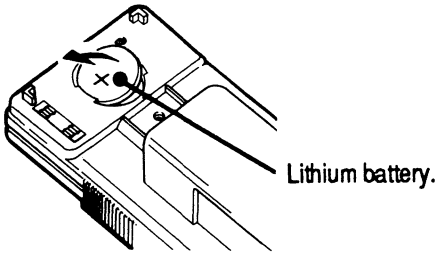
Caution:

When the backup battery is removed, all data stored in the unit are lost.

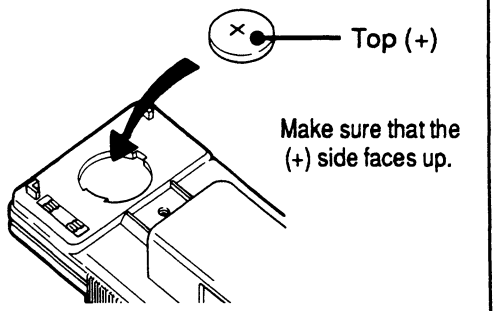
1 Remove the battery compartment and the backup battery compartment cover.



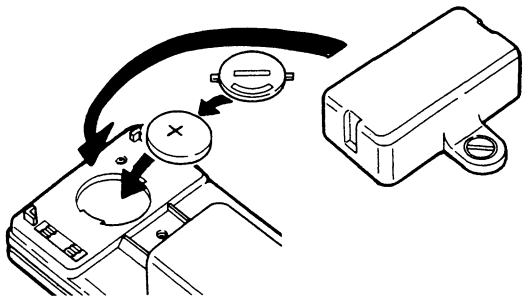
2 Remove the old lithium battery, if inserted.



3 Insert the new lithium battery.



4 Reattach the backup battery compartment cover and the battery compartment.



5 Set the standard value (refer to page 12).

Battery Precautions

- Do not dispose of batteries in fire, and do not attempt to charge batteries.
- Do not grasp batteries with a metal pincette or the like.
- Remove the batteries from the unit if it is not to be used for an extended period of time.
- Keep batteries out of the reach of children. Immediately contact a physician in case of accidental ingestion.

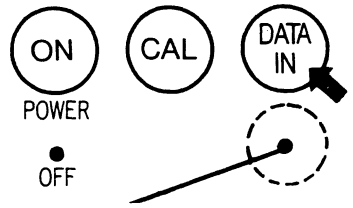
Setting the Standard Value

Setting the Standard Value

Perform the following steps to set the unit to the gloss value of the standard plate.

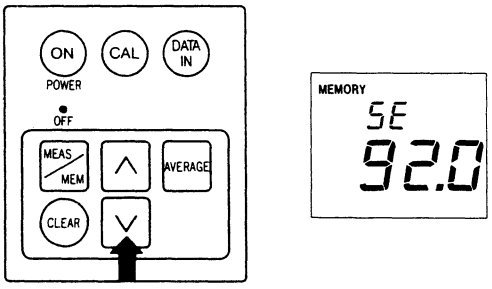
1 Turn the unit on.

2 Hold down the standard value input button and press the DATA IN button.



Standard value input button
This button has no indication on the panel.

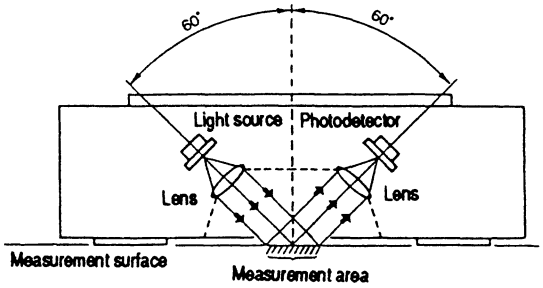
3 Press the ∧ or ∨ button to set the display to the standard value printed on the protective cover.



4 Turn the unit off or set up the standard plate for calibration.

Reference

How is gloss evaluated?



Gloss as measured by the IG-320 is a numerical value which expresses the intensity of the luminous reflection on the surface of an object. The value is determined by comparing the value obtained with a standard reflective surface to the intensity of reflected light on the measurement object.

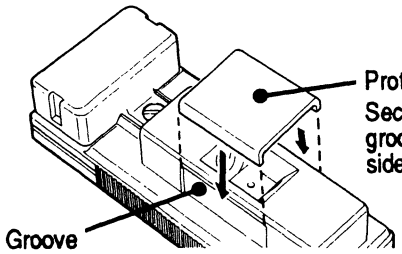
According to JIS, a glass plate with a refractive index of 1.567 is defined as having a gloss of 100 units. Because glass surfaces with a refractive index of 1.567 are chemically unstable, the IG-320 uses a polished black glass with a gloss of about 90 as standard reference surface for calibration.

Because gloss quality changes considerably depending on the material and surface condition of an object, material with known gloss (ceramic tiles, paint gloss reference sheet) or material similar to the measurement object is often used as a secondary reference.

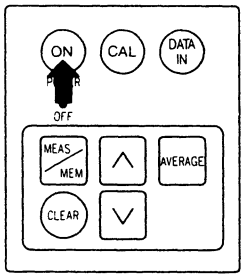
Sensitivity Calibration

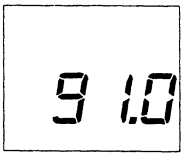
This unit is calibrated by entering the gloss value of the standard plate inside the protective cover (for example 90.0). This value is then used as reference for the measurement. Sensitivity calibration (verification) must be performed if the unit was not used for a long time or after battery replacement. It is also recommended before starting a measurement.
First make sure that the standard plate inside the protective cover and the lens are clean. If not, clean these parts as described on page 26.

1 Attach the protective cover to the unit.

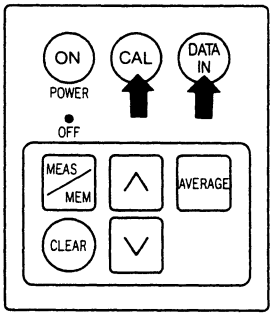


2 Turn the unit on.





3 Hold down the CAL button and press the DATA IN button.

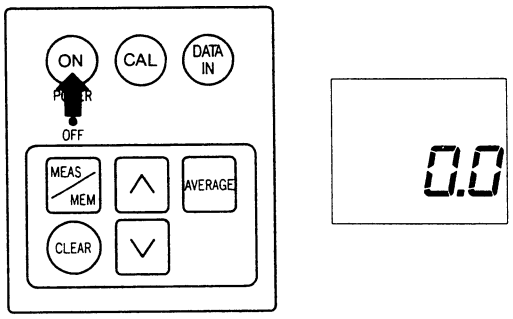


First, "CAL" is displayed, followed by "90.0". This completes the calibration. When the protective cover is removed, the unit is ready for measurement.

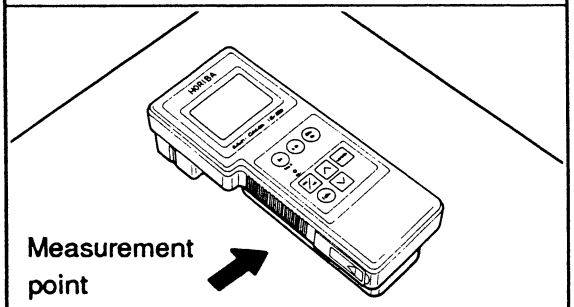
Perform the measurement on a flat surface to ensure accurate results. If the measurement surface is curved, warped, uneven, or scratched, the results will not be reliable.

Normal Measurement

1 Remove the protective cover and turn the unit on.

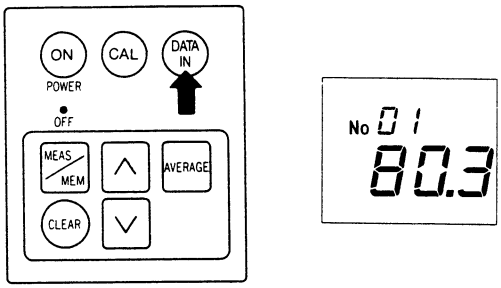


2 Place the unit carefully on the surface to be measured.



The gloss value is shown on the display.

3 When wishing to store the measured data, press the DATA IN button.



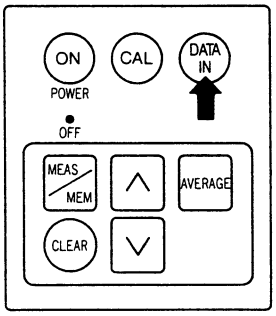
The currently displayed value is stored, along with a data number.

4 To carry out more measurements, repeat steps 2 and 3.

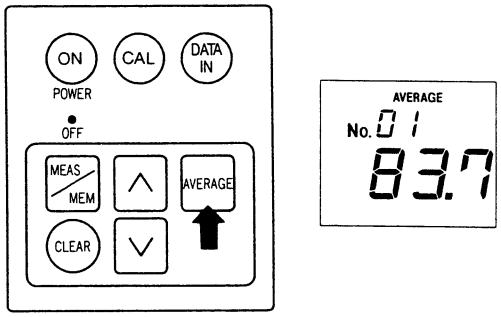
To determine the average of measured data

When three or more data have been stored, pressing the AVERAGE button shows the average value. For average calculation, the maximum and minimum value are disregarded. If only two data are stored, the mean value of the two data is shown.

1 Store several measurement data.

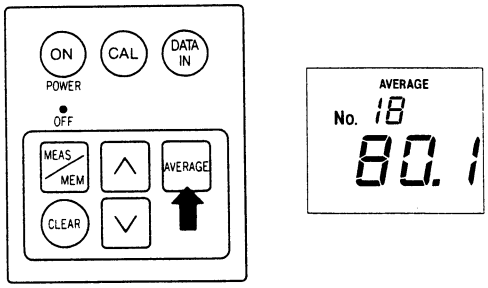


2 Press the AVERAGE button.



Average value of stored data is shown.

3 Repeat steps 1 and 2 when wishing to average other data.

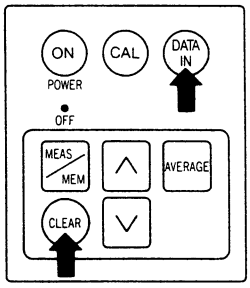


Pressing the AVERAGE button will clear previously stored data.

Clearing Data

Before starting a new measurement, all stored data can be cleared as follows.

Hold down the CLEAR button and press the DATA IN button.

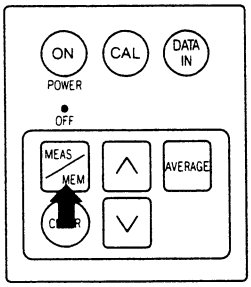


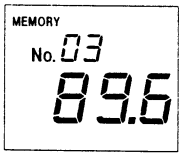
"Clr" is displayed, and all stored data are cleared.

Recalling Stored Data

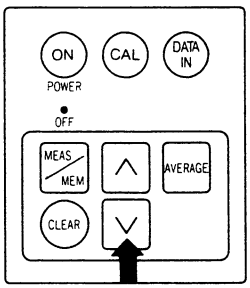
Stored measurement data or average data can be recalled as follows.

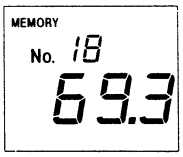
1 Press the MEAS/MEM button to set the display to the MEMORY mode.





2 Use the ∧ and ∨ buttons to call up the desired data.



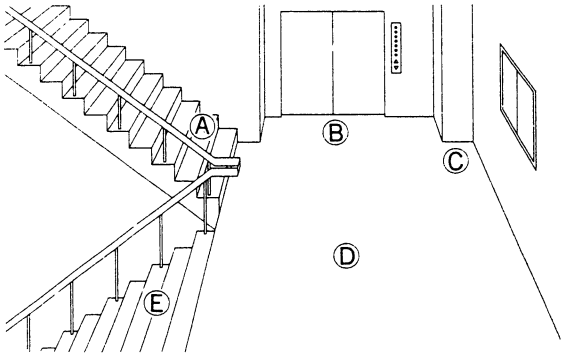


Note:When measurement data are stored, average data cannot be recalled.

After the measurement is terminated, press the POWER OFF button to turn the unit off.

Measuring floor gloss in a building

Determine the measurement points, such as points Ⓐ through Ⓔ in the illustration.



If there is considerable variance in the readings for a measurement point, make several measurements for that point. Then use the averaging function (page 18) to determine the gloss value for that point.

Measurement examples for point Ⓐ (AVERAGE No. 1)

Data No.e	1	2	3	4	5	Average
Measured value	83.5	88.3	87.9	85.6	84.3	85.9

Measurement examples for point Ⓑ (AVERAGE No. 2)

Data No.e	1	2	3	4	5	Average
Measured value	61.3	63.0	65.9	64.5	62.8	63.4

Q & A

How many measurement data can be stored?

The unit can store up to measurement 99 data. When the maximum is reached, the indication "FUL" appears and further input is not accepted.

How many average data can be stored?

The unit can store up to 99 average data. However, note that when any measurement data are input after 99 average data have been stored, the average data cannot be recalled.

What if measured data fluctuate considerably?

The unit may be placed on an uneven or warped surface or above a groove. Place the unit on a smooth, flat surface to obtain stable readings.

What if the "OVER" indication appears?

When the measured gloss exceeds the 0 to 100.0 range, this indication appears. The measured value can still be input if it is 199.9 or less. If the value exceeds 199.9, the indication "199.9" flashes and the "OVER" indication is displayed. In such a case, the measured value cannot be input.

When I press DATA IN, the measurement data are not input. Why?

The unit may be set to the memory mode. Press the MEAS/MEM button to set it to the measurement mode.

* Operation modes

Measurement mode ("MEMORY" indication not shown on the display)	This mode serves for measurement, data input or average calculation.
Memory mode ("MEMORY" indication shown on the display)	Serves to recall measurement or average data.

Will data be lost when the unit is turned off?

No. All stored data will be retained also while the unit is turned off (either manually or by the auto power-off function).

What is the auto power-off function?

The unit automatically turns itself off after about 10 minutes of inactivity.

Troubleshooting

Check the following points.

When these indications are displayed

"BATTERY"
Main battery exhausted. Replace battery.

"BATTERY NO."
Backup battery exhausted. Replace battery.

"CAL" (blinking)
Check protective cover.

"Err"
Stored standard value is abnormal. Calibration is carried out automatically after 1-2 seconds (CAL is displayed).

"Err" (blinking)
Internal circuit problem. Contact your dealer.

No display

- Main battery not inserted. Insert battery.
- Main battery exhausted. Replace battery.
- Battery inserted with wrong polarity. Insert with correct orientation.

Display appears not normal.

- Measurement surface not flat.
- Measurement section of unit not placed directly on measurement surface.
- Irregular surface (containing metal or plastic components).
- Lens is contaminated or scratched. Clean lens and perform calibration (p. 14, 26).
- Calibration was carried out with contaminated standard plate. Clean standard plate and repeat calibration (p. 14, 26).

Display indication does not change.

- Protective cover is not removed.
- Memory mode is activated.

Maintenance and Storage

Cleaning the unit

Clean the unit by wiping it with a soft, dry cloth. Severe contamination can be removed by lightly moistening the cloth with a mild detergent. Do not use cleaning alcohol or solvents.

Storage

Before storage, make sure that the unit is clean and dry. Attach the protective cover and place the unit in the supplied soft carrying case.

Specification

Measurement range
0.0 to 100.0

Display
3-1/2 digit LCD,
range 0.0 to 199.9 (resolution 0.1)

Measurement area
12 x 6 mm, elliptical

Optical system
Incidence angle - viewing angle 60°- 60°

Light source
LED

Photodetector
Silicon photodiode

Measurement precision (reproducibility)
±0.5% of full-scale, ±1 digit

Temperature range for use
0° to 40°C (no dew formation)

Temperature range for storage
-10° to +50°C

Power source
Main battery:
9-V battery (6F22)
(Battery life approx. 15 hours continuous use)
Backup battery:
3-V lithium battery (CR-2025)
(Replacement cycle: once per year)

Features
1 Simple calibration
2 Over-range indication
3 Auto power-off
4 Battery alarm
5 Data memory
6 Average calculation
7 Confirmation beep

ABQINDUSTRIAL
PRECISION. RELIABILITY. QUALITY.
Distributed by: ABQ Industrial LP USA
Tel: +1 (281) 516-9292 / (888) 275-5772 **eFax:** +1 (866) 234-0451
Web: https://www.abqindustrial.net **E-mail:** info@abqindustrial.net