


製品名	IG-330		本体 製品番号	
お客様	ご住所 千			
	ご氏名			
お買上げ日	年	月	日	保証期間
				お買上げ日より1年
販売店	住所 千			
	氏名			
				

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PREFACE

Previously gloss level values were only roughly measured by the naked eye. The Gloss Checker has been developed to measure gloss level values more accurately.

Before using the Gloss Checker, thoroughly read this manual for the proper usage. The instruction manual should be carefully stored.



This equipment is in conformity with the following directive(s) and standards(s);
Directive(s) The EMC Directive

89/336/EEC as amended by 91/263/EEC, 92/31/EEC and 93/68/EEC, in accordance with the Article 10 (1) of the Directive.

Standard(s) EN55011:1998 Class B Group 1 and EN50082-1:1992

株式会社 堀場製作所

本社・工場/京都市南区吉祥院宮の東町2

電話 (075)313-8121 郵便番号601-8510

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- The sensor is particularly delicate. When measurements are being taken, make sure that the sensor never be scratched or scrubbed.
- The protective cap contains a reference plate for calibration use. Never touch this plate or the lens with your hands or any dirty item.
- If the reference plate or lens become dirty, no accurate measurements can be performed. Clean these parts by only wiping them with a clean dry soft cloth.
- Do not roughly handle the main unit and the protective cap.
- Never leave the Gloss Checker under direct sunlight for long hours.
- Do not store the Gloss Checker in areas with high humidity or excessive dust.
- After using the Gloss Checker, be sure to turn it off. If the Gloss Checker will not be used for a long time, remove the batteries.

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2. CHECKING THE CONTENTS

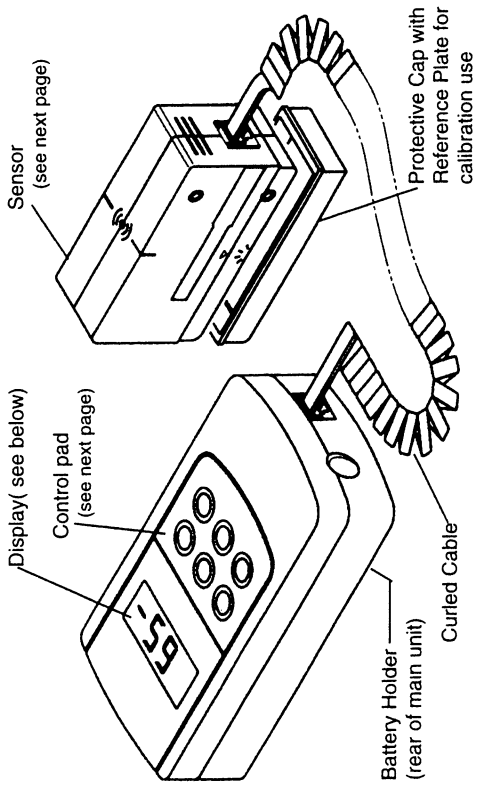
- Checking the items included in the carton

Check that all of the items listed below are included in the carton:

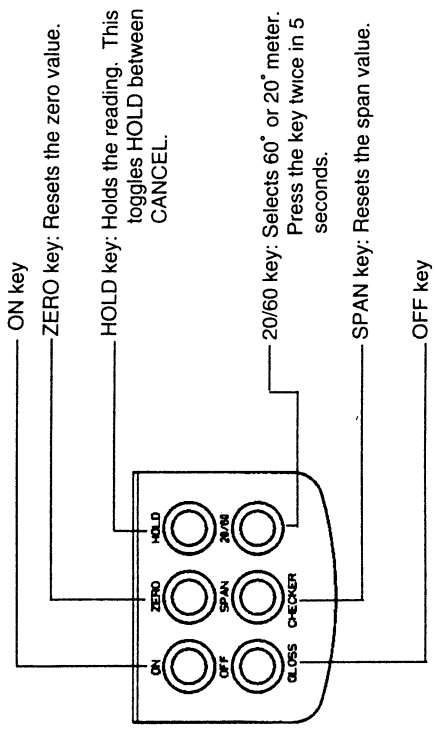
- Main unit with battery lid 1 pc.
- Sensor 1 pc.
- Protective cap with reference plate 1 pc.
- Curled cable 1 pc.
- #AA battery 1 pack including 4 pcs.
- Instruction Manual 1 copy

Note: The batteries included in the carton may have a shorter life.

3. NAMES OF VARIOUS PARTS

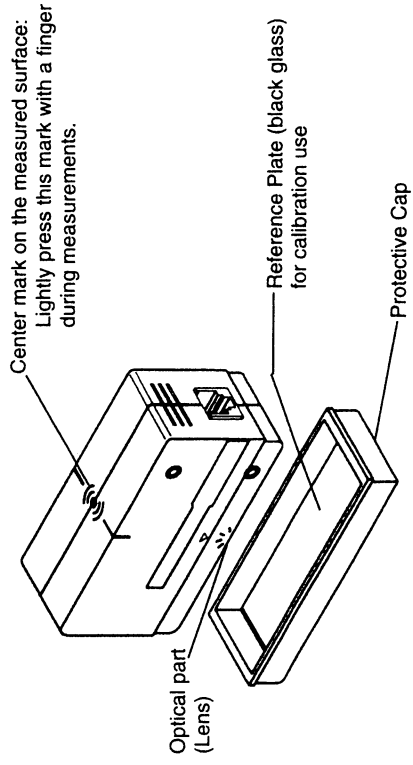


Control pad

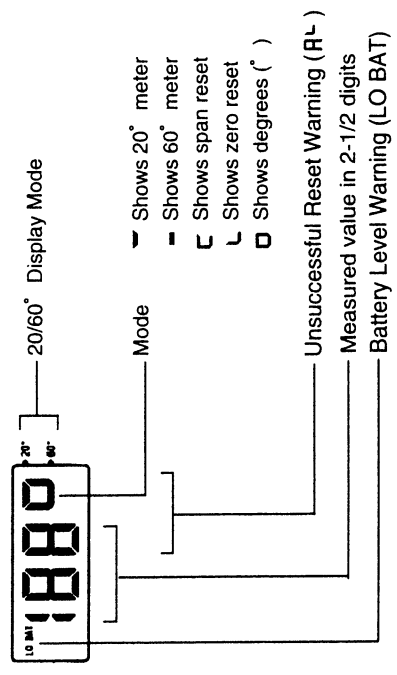


Note: Once the ZERO, SPAN, or 20/60 key is pressed, the HOLD key cannot be used for about five seconds.

Sensor



Display



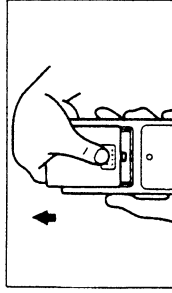
4. LOADING THE BATTERIES

Load the batteries with the following procedure:

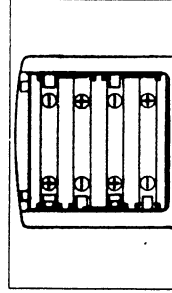
- The Gloss Checker uses four #AA batteries.

■ Replacing the batteries

- 1 Remove the battery lid.

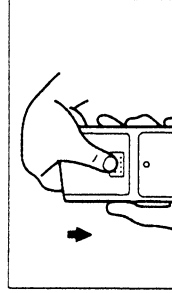


- 2 Load new batteries.



Check polarity

- 3 Fit the battery lid.



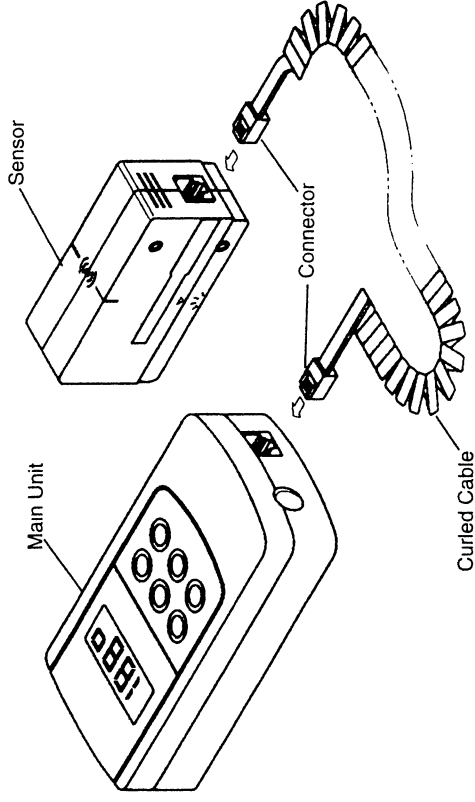
Ensure lid is securely fit.

Caution on batteries

- Use #AA manganese or alkaline batteries.
- Do not use rechargeable batteries such as NiCd battery.
- Never throw the used batteries into fire, nor try to recharge them.
- Remove the batteries if the Gloss Checker will not be used a long period.
- When the batteries have run out, "LO BAT" appears at the upper left part on the readout. Replace batteries.
- After loading new batteries, be sure to set the reference value.
- Do not use both old and new batteries together.

5. CONNECTING THE CABLES

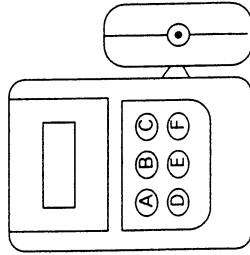
- Connect the connectors on the Curled Cable to the connector ports of the Main unit and Sensor.



Please use only the Curled Cable included. Do not use a normal telephone curled cable as proper readings cannot be taken.

6. RESETTING THE SPAN/ZERO VALUES

Controller



- A : "ON" ...To turn on Gloss Checker.
- B : "ZERO"...To set zero point.
- C : "HOLD"...To hold readout.
- D : "OFF" ...To turn off Gloss Checker.
- E : "SPAN"...To adjust sensitivity.
- F : "20/60" ...To change measurement angles of 20 and 60 degree.

NOTE:

When "AL" is blinking,



It doesn't mean the Gloss Checker is "out of order."

Please start from "2. Adjust sensitivity" again and complete the above procedure toward "10. The Gloss Checker is ready to measure."

(You will still see AL blinking at the stage of "3. readout is blinking" and "5. Readout is blinking" but please go forward your procedure because it is a normal reaction.)

※ From the second adjustment readout doesn't blink, but please continue your procedure because it is a normal reaction.

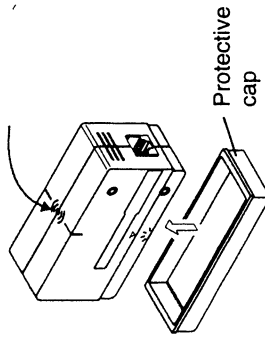
Press the keys slowly and firmly.

1. Turn on Gloss Checker.

Press "ON" key once.

2. Adjust sensitivity.

Place the protective cap on the sensor. Then, place the sensor on a flat surface such as a table. And then, press the center of the sensor lightly.

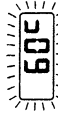


3. Readout is blinking.



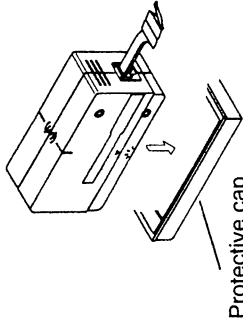
4. Press "SPAN" key twice.

5. Readout is blinking.



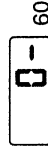
6. Adjust zero point.

Remove the protective cap. Then, pick up the sensor and hold it in the air.



7. Press "ZERO" key twice.

8. The display is indicating "0-" as below.



9. Preparation is completed.

10. The Gloss Checker is ready to measure.

Be sure to reset the reference values:

- ◆ before starting a measurement
- ◆ after the Gloss Checker has not been used for a long time
- ◆ after the batteries have been replaced
- ◆ when the working temperature has changed.

• The Span/Zero value for both 20° and 60° meter needs to be reset before each use.

• Press the ON key, all the indicators light up. To reset these values, the "SPAN/ZERO" button needs to be pressed.

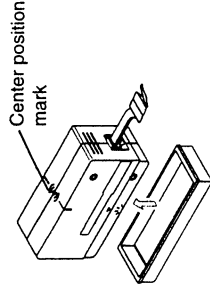
Two conditions may exist:

- (1) If the display is blinking, then SPAN / ZERO button needs to be pressed only once.
- (2) If the display is in normal measuring mode (not blinking), then press the SPAN / ZERO button twice.

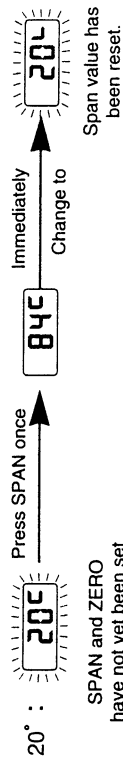
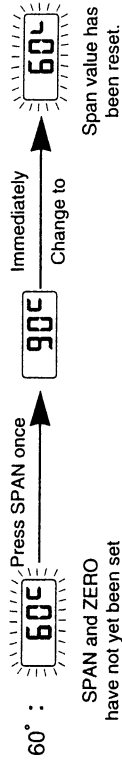
Resetting the span value

The span value is reset as follows:
60° meter: 90; 20° meter: 84

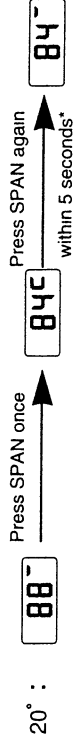
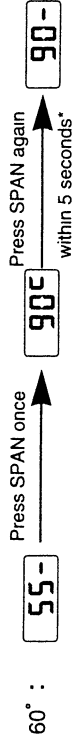
- Firmly fit the protective cap with the reference plate to the sensor. Place the sensor on a flat surface and then lightly press the center position mark with a finger.



Example for Blink Mode:



Example for Normal Mode:



* If the SPAN button is not pressed within 5 seconds, then the display will return to measuring mode.

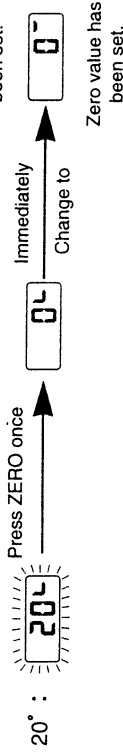
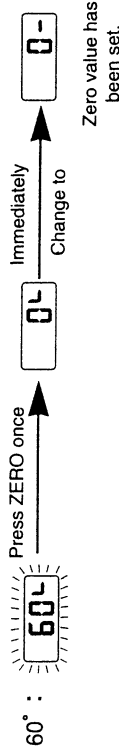
Resetting the zero value

The zero value is reset as follows:

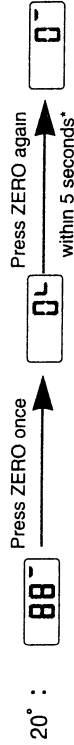
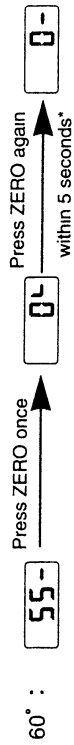
60° meter: 0; 20° meter: 0

- Remove the protective cap with the reference plate.
- Turn the Sensor toward the ground so that no reflective light such as sunlight comes into the optical Lens.

Example for Blink Mode:



Example for Normal Mode:



* If the ZERO button is not pressed within 5 seconds, then the display will return to measuring mode.

7. MEASUREMENTS

- Place the sensor as close to the object to be measured as possible. (Lightly press the center position mark with a finger) The value displayed shows the measured.*
- If you wish to retain the value during the measurement, press the HOLD key. This key toggles between HOLD (the value blinks) and CANCEL.
- If an object with a high gloss level is measured with the 60° meter, the difference between the gloss levels are more difficult to detect. (Compared to human eyes) In this case, the measurement should be made with the 20° meter for more precise readings. Switch modes when the gloss level measured with the 60° meter is greater than 70.
- If no key has been pressed for about 5 minutes, the automatic power-off mechanism is activated to automatically turn off the Gloss Checker. To start a measurement again, press the POWER ON key, the previous mode is retained when the Gloss Checker is turned on again.
- * The Gloss Checker a practical tool for Quality Control can be used to measure the differences in the surfaces of similar objects. However, irregular surfaces may effect the measured value from device to device. Complex objects include materials such as painted objects, inks and surface that are grounded transparent or laminated.

8. STORAGE

- After the measurement, press the OFF key.
- Store the Gloss Checker in accordance with the following instructions:

■ Checks and storage after use

- If dirty/wet, Clean the following parts with a dry soft cloth:

- ◆ Main unit
- ◆ Flat surface of Sensor
- ◆ Optical Lens
- ◆ Reference plate on the protective cap

If foreign matter cannot be wiped off, apply a very small amount of commercially available detergent such as liquid cleaner to put soft cloth and then lightly wipe.

Caution 1: Never use organic solvents such as thinner.

Caution 2: The Gloss Checker is not water-proof; never wash it with water !

- ◆ If the Gloss Checker is not used for a long period, remove the batteries.

After the above work, store the Gloss Checker.

9. USEFUL INFORMATION

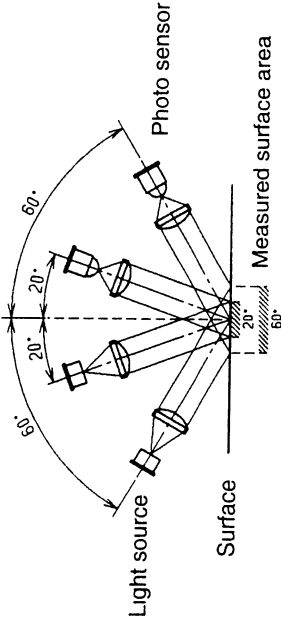
What is the reference of gloss levels?

The gloss level measures the reflection when a beam of light is shined on a surface. It is determined by the ratio of the intensity of the light reflected of the measured spot to that from the reference plate. JIS specifies that the gloss level on the surface of glass with a refractive index of 1.567 should have a reference level of 100. However, since this glass is scientifically unstable, the Gloss Checker uses a black glass plate with a gloss level of 90 on the 60° meter and 84 on the 20° meter, as the reference plate for calibration use. (JIS : Japanese Industrial Standard)

How should the 60-degree and 20-degree meters be used?

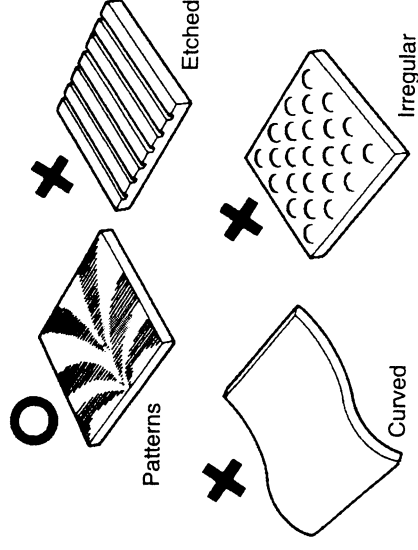
The Gloss Checker uses two optical systems for different measurement angles of 60 and 20 degrees. This allows for efficient measurements of gloss levels over a wide range. The 60° meter covers a wide range from low to high gloss levels. The 20° meter should be used to measure high gloss levels which are more than 70 on the 60° meter. (Note: The 20° meter is more sensible to surface conditions and the tilt of the sensor.)

Configuration of Optical Systems



What materials can be measured?

Since the Gloss Checker uses two optical systems for measurement angles of 60 and 20 degrees, it is suitable for quality control use of various materials such as coatings on painted plates, plastics, stones, tiles, and enamel. However, some materials, such as ground metallic surfaces, cannot be measured because their gloss levels are too high. The surface to be measured must be flat. Therefore, those objects which have a rough or curved surface may not be measured properly. Measured values for transparent objects are also affected by reflections from the bottom surface.



10. TROUBLESHOOTING

■ The readout displays nothing.

- ➔ The power is off ➔ Press the ON key
- ➔ The batteries are not installed ➔ Install the batteries.
- ➔ The batteries have run out ➔ Replace the batteries.
- ➔ The polarities of the batteries are reverse ➔ Reinstall the batteries in the correct position.

■ The reading is abnormal.

- ➔ The measured surface is rough ➔ Measure a flat surface.
- ➔ The sensor part is floating ➔ Ensure the sensor makes a tight fit with the spot to be measured.
- ➔ The lens is dirty ➔ Wipe the lens with dry soft cloth or the like.
- ➔ The reference plate for calibration use is dirty ➔ Clean the reference plates with dry soft cloth or the like.
- ➔ The batteries have run out ➔ Check for "LO BAT" which means that the batteries have run out. If "LO BAT" appears, replace the batteries.
- ➔ The reading does not change ➔ Remove the protective cap.
- ➔ Shows meaningless figure ➔ Take the batteries, and wait about 10 seconds then load batteries again.

■ The reading blinks.

- ➔ The reading does not change ➔ Press the HOLD key.
- ➔ "-9" is displayed ➔ Displaying after zero reset sometimes. It is not fault.
- ➔ "AL" is displayed ➔ Reset the reference values.
- ➔ "199" or "99" is displayed ➔ The object surface cannot be measured because its gloss level is too high.

If the problem still exists, contact the Service Department or the dealer where you purchased the Gloss Checker.

11. SPECIFICATIONS

- 1) Measurable range: 0-100
- 2) Optical systems:
 - 60° : 60° Optical Range
 - 20° : 20° Optical Range
- 3) Measurable spot:
 - 60° : Oval Size of 6 mm X 3 mm
 - 20° : Oval Size of 4 mm X 3 mm
- 4) Display: LCD for digital display in 2-1/2 digits in the range of 0-199.
- 5) Repeatability : $\pm 5\%$ of full scale ± 1 digit
(On black reference plate)
- 6) Power source: Four #AA batteries. Continuous Operation: 15 hours (R6P battery type at 25°C ambient temp.)
- 7) Warm-up time: Within 10 seconds after turning on the power.
- 8) Ambient temperature range: 10-40°C without condensation
- 9) Features: HOLD mode in which the reading blinks
Measurement mode selection between 60-degree and 20-degree meters
"AL" displayed for an error
Warning "LO BAT" displayed for low battery level
Automatic power-off mechanism after about 5 minutes.
- 10) Mass: Approx. 350 g
- 11) EMC: $\pm 6\%$ of full scale ± 1 digit
at 27 MHz to 500 MHz 3 V/m
(On black reference plate)