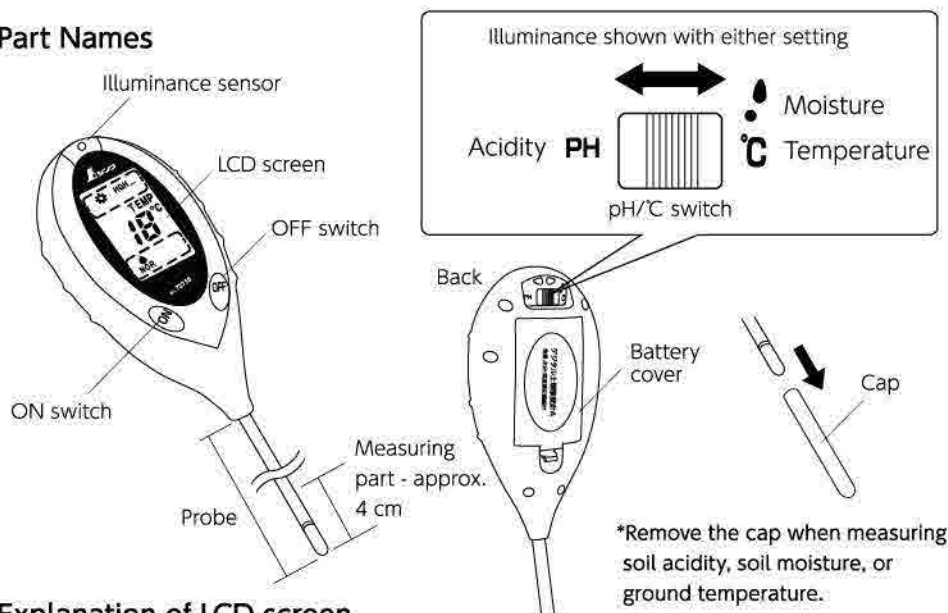


■Features

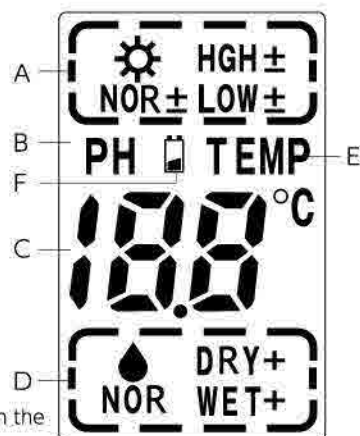
- Multifunctional digital soil pH meter that can measure ground temperature, soil moisture, and illuminance
- Backlight function
- Switch allows easy change between soil acidity (pH) and temperature (°C)

■Part Names



■Explanation of LCD screen

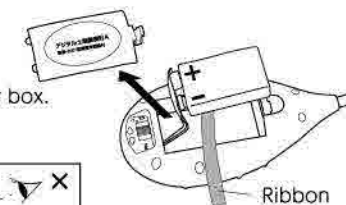
- A. Display for illuminance. Indicated by nine levels.
(LOW-, LOW, LOW+, NOR-, NOR, NOR+, HGH-, HGH, HGH+)
LOW- is the darkest and HGH+ is the brightest.
- B. pH (soil acidity)
- C. Display for pH and temperature.
Range of pH: 3.5 - 9.0. Range of temperature: -9°C - 50°C
"Lo" is displayed when exceeding the display range's lower limited.
"HH" is displayed when exceeding the display range's upper limited.
- D. Soil moisture display. Indicated by five levels.
(DRY+, DRY, NOR, WET, WET+)
DRY+ is the lowest, and WET+ is the highest.
- E. TEMP (Temperature)
- F. Low battery alarm. The battery icon () will be displayed when the amount remaining is 7V or less.



■How to Use

●Installing the battery

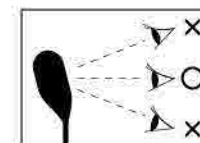
Open the battery cover and insert one 9V battery into the battery box.
(Comes with one 9V battery)



●Operating instructions

Read off the value shown on the LCD screen while facing it directly.

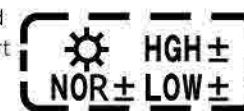
*When viewed at another angle, other information may seem to be displayed.



1. Measuring illuminance

- (1) Push the ON button to turn on the power.
- (2) Set the illuminance sensor at the position you wish to measure.
- (3) Illuminance is shown on the display in nine levels.

(The relation between each level and the illuminance is shown on the chart to the right.)



(Display level and illuminance)

Display	Lux
LOW-	Under 500
LOW	500 - 3,000
LOW+	3,000 - 7,000
NOR-	7,000 - 10,000
NOR	10,000 - 25,000
NOR+	25,000 - 30,000
HGH-	30,000 - 40,000
HGH	40,000 - 60,000
HGH+	Over 60,000

Caution: When measuring, please make sure that your body or material such as leaves will not obstruct the sensor.

2. Measuring soil acidity

- (1) Slide the pH/°C switch on the back to the pH side.
- (2) Sprinkle water on the soil and make sure it has sufficient moisture as if a mud ball was to be made.
- (3) Insert the measuring part into the soil vertically (See Caution section) and push the ON button to turn on the device.
- (4) The soil's pH value will appear on the display.
- (5) In order to obtain correct measurements, clean the measuring part before using. Measure different places several times and calculate the average value. Be sure to record numerical values after more than 1 minute has passed since starting measurement.

Caution: ●In the case of a potted plant, insert the measuring part in the middle between the stem and the edge of the pot. If the diameter of the pot is over 30 cm, insert in between the edge of the pot and the stem of the plant at a spot about 1/3 of the distance from the stem. If the pot is deep, insert deeply to the point where the roots are concentrated.
(Take care not to damage the roots.)

- Do not use too much force when inserting into the soil as this could damage the probe.
- When it is difficult to measure because the soil is too dry or has too much fertilizer, water the area being measured and measure again after 30 minutes.

Reference (If the result is lower than the desired value, lime can raise the pH value.
If the result is higher than the desired value, chemical fertilizer or organic matter can lower the pH value.

Over	←								→								Over
Acidity becomes stronger									Neutral	Alkalinity becomes stronger							
Lo	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	HH				

3. Measuring soil moisture

- (1) Slide the pH/°C switch on the back to the °C side.
- (2) Insert the measuring part into the soil vertically. (See Caution section)
- (3) Push the ON button to turn on the device.
- (4) The soil moisture will be displayed.
- (5) In order to obtain correct measurements, clean the measuring part before using. Measure different places several times and calculate the average value. Be sure to record numerical values after more than 1 minute has passed since starting measurement.

Caution: ●In the case of a potted plant, insert the measuring part between the stem and the edge of the pot. If the diameter of the pot is over 30 cm, insert in between the edge of the pot and the stem of the plant at a spot about 1/3 of the distance from the stem. If the pot is deep, insert deeply to the point where the roots are concentrated.
(Take care not to damage the roots.)
●Do not use too much force when inserting into the soil as this could damage the probe.

Soil moisture is indicated by five levels.



Display	Soil moisture*
DRY +	Under 5%
DRY	5 - 10%
NOR	10 - 20%
WET	20 - 30%
WET+	Over 30%

*For this device, soil moisture is defined as follows.
Soil moisture (percent)
= Weight of water/Weight of soil including water x 100

4. Measuring ground temperature

- (1) The ground temperature will be displayed when turning on power with the same procedure as measuring soil moisture.

Caution: When the measuring part is not inserted in the soil, the device will display the area's environmental temperature.

■Specifications

Measuring Target	Illuminance, soil acidity, moisture of soil, soil temperature
Measuring Range Illuminance (9 levels)	LOW-, LOW, LOW+, NOR-, NOR, NOR+, HGH-, HGH, HGH+
Moisture of Soil (5 levels)	DRY+, DRY, NOR, WET, WET+
Acidity of Soil (14 levels)	pH3.5 - 9.0 (minimum display pH0.5, accuracy ±pH0.5)
Temperature of Soil	-9 - 50°C (minimum display 1°C, accuracy ±1°C)
Power Source	1x 9V battery
Battery Life	12 hours of continuous use *Battery included is for trial use only and may not last as long.
Auto Power Off	Turns off approximately 5 minutes after operation stops
Auto Backlight Off	Backlight turns off approximately 1.5 minutes after operation stops
Operating Temperature	5°C - 40°C
Body Size	322 mm × 63 mm × 36 mm
Probe Size	φ6 mm × 200 mm
Weight	117 g (including battery)

■Problems and Remedies

Symptom	Cause	Remedy
Display is unstable Unusual numerical values, etc.	Measuring part touched a stone or organic matter such as fertilizer in the soil.	After cleaning the measuring part, measure again at a different point.
	Measuring part is too close to the bottom or inside wall of the pot.	
	The soil is too dry.	Sprinkle water and make sure soil has sufficient moisture to make a mud ball.
	Distribution of soil around the measuring part is unequal.	Mix the soil well.

⚠ Caution

- When measuring soil acidity, soil moisture, or ground temperature, remove the cap on the measuring part.
- When storing the device, clean the measuring part and replace the cap in order to protect it from oxidation.
- Use is limited only to soil measurement. Do not insert the measuring part into water or other liquids.
- Do not allow the probe to remain inserted as this could cause it to corrode.
- Do not bend the probe.
- Do not loosen the clod of soil with the probe.
- Do not allow the probe to come in contact with metal. When storing, make sure that it does not make contact with other metals. Do not put it into a toolbox with other tools.
- Clean the tip of the probe (0 - 10 cm) before use. As much as possible, remove any oxidation that may be adhering to the metal tip.
- Do not touch the measuring part with bare hands.
- Do not drop or subject to strong impact as this may cause the device to operate incorrectly.
- Do not alter or disassemble the device other than as directed in this manual.
- Do not use the device in the rain.
- Do not store at a temperature of 50°C or higher.
- If the device gets dirty, wipe it clean with a soft cloth. Do not wipe with a volatile oil such as thinner, or alcohol.
- Remove the battery when the device will not be used for a long time.
- We shall not be liable for any consequential, incidental, or indirect damages such as losses and lost profits to the customer as well as a third party resulting from the operation of this product, regardless of whether or not they were foreseeable or the possibility was reasonably foreseeable. However, this shall not apply in the case where there is wilful or gross negligence or when the customer is a consumer according to the Consumer Contract Act. In the event that we are liable for the use of this product, we shall be liable for damages limited to an amount equal to the price of the product.