

DIGITAL PD METER

Instructions



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1. Application and Characteristics

1.1. Purpose of Device

BRT-3 Type Multifunctional Pupilometer is a precision optical device which can be used for the measurement of PD, pupil height, and distance between glasses and eyes in the process of optometry.

1.2. Product Features

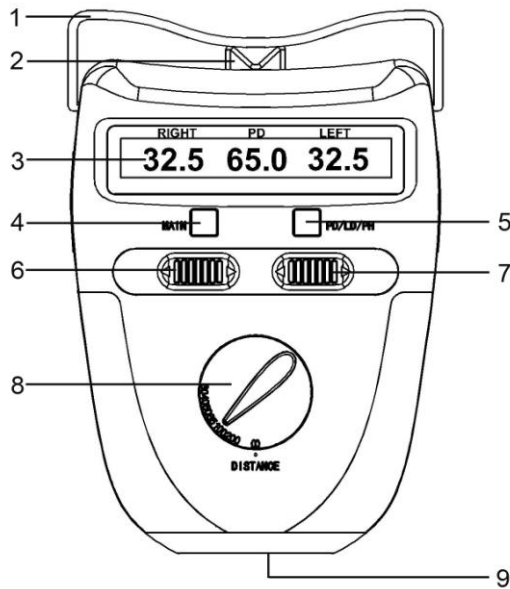
- 1) We made the world's first pupilometer which can measure pupil height, so the original number of the coreometer's function is increased to three. The function of the device becomes more abundant and can meet the optometrist's requirements completely.
- 2) The new pupilometer makes the high pupil measurement easier, a beginner can also accurately measure their customer's pupil height, which makes it more convenient for stores to promote progressive lenses.
- 3) By using the method of detection of corneal reflection points, the process of sampling will be direct and continuous.
- 4) The design of the high precision linear sensor and advanced algorithm will improve the detection accuracy. Such method not only has the advantages of convenient operation, but can also effectively eliminate any measurement errors caused by the optometrists' human factors.
- 5) Measurement results are intuitive and easy to read by using large viewing angle LCD screen.

- 6) Due to the adoption of a new generation of lenses, the dispersion and deformation is decreased by 20%.
- 7) Mold surface with anti-fingerprint processing, waterproof, and anti-oil.
- 8) Updates to the low power processors allows battery life to be increased by 40%
- 9) By using a new generation of the LED light source, the light source is soft and easy on the eyes, and the energy consumption is reduced by 60%.
- 10) The product weighs only 600 grams which is 30% less than other similar products.

1.3. Main Technical Specifications

- 1) Date Range:
 - a) binocular PD 46-82 mm
 - b) monocular PD 23-41 mm
 - c) PH:12-28mm
 - d) LD:6-20mm
- 2) Distance range: 300 mm - ∞
- 3) Indication error: ≤ 0.5 mm
- 4) Rounded error: ≤ 0.5 mm
- 5) Asymmetric error: ≤ 0.5 mm
- 6) Power rating: DC 3V(2 pieces AA batteries)
- 7) The automatic power-off function works within 2 minutes when out of usage.
- 8) Dimensions: 220 mm (length) x 160 mm (width) x 60 mm (height)
- 9) Weight: 600 g

2. Device structure description

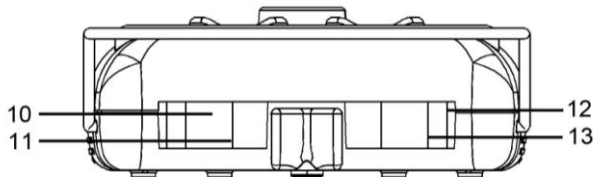


2.1. Front side

- 1) Forehead Bracket: the bracket is light on the forehead and plays the role of an assisting position when measuring.
- 2) Nose Support:
 - a) PD: The target person's nose can be secured with a nose support;
 - b) LD: No function;
 - c) PH: Replaces the direction of the nose support, otherwise it will collide with the patient's glasses.

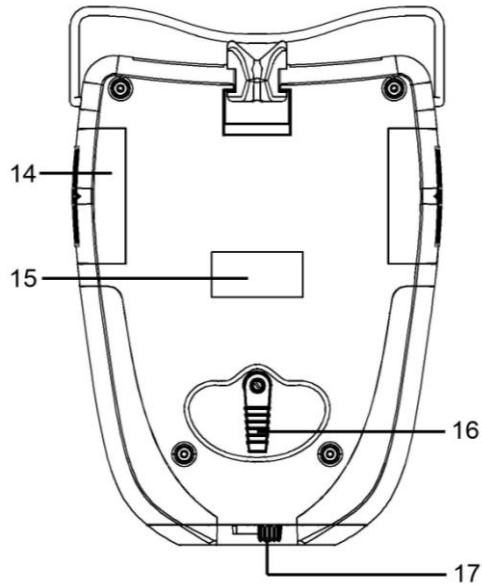
- 3) LCD: Shows the numerical index and measurement project.
- 4) Power: Press once to turn it on, press again to shut down
- 5) Function Switch: PD, LD, and PH mode can be changed by switching the measurement function.
- 6) PD Adjustment Slide (right): Used to measure the right eye's data. The lateral sliding values increases while the inside of the sliding value decreases.
- 7) PD Adjustment Slide (left): Used to measure the left eye's data. The lateral sliding values increases while the inside of the sliding value decreases.
- 8) Focus Distance Adjustment Knob: Different ranges can be adjusted according to the measurement requirements, from 30cm to infinity (∞).
- 9) Observation Hole: For the optometrist to view.

2.2. Top surface



- 10) Windows: For patients to observe. There are two black lines carved on top.
- 11) Needle: Used to block the patient's pupil reflex point.
- 12) PH Marker Line: Is aimed to the lower edge of the patient's lens.
- 13) LD Marker Line: Is aimed to the patient's cornea vertex.

2.3. Back side



- 14) Battery Socket (Both side): For the 5th battery replacement
- 15) Nameplate: Printed with ID machine.
- 16) Eye Shield Switch: Monocular or Binocular switching.
- 17) Compensating Mirror: One side is plain glass, the other side is +2.00D lens.

3. Operating instructions

3.1. Pupil Distance Measuring

- 1) After loading the battery, LCD (3) will show the current value of the PD (device self-test completes).
- 2) Push both the PD Adjustment Slide (right)(6) and PD Adjustment Slide (left)(7) toward to the middle. At this moment, the value of right PD and left PD are 23 on the LCD(3); the center of the display shows the minimum value of the device: both PD 46. Then push the buttons (6)/(7) to the lateral, both right PD and left PD show the value of 41. In the middle of the screen it shows maximum value of the device: 82. In the process of sliding buttons (6)/(7), the value index in LCD(3) will change simultaneously.
- 3) Turn the Focal Distance Adjustment Knob (8) to a certain position, usually set to infinity (∞).
- 4) For turning into sleep mode, LCD(3) should be closed, and press the switch (4) again.
- 5) Patients should hold the PD meter like carrying binoculars, and should be cautious of the forehead bracket(1) and nose support(2) as shown in Figure 1.
- 6) The patient is able to see through the windows(10), as shown in Figure 2, which allows them to stare at the green point.

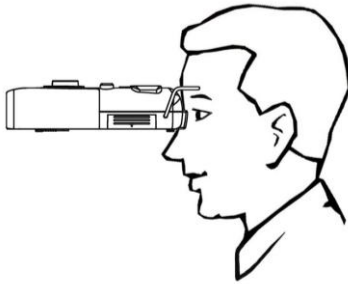


Figure 1

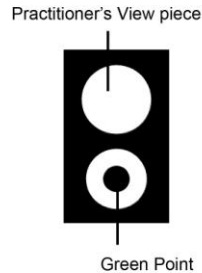


Figure 2

- 7) Optometrists could see the pupil reflex point of patients through the observation hole(9), as shown in Figure3.

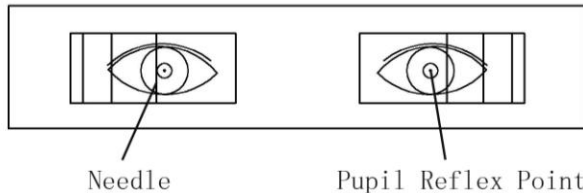


Figure3

When measuring, the optometrist slides the PD adjustment (right/left)(6)/(7), and lets the needle block the reflecting point of the eye, as shown in Figure 4.



Figure 4

- 8) After the measurement, LCD(3) screen will show the PD values. The left side of the screen shows the distance from the patient's right pupil to the center of nose and the right screen shows the distance from the patient's left pupil to the center of nose. The middle of the LCD(3) screen displays the PD value of both eyes. The PD value is measured by

millimeters. The device will be automatically set to standby mode after 2 minutes without any measurement.

- 9) In the case for the monocular PD measurement, switch the Eye Shield Switch(16) to block the other eye. The switch(16) is located on the bottom of the device.

3.2. Eye Wire Distance measuring

- 1) Press the function switch(5), LCD(3), screen should display the “LD” sign, which presents changing to the eye lens distance measurement mode
- 2) Turn the Focal Distance Adjustment Knob(8) to the 30cm position.
- 3) Optometrist stands to the lateral side of the patient and holds the pupil meter horizontally. (Figure 5) If the optometrist is on the left side of the patient, please use the right window(10); If the optometrist is on the right side of the patient, please use the left window(10).

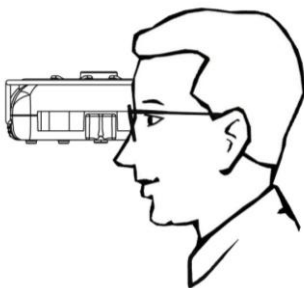


Figure 5

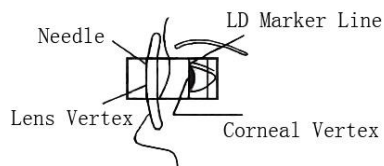


Figure 6

- 4) Let the LD Maker Line(13), which is close to the nose

support on the window lens, aim to the patient's corneal apex. Align the needle(11) at the highest point outside the arc of patient's glasses, as shown in Figure 6.

- 5) The exact distance between the cornea and the lens is obtained by subtracting the lens thickness from the digitally displayed value.

3.3. Pupil Height measuring

- 1) Press the function switch(5), LCD(3) screen should display the “PH” sign , which presents changing to the pupil height distance measurement mode.
- 2) Turn the Focal Distance Adjustment Knob(8) to the 30cm position. Reverse the nose support(2) and insert it into the plastic shell.
- 3) Taking the left eye measurement as an example. Firstly erect the pupilometer. Then hold underneath it with the right hand, put either the forefinger or middle finger on the PD Adjustment Slide (left)(7), and put the left hand above the device to make it steady, as shown in Figure 7

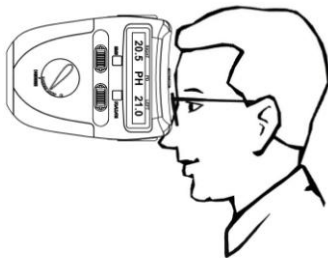


Figure 7

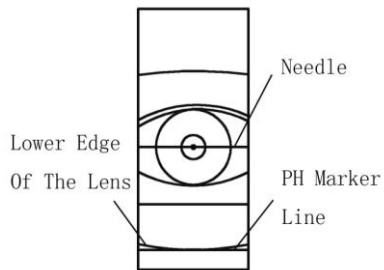


Figure 8

- 4) Align the PH Maker Line(12) on the window to the lower edge of the lens of the patient. Push the PD adjustment slide (left)(7) and let the needle(11) block the reflecting point of the eye (Figure 8). Then the LCD(3) screen will show the PH value of the left eye.
- 5) If you need to measure the right eye, please rotate the device by 180 degrees. Hold the top of the pupilometer with the right hand and support the under part with the left hand. Let the left side of the window align with the right eye of the patient. Use the index finger or middle finger to push the button(6). The needle(11) could block the reflective point of the eye. LCD(3) will show the PH value of the right eye.

4. Caution and Notes:

- 4.1 The device has been adjusted and checked strictly after manufacturing. Please do not attempt to disassemble or modify the device, which will negatively affect the accuracy of measurement.
- 4.2 This device is a high accuracy measurement device. Avoid shaking and handle with care.
- 4.3 Operation Condition: Temperature: Between 10℃ to 40℃, Humidity: Between 25% to 85%.
Storage Condition: Temperature: Between 5℃ to 50℃, Humidity: Between 25% to 85%.
- 4.4 Please do not touch the LCD screen with your fingers. If there are dust or fingerprints on it, clean with a lens cleansing cloth.
- 4.5 Keep the device clean. Do not use any chemical solvents or aerosol cleansers.

- 4.6 If device works improperly, contact the manufacturer or vendor. Do not attempt to repair or modify the device by yourself in any way.
- 4.7 After using for a long period time, it is normal for the characters on LCD to become lighter than before, which makes it appear unclear. Please replace the new batteries with the correct pole. PS: Must take out the batteries if the device is rarely used.
- 4.8 Do not expose the device under the sun light. Keep it away from any heat source.

Product Certification	
Product Name	Pupilometer
Product Model	BRT-3
Rated Voltage	DC 3V
Product Number	
Inspector	
Date Of Production	___/20__

A New Generation of Pupilometer

Measure Pupil Height Becomes Easier