


PLR[®]-4000 Pupillometer

Quick Start Guide



Power Up

Charging the PLR-4000 Pupillometer

1. Connect the PLR-4000 Power Adapter to the PLR-4000 Charging Station and plug into a power outlet. The indicator light at the base of the Charging Station will display a white color to indicate power has been established to the Charging Station.
2. Place the PLR-4000 into the Charging Station. The Charging Station indicator light will turn **blue**, and the LCD screen will display  within the battery icon, indicating the PLR-4000 is charging. The indicator light will turn **green** when fully charged.

NOTE: Prior to first-time use, ensure the PLR-4000 is fully charged and Date/Time are set accurately (refer to Setting Date and Time section).

3. The PLR-4000 Pupillometer goes to sleep in the Charging Station to efficiently charge:

- The PLR-4000 will initially turn ON (or remain on) upon being placed in the Charging Station.
- After 2 minutes in the Charging Station, the PLR-4000 will go to sleep to efficiently charge. The screen will go dark. If any button is pressed or the screen is touched within this 2-minute window, the time period before the PLR-4000 goes to sleep is extended by an additional 2 minutes.
- To use the PLR-4000 after it has gone to sleep in the Charging Station, simply remove from the Charging Station, and it will wake up automatically.

4. If the PLR-4000 Pupillometer is not in the Charging Station, to conserve battery life it will:



- Go into sleep mode after 4 minutes. To turn ON, touch the screen or push any button.
- Power down after an additional 6 minutes.

Turning On the PLR-4000 Pupillometer

5. If the PLR-4000 is out of the Charging Station and has powered down, press (do not hold) the **On/Off** button  on the side of the device.



Setting Date and Time

6. To modify the date and time, from the Home Screen, select the **Settings** icon  and then select **Date** or **Time**. Follow the prompts to input the current date and time using 24-hour time configuration and select .
7. Customers in the United States have the option to enable **Automatic Daylight Savings Time (DST)** in the **Time** settings. Automatic DST is disabled by default. Automatic adjustments occur based only on US DST regulations and are not updated according to geographic location.

Date and Time Maintenance:

- Regular quarterly maintenance is necessary to ensure date and time are correct. The set date and time will affect the timestamp listed for subsequent patient pupil measurements. Changing the date and time will not alter the timestamps on previous measurements.
- Immediately adjust the time after any time change if Automatic DST is disabled.

Returning to the Home Screen

8. Press the **LEFT** or **RIGHT** buttons (green circles) to return to the Home Screen.

Measuring Pupils Using the PLR-4000 Pupillometer

Attaching the Eye Cup to the Pupillometer

- 9-10. Two components are required to initiate a bilateral pupil measurement:

- PLR-4000 Pupillometer (Ex. 9)
- Eye Cup (Ex. 10)


The PLR-4000 should not be used without the eye cup positioned correctly (Ex. 10). It is very important that the eye cup be correctly fitted. A snug fit helps reduce the possibility of stray light entering the eye while the scan is taking place. The eye cup has a tab in the rim which fits into the indentation in the lens shield of the Pupillometer.

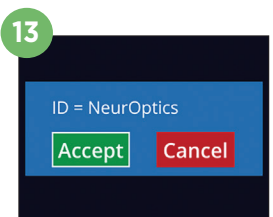
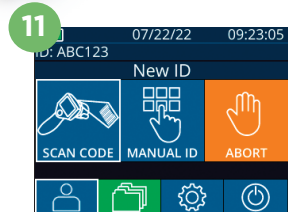
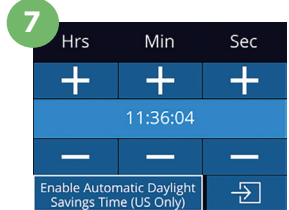
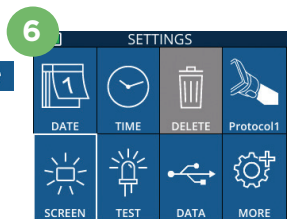
Position the tab in the eye cup rim into the indentation in the lens shield of the Pupillometer and press into place. The tabs on either side of the lens shield should also snap into the holes on either side of the eye cup.

Enter a New Patient ID

11. There are two options for associating the Patient ID to the Pupillometer:
 - 1) Scanning the patient's wristband barcode using the PLR-4000 Incorporated Barcode Scanner; or
 - 2) Manually entering the Patient ID with entering alpha or numeric characters.

Scan Barcode Using Incorporated Barcode Scanner

12. From the Home Screen select , then **Scan Code**. The PLR-4000 will emit a white light from the top of the device. Center the light over the barcode until you hear an audible beep.
13. The Patient ID will now appear on the PLR-4000 touchscreen. Confirm the patient information is correct and select **Accept**.



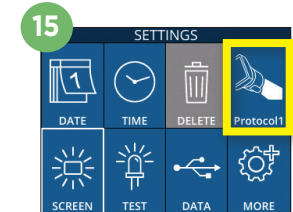
Manual Entry of the Patient ID

14. From the Home Screen select then **Manual ID**. Using the touchscreen or keypad, enter the alpha or numeric Patient ID and select . Confirm the patient information on the screen is correct and select **Accept**.



Set Measurement Protocol

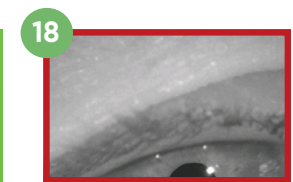
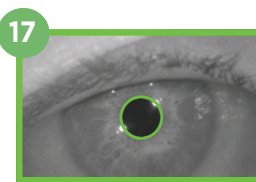
15. From the Home Screen, select the Settings icon and then the top right icon to set protocol parameters. Then press **RIGHT** or **LEFT** to return to the Home Screen. Refer to pg. 6 of Instruction Manual for more details



Measure Pupils

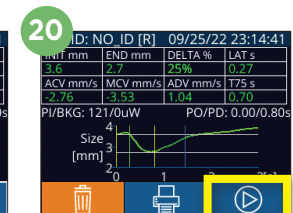
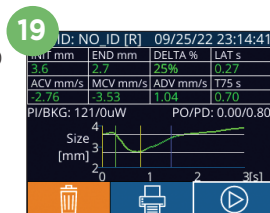
16. Position the PLR-4000 with at a right angle to the patient's axis of vision, minimizing any tilting of the device.

- 17-18. Press and hold either the **LEFT** or **RIGHT** button until the pupil is centered on the touchscreen and the display shows a green circle around the pupil. A green frame around the screen indicates the pupil is properly targeted (Ex. 17), while a red frame indicates the pupil needs to be re-centered on the screen before the measurement is initiated (Ex. 18). Once the green frame appears, release the button, holding the PLR-4000 in place for approximately three seconds until the results screen is displayed.



19. When the pupil exam is complete, the PLR-4000 measurement results will be displayed in **green** for the Right eye and in **yellow** for the Left eye.

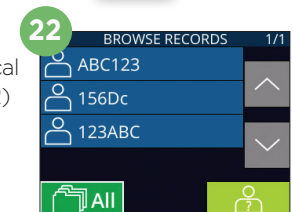
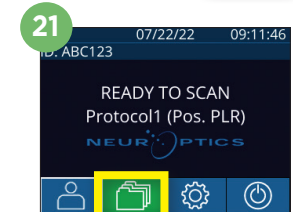
20. From the Results screen, select the **Video** icon to view the playback of the reading.



Browse Records



To review records stored on the PLR-4000:

21. • From the Home Screen: Select the Records icon (Ex. 21).
- To browse records by Patient ID, select the ID from the list or use the UP and DOWN arrows on the screen to browse additional IDs available in the list. The IDs of the most recent measurements taken on the PLR-4000 will appear at the top of the list.
22. • To search for a specific Patient ID, select (Ex. 22), then type in the Patient ID and select .
- To browse all pupil measurements stored on the PLR-4000 in chronological order (including all Patient IDs), select the All Records icon (Ex. 22) and press the DOWN Arrow button on the keypad to scroll through all previous measurements stored on the PLR-4000.
 - When the "No more records" message appears, the earliest pupil measurement stored has been reached.



The pupillometer stores at least 1,200 measurement in its memory. Once the memory is full, it begins to write over the oldest measurements first.


Download Data

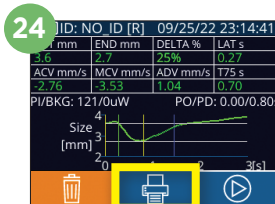
23. From the Home Screen, select the **Settings** icon  then select **Upload Data** . Two choices will appear “Data” or “Video”. If you choose “Data” a text message will appear on the screen instructing the user to “connect USB cable & copy R_#####_#####.xls.” If you choose “Video” an AVI file will be saved, and a text message will appear on the screen instructing the user to “connect USB cable & copy V_#####_#####.avi.” Connect the USB cable from the pupillometer to the computer (Ex 23). The computer will show as “Neuroptics” drive on the computer. Click on the drive, copy the XLS file or the AVI file and paste it on your computer. Press “DONE” in the small window on the pupillometer screen only after the copy has been completed, as the file will then be erased.



Note: Only the last measurement can be downloaded as a video, and it must be done immediately after a measurement is captured.

Print Data


24. Attach the power supply to the printer. Turn the printer on and a green light will illuminate. From a measurement results screen (either last measurement taken or “Browse Records” to find a different measurement), select the Print icon  on the bottom of the screen (Ex. 24).



The system will only print a record when a measurement result is displayed on the screen. If you want to print a measurement other than the last measurement taken, refer to the “Browse Records” section above. Consult the printer’s instruction manual for specific printer operation instructions.

Power Off

To turn the PLR-4000 Pupillometer OFF, either:

- Navigate to the Home Screen and select the **Power** icon , then confirm **Yes** to power OFF.
- Press and hold the **On/Off** button  on the side of the PLR-4000.

The PLR-4000 may occasionally require a System Reboot. To reboot, simply press and hold the **On/Off** button  on the side of the PLR-4000 until it powers OFF and then power it back on.

Cleaning and Maintenance

Isopropyl alcohol (IPA)-based cleaning solutions, in formula concentrations up to 70% IPA, are recommended for use in cleaning the PLR-4000, Charging Station, and eye cup. Please refer to the Cleaning and Maintenance Instructions included in the **Instructions For Use**, which can be found at <https://neuroptics.com/resource-center-applied-research/>

Ordering Information

PLR-4000-SYS	PLR®-4000 Pupillometer System
NEUR-2059-01	Eye Cup
CBL-0006-00	Data Download Cable
NEUR-PRTS445	Wireless Printer Kit

For additional information regarding our product, please refer to the **Instructions For Use**, which can be found at <https://neuroptics.com/resource-center-applied-research/>