



Medical-Biological
Research & Technologies

OD PLATE Verification Plate



| User manual

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1. Safety Precautions

The following symbols mean:



Caution: Make sure you have fully read and understood the present Manual before using the instrument. Please pay special attention to sections marked by this symbol.

GENERAL SAFETY

- Use only as specified in the operating manual provided.
- Do not use the unit if dropped or damaged.
- Store and transport the unit in a horizontal position (see package label).
- Before using any cleaning or decontamination methods except those recommended by the manufacturer, check with the manufacturer that the proposed method will not damage the equipment.
- Do not make any modifications to the design of the unit.

DURING OPERATION

- Do not scratch the glass filters.
- Do not use outside the laboratory rooms.
- Do not operate the unit if it is faulty or has been repaired incorrectly.

BIOLOGICAL SAFETY

- It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilt on or penetrates into the equipment.

2. Introduction

OD Plate is a performance quality instrument plate reader photometer MPP-96 HiPo. The purpose of this product is to verify the accuracy and precision (trueness and reproducibility) measurement of photometer at 6 absorbance levels: 0.3, 0.6, 1.0, 2.0, 3.0, 4.0 Abs (nominal). The standard range is at following 17 Centre Wavelengths (CWL (± 1 nm)): 405, 414, 450, 480, 492, 515, 540, 550, 560, 568, 580, 594, 620, 632, 650, 690, 700.

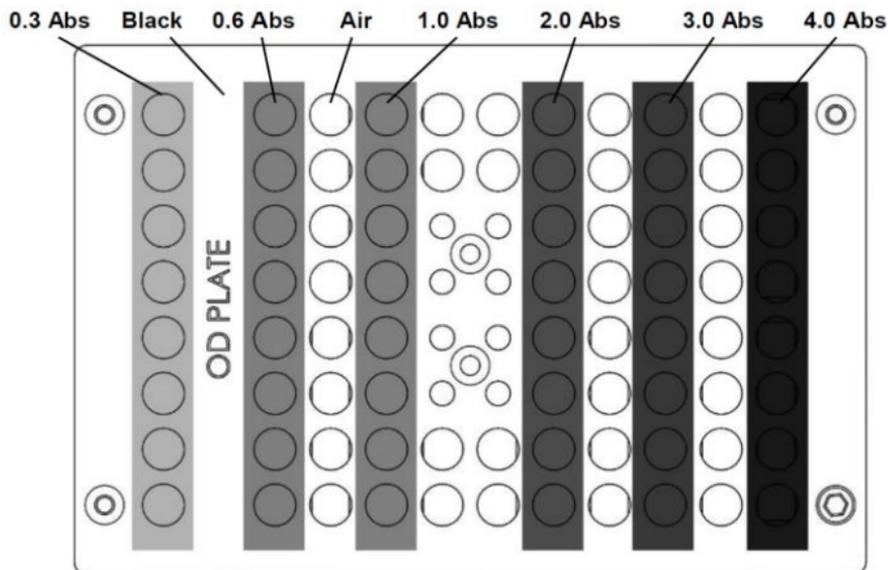
Optionally, the plate can be verified at any following Centre Wavelengths (CWL (± 1 nm)): 400, 405, 414, 420, 422, 430, 436, 440, 442, 445, 450, 455, 458, 460, 470, 473, 480, 486, 488, 492, 500, 505, 508, 510, 515, 520, 532, 540, 546, 550, 560, 568, 580, 589, 594, 600, 610, 620, 632, 636, 640, 647, 650, 656, 660, 671, 676, 680, 685, 690, 694, 700 nm.

The plate comes in a shockproof case and USB drive containing the verification data and software.

Included is copy of the calibration certificate of reference materials issued by accredited bodies.

3. Specifications

- 3.1. Absorbance Levels0.3, 0.6, 1.0, 2.0, 3.0, 4.0 Abs.
3.2. Available calibration wavelength range.....
.....52 λ in range 400 to 700 nm (\pm 1 nm)
3.3. Plate Dimensions 128 x 86 x 12 mm
3.4. Plate Weight 0.2 kg
3.5. Plate Design

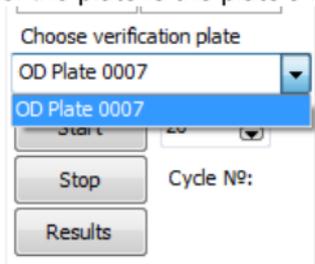


4. Complete Set

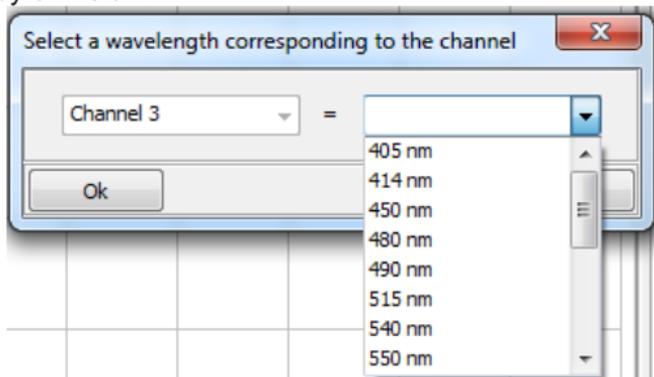
- OD Plate
- USB Flash Drive with Software
- Manual
- Shockproof case

5. Perform a Verification Test with OD Plate Verification Software

- 5.1. For the verification, use the OD Plate (Catalogue number BS-050108-AK)
- 5.2. Plug the flash drive provided with the plate in the computer.
- 5.3. Open the **OD Plate verification software.exe**
- 5.4. Choose the verification plate from the list. The 4 digits number stickered on the side of the plate is the plate's ID number.



- 5.5. Choose the channels you need to verify. If you have additional channels, choose them. The wavelength of **Channel 1/2/3/4** are written body of the unit.



- 5.6. Set the number of measurements. Recommended is 20, minimum is 10.
- 5.7. Enter the name of the QC operator, Head of QC and QC company in the empty fields.
- 5.8. Press **Start**.
- 5.9. When finished, press **Results** button.
- 5.10. Test type should be **Verif**. Other test types are for manufacturers use only.

- 5.11. Press **Calculate**.
- 5.12. In the **Protocol** tab press **Save to PDF** in order to export the verification certificate. Also available is the **.csv** export.
- 5.13. Print the report, sign it and leave with the customer.
- 5.14. Save the report and send it to the manufacturer: **gc@biosan.lv**
- 5.15. Here is a sample of a verification report if test is passed:

Verification test report



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Verification test details

1. Name of instrument: HPo MPP-96
2. Instrument ID: 050108-1801-0001
3. Date of Validation: 30.01.2018
4. Date of Validation expiry: 30.01.2019
5. Quality control Company: SIA BIOSAN
6. Head of Quality control: A. Miroshnik
7. Quality control Operator: R. Stradins
8. Manufacturer: SIA BIOSAN
9. Humidity: _____ Ambient Temperature: _____
10. Verification method: ISO 5725

Verification plate info

11. Verification plate: MULTISKAN VERIFICATION PLATE
12. Cat. no.: 24072805
13. Verification Plate serial no.: 1641-09
14. Date of calibration: 06.06.2017
15. Calibration expires: 01.06.2018

Neutral Density Filter (NDF) (etalons 3 –8):
Accuracy test for the stepping measurement mode (OD)

0	1	2	3	4	5	6
Etalons	1638-21	1638-20	1638-17	1641-09	1641-09	1641-09
Filts/Limits	0.5%±0.010	0.5%±0.010	0.5%±0.010	0.5%±0.010	1%±0.010	2%±0.010
405 nm	Passed	Passed	Passed	Passed	Passed	Passed
450 nm	Passed	Passed	Passed	Passed	Passed	Passed
490 nm	Passed	Passed	Passed	Passed	Passed	Passed
620 nm	Passed	Passed	Passed	Passed	Passed	Passed

Precision test for the stepping measurement mode (CV%)

0	1	2	3	4	5	6
Etalons	1638-21	1638-20	1638-17	1641-09	1641-09	1641-09
Filts/Limits	≤0.5	≤0.5	≤0.5	≤0.5	≤1.0	≤2.0
405 nm	0.115	0.050	0.033	0.021	0.010	0.044
450 nm	0.103	0.048	0.026	0.018	0.011	0.026
490 nm	0.050	0.025	0.011	0.010	0.006	0.001
620 nm	0.063	0.025	0.016	0.010	0.008	0.010

signature:
A. Miroshnik
Head of Quality control

date

6. Interpretation of the Measurement Results

6.1. Accuracy.

Accuracy is determined for selected wavelengths at six absorbance levels, each of which covers eight well positions in a row. Each of the 20 measurements of the OD plate is compared to the accuracy criteria as follows:

(Test value – Reference absorbance value) × 100 < Accuracy criteria.

- The accuracy test will be passed only if all test values meets the specifications

Accuracy	Criteria
0 – 2.3 OD	≤ (0.5 % ± 0.010 OD) typical
2.3 – 3 OD	≤ (1 % ± 0.010 OD) typical
3 – 4.3 OD	≤ (2 % ± 0.010 OD) typical
4.3 – 5 OD	≤ (15 % ± 0.010 OD) typical

6.2. Precision

Precision here is the coefficient of variation (CV%), which is determined for any row after reading the OD Plate 20 times. The CV% is calculated as follows:

$$C = \frac{S}{M} \times 100\%$$

Where **C** is CV%, **S** is Standard deviation between and **M** is Mean. The precision test will be passed only if the average precision at each absorbance level and at each channel meets the specifications.

Precision	Criteria
0 – 2.3 OD	≤ 0.5 %
2.3 – 3 OD	≤ 1.0 %
3 – 5 OD	≤ 2.0 %

7. Troubleshooting

7.1. **The accuracy or precision test have failed.**

In case of failed tests, the reason may be in faulty or unclean instrument or OD Plate. Generally, if one or more of the precision tests have FAILED, the reason lies in the instrument or OD plate, if it was assembled. If one or more of the accuracy tests have FAILED, the reason may lie in the instrument or in the OD Plate. Here is the list of to do things:

- Check that the OD Plate has been placed correctly onto the plate carriage. The A1 markings on the instruments should coincide and the OD plate should lie flat.
- Check that the glasses are clean.
- If the fault does not disappear, contact the technical service representative.

7.2. **The device cannot connect to the computer.**

Install the driver by opening "Drivers/Driver.exe" on the provided USB flash drive and restarting your devices/software/computer after.

7.3. **The program cannot close, says that the experiment is still going, but I stopped it.**

Try pressing the **Play** button on the toolbar (to start the experiment), and click on the **Stop** button, wait 5 seconds and then try to close it. If this does not work, open Task Manager (Ctrl + Shift + Esc) and close all processes "OD plate verification software.exe"

7.4. **Device does not respond to the program.**

Try turning the device on or off. If necessary, try unplugging it and reconnecting.

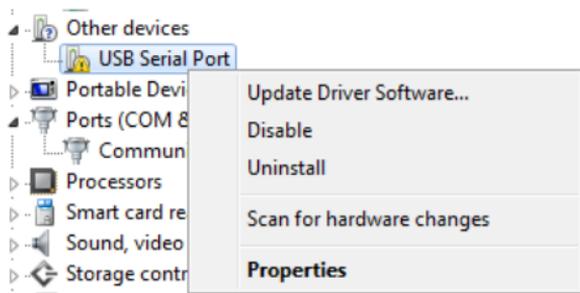
7.5. Drivers cannot be installed

Try giving administrator rights to the user who installs the program.

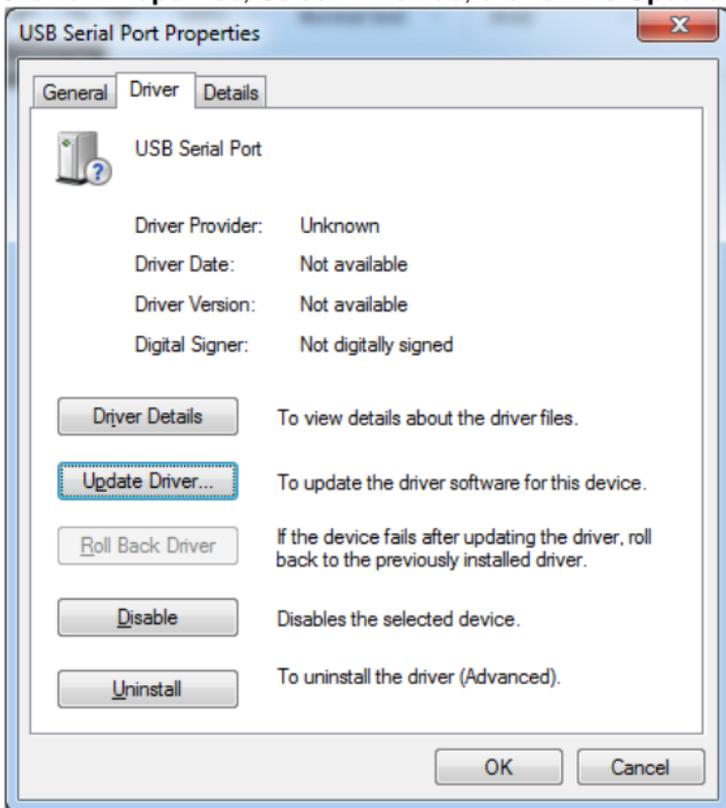
7.5.1. If the previous step did not help, try the following:

Go to Control Panel - Device Manager

Expand the Other devices line, right-click the USB Serial Port:



Click on **Properties**, Select Driver tab, click on the **Update Driver**:



Select **Search automatically for updated driver software**. You should have internet connection on.



After installing the driver, the following message should appear:

Windows has successfully updated your driver software

Windows has finished installing the driver software for this device:



- 7.5.2. If you do not have an internet connection, please use computer with internet to download latest drivers from <http://www.ftdichip.com/Drivers/VCP.htm> under "Available as setup executable". Then, transfer and install the driver on the computer to which the units are connected.
- 7.5.3. If it does not help, please try a solution described here: <https://support.microsoft.com/en-us/help/2654149/error-usb-device-not-recognized-when-you-try-to-access-a-usb-external-hard-drive>
- 7.6. **I have connected the device to USB 2.0 SS (super speed) terminals and my computer shuts down constantly.**
There is some sort of an error with FTDI driver.
Please avoid connecting to USB 2.0 SS, connect the devices to the standard USB 2.0. Data for connecting to USB 3.0 terminals is not yet available.

- 7.7. **When I was disassembling/assembling the plate, I found some breaks / scratches on the glass. What should I do?**

If the breaks/scratches are only localized outside the plate's apertures, it is ok, although check regularly if it did not expand to the aperture. In the cases the breaks/scratches are in the apertures, contact the technical support for further action.

- 7.8. **The glass ID number stickers can be seen in the apertures. Is this OK?**

The working aperture of the HiPo MPP-96 is only 2 mm in diameter, so if you have received the plate with some small part of the stickers located inside the bigger aperture (6.8 mm in diameter), it is OK.

- 7.9. **My problem is not described here.**

While doing the verification process, a problem that is not described here may arise. Contact the technical support in such cases.

8. Storage

Always store the OD Plate in its own case when not in use to keep the glass surface free of dust. In general, avoid storage sites with excessive dust, dirt, moisture or large temperature fluctuations.

9. Cleaning

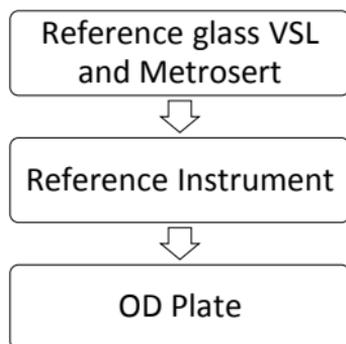
- 9.1. If dust particles can be visually detected on the surface of glasses, remove the dust with clean compressed air.
- 9.2. If any spillages can be seen, clean the glasses with a microfibre cloth moistened with ethanol (70-96%), rinse the glasses with distilled water and dry them well.
- 9.3. To disassemble the instrument:
 - Rotate the OD plate upside down (the side with A1 marking faces surface).
 - Loosen the black countersunk screws from the sides.
 - Unscrew the facing to you bottom side.
 - We suggest taking a picture on a smartphone for the ease of reassembly.
 - Carefully remove the glass for cleaning.
- 9.4. Handle the glasses with care. Never use an abrasive cleaning material that may scratch the glasses.
- 9.5. Do not touch the glasses with your hands. Use gloves. When assembling be sure that glasses (especially on the ends of the plate) lies flat.

10. Repair

We do not deliver or accept any separate parts for recalibration or repair. Faulty glasses can only be replaced by provider officials. For repairs, contact your technical service representative.

11. Calibration

The calibration is traceable through the VSL – NEDERLANDS METROLOGISCH INSTITUUT and METROsert Ltd. The traceability chain is shown below:



The absorbances of the reference glasses are calibrated at the intervals of five years at the VSL at several wavelengths between 400 nm – 700 nm.

The reference glass is then used to calibrate the Reference Instrument.

The glasses from the OD plate is then calibrated by measuring the absorbances of the glasses with the reference instrument.

The uncertainty of the calibration is calculated according to the publication EA-4/02 (Expression of the Uncertainty of Measurement in Calibration).

The main uncertainty factors are the uncertainty of the calibration of the reference glass and the repeatability of the measurements.

