

BIO-RAD



Checkmark™ (√ mark™) Reader Performance Check Software

Instruction Manual



Catalog Number 170-6940

Part Number 400-0186 Rev B

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1 Introduction

The Checkmark (**√mark**) Reader Performance Check Software is designed to allow easy-to-perform routine checks of Bio-Rad absorbance microplate readers. The main features are:

- Windows based program, compatible with Windows 95/98/2000/NT/ME/XP.
- Utilization of the "**√mark Plate**"
- Performs the necessary measurements on the connected microplate reader(s)
- Validate the performance for the following Bio-Rad microplate readers: Model 3550, 550, Model 680, Benchmark, Benchmark Plus, Ultramark and Ultramark EX
- Performs calculations necessary to validate the performance of these photometric microplate measurement systems
- Utilizes the instrument configuration (filters installed)
- Validate the reader performance by comparing reference data provided with the plate with measurement taken from the instrument
- Produces a validation report showing all relevant data and PASS/FAIL results
- Provides Operator authorization by login with username and password
- Saves data from previously performed validations

2 Quick Start for Administrators

2.1 User Administration

The $\sqrt{\text{mark}}$ software has the ability to manage a number of different users. Only authorized users are able to operate the system and will be identified on the validation printout and in the validation data stored.

Administrator

The administrators have the capability to set-up other administrator or common user by assigning/editing user identification and password. Additionally, they can install and set up plate calibration data files to be used by normal users, and select/deselect testing parameters to be performed in a validation procedure. All **level 2** users are local administrators.

Upon installation of the new software, the administrator logs in as “**admin**” and uses “**admin**” as the password. It is strongly recommended to change this username and password immediately after installation of the software.

Normal Users

Normal users are assigned at **levels 1**. This level allows the users to select a reader, perform validation runs, retrieve stored validation data from the database of previously run validation and print reports. They can change their own password only and have no access to the administration level.

Reference Data

The $\sqrt{\text{mark}}$ Software utilizes reference data provided as a plate calibration data file on CD Rom with each $\sqrt{\text{mark}}$ Plate. (x:\Ref_Data*.DAT)

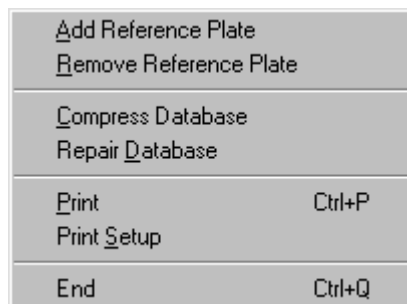
The reference values for the neutral density filters are the result of a calibration procedure at the manufacturer’s site and are traceable back to NIST-standards for absorbency. A re-calibration of the plate at the manufacturer is recommended in intervals of two years. After that an updated plate calibration data file is provided.

The plate calibration data file is identified by the serial number of the Checkmark plate and the date of calibration. Data of an individual validation run (printed and saved) will also contain a reference to the plate calibration data used.

Plate calibration data are supplied per position on each neutral density filter for the wavelengths 405nm, 450nm, 492nm (for 490 nm filters), 540nm, 620nm and 690nm.

2.2 Administration Operations

2.2.1 File Menu



Screen 1: File Menu

Add Reference Plate

Add a new reference plate into database, using reference data file from the Checkmark CD. Open $\sqrt{\text{mark}}$ and log in as administrator. Under the file menu, select *Add Reference Plate*. Locate the desired file and open it. A $\sqrt{\text{mark}}$ dialog box will appear, "Reference plate added/edited. Serial number (X)." Click the *OK* button.

Older versions of the plate calibration data will not be deleted from the system.

Remove Reference Plate

Removing a stored reference plate from database. Removed reference plates are marked as deleted but can still be used for recalculation.

Compress Database

Removes non-actual tables of database-requests.

Repair Database

Repairs corrupted database.

Print... **Ctrl+P**

Prints the current report with the selected printer.

Print Setup

Change printer and settings for the currently selected report.

End **Ctrl+Q**

Exits the $\sqrt{\text{mark}}$ software and closes the program.

2.2.2

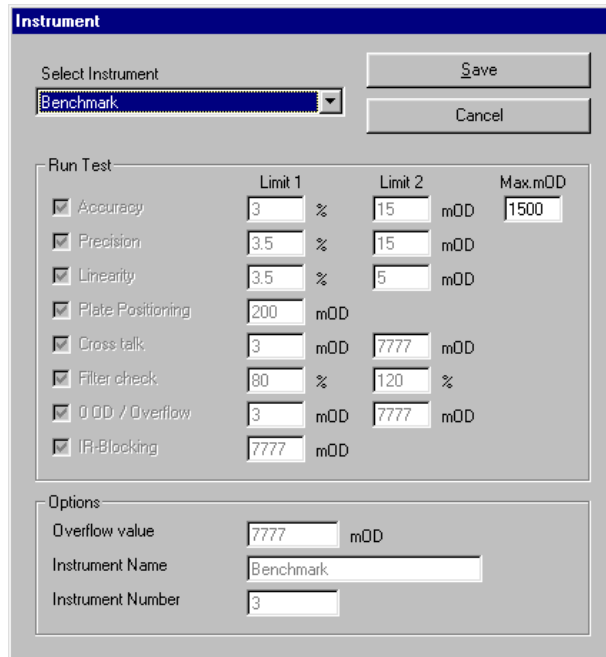
Edit Menu

I <u>n</u> strument data	Ctrl+I
R <u>e</u> ference data	Ctrl+R
C <u>h</u> ange Password / <u>E</u> dit User	Ctrl+E
S <u>y</u> stem	Ctrl+S
<hr/>	
C <u>o</u> py R <u>a</u> w Data	Ctrl+A
C <u>o</u> py	Ctrl+C
C <u>o</u> py R <u>e</u> ference Data	Ctrl+D

Screen 2: Edit Menu

Instrument Data **Ctrl+I**

Select an instrument / See a preview of selected tests.



Instrument

Select Instrument: Benchmark Save

Cancel

Run Test

	Limit 1	Limit 2	Max.mOD
<input checked="" type="checkbox"/> Accuracy	3 %	15 mOD	1500
<input checked="" type="checkbox"/> Precision	3.5 %	15 mOD	
<input checked="" type="checkbox"/> Linearity	3.5 %	5 mOD	
<input checked="" type="checkbox"/> Plate Positioning	200 mOD		
<input checked="" type="checkbox"/> Cross talk	3 mOD	7777 mOD	
<input checked="" type="checkbox"/> Filter check	80 %	120 %	
<input checked="" type="checkbox"/> 0 OD / Overflow	3 mOD	7777 mOD	
<input checked="" type="checkbox"/> IR-Blocking	7777 mOD		

Options

Overflow value: 7777 mOD

Instrument Name: Benchmark

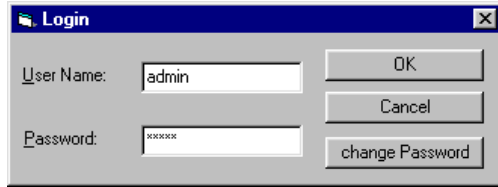
Instrument Number: 3

Screen 3: Instrument data

Reference data **Ctrl+R**

For higher level administrators only.

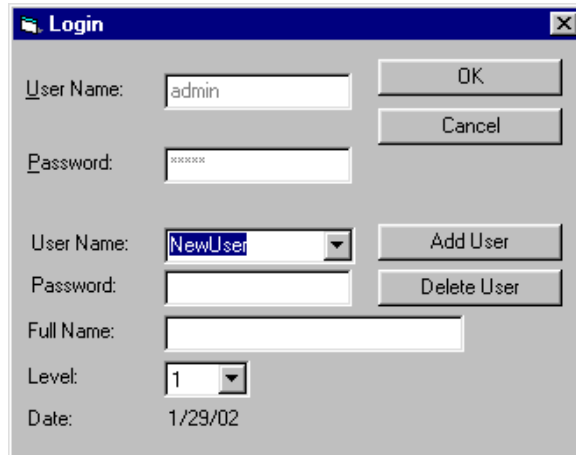
Change Password / Edit User Ctrl+E



Screen 4: Login window

To change password, click on the *change Password* button, enter a new password and confirm. Click *OK*.

To edit a user Open $\sqrt{\text{mark}}$, log-in as administrator and press *change Password*.



Screen 5: Change Password / Edit User

In the log-in dialog box press *Add User* to create a new user. Fill in User Name, Password, Full name, select User-Level and confirm by clicking on the *OK* button. Up to a maximum of 60 users are allowed.

System Ctrl+S

Shows the current path for the database file. If you want a new database for each instrument select a new path. A new database will be created.

Copy Raw Data Ctrl+R

Copies raw data of all measurements + means into the clipboard.

Copy Ctrl+C

Copies mean data of a selected wavelenght into the clipboard.

Copy Reference Data Ctrl+R

Copies reference data into the clipboard.

3 Software

3.1 Installation

Software on CD

You PC should have “Autorun” enabled. Insert the Checkmark PC software installation CD into the CD-drive of your PC, an installation splashscreen will pop-up on your desktop, select from the menu list to review **Installation Notes, Install the Checkmark Software, review Operating Manual, Test Printout, Visit Bio-Rad website, Explore the CD content,** or **Exit** out from installation.

To install the Checkmark software, select **Install Software** menu, follow the instructions given during the setup process. After setup has finished, the **√mark** software is ready for operation.

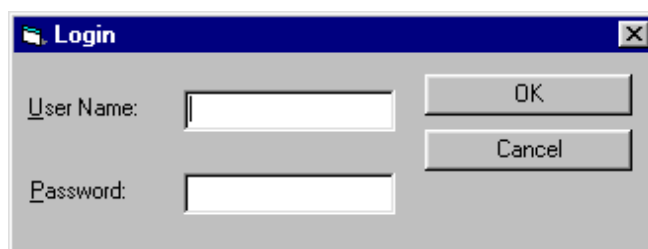
*Note: When using the software with the Bio-Rad Ultramark, ensure that the “Ultramark SCSI-Kit” is installed prior to installing the **√mark** software!*

Starting the setup.exe file again after installation allows you to repair the current installation or to un-install the software.

3.2 Starting the Software

Double-click on the **√mark** icon on your desktop or select the **√ Checkmark** software under “programs” in the start menu.

The following log-in window appears:



Screen 6: Log-in window

User: Enter your username and password (given by the administrator).

Confirm your entries by clicking on *OK* or press the **Enter** key.

3.3 Run Instrument Check

(1) Select the type of instrument to be checked by clicking on the appropriate instrument in the *Select Instrument* pull-down list. Then click on the *Run Test* button.

Instrument Serial Number

Dialog box "Input serial number" appears.

Enter the serial number of the instrument as seen on the back of the instrument or click on the pull-down arrow and select the correct serial number for the instrument from the list.

(2) "Select Reference Plate" dialog box appears. Select desired reference plate from the list and click *OK*.

Warning: Please make sure to select the correct reference plate (serial number on plate must match the entry in 'Plate ID#'). Selecting a different reference plate will result in wrong results!

(3) Dialog "Select Measurement Filters" will be displayed with following:

Filters installed: displays the installed filters of the connected instrument.

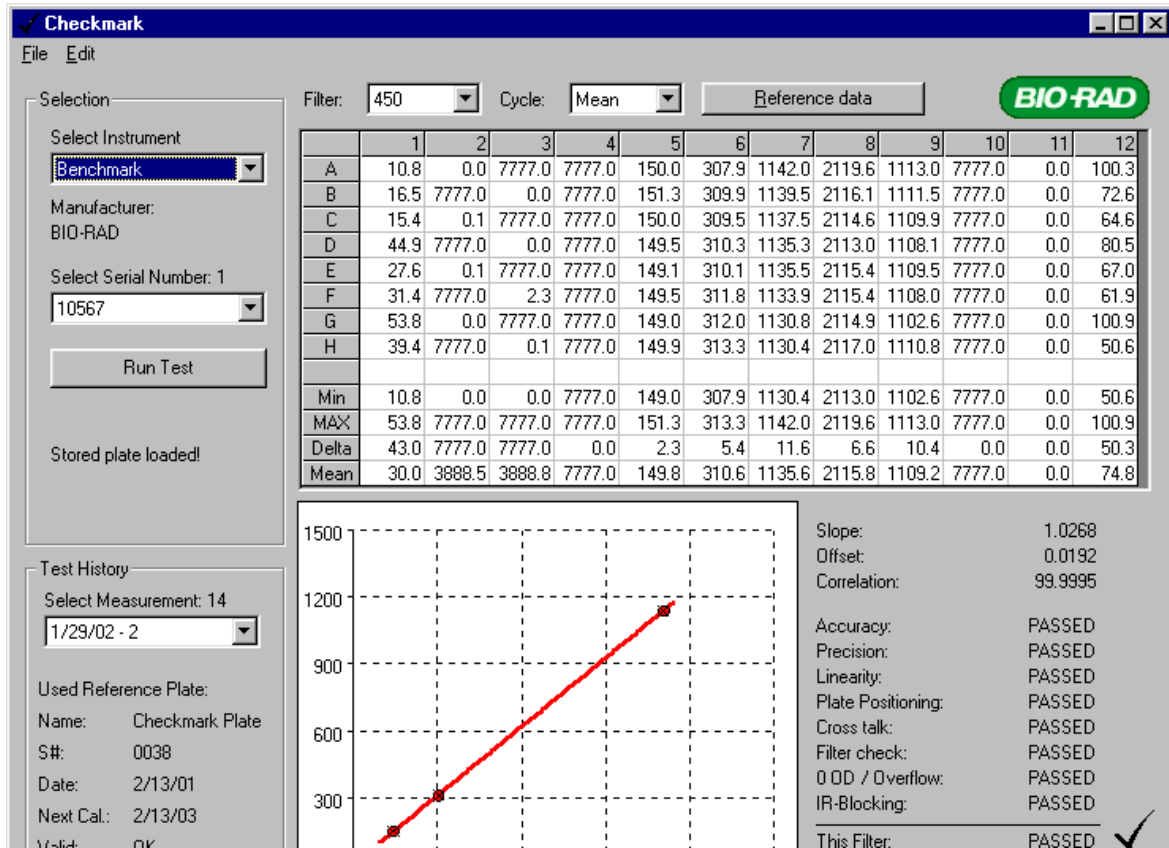
Filters reference plate: displays the data on the reference plate for the test run.

Possible filters: At least one of the filters installed must be present in the instrument. Select/de-select the filters for the test run to be performed. Click *OK*.

Test History

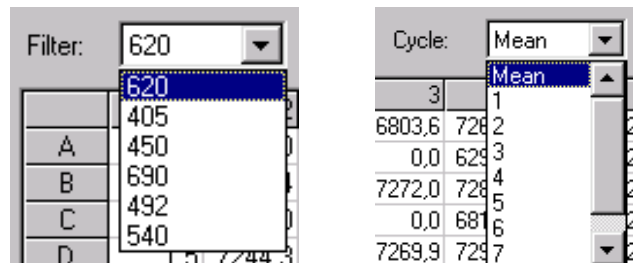
Select from the list of past validation runs to review the result.

3.4 $\sqrt{\text{mark}}$ Results



Screen 7: Main Screen - Results

The $\sqrt{\text{mark}}$ results dialog box consists of a selection box consisting of the selected instrument, serial number, and measurement desired, a plate layout consisting of the measurement values, and a graph showing the linearity of the neutral density filters, lanes 5 to 8. The filter tested is shown as well as the cycle for the results shown. In the cycle box, mean selected indicates the mean of all eight reads. Selecting cycles 1 through 8 shows the results from any of the cycles read.



4 Verification Parameters

4.1 Measurements

Eight subsequent readings are performed with each filter selected for validation. All validation tests are calculated separately for each set of measurements related to that particular filter.

4.2 Accuracy

Calculation: For each position of the four neutral density standards (columns 5 to 8 on Checkmark plate), the average (mean) of the 8 readings is calculated and the related reference value (from Reference Data file) is deducted. The deviation is expressed in mOD and % of the reference value.

Criterion: The deviation from the related reference value must not exceed the calculated limit. The limit is calculated using the mean of the particular position (from the 8 measurements) and the limit parameters set in instrument data.

Example:

Mean value of position	305.9 mOD
Deviation from reference	6.9 mOD
Limit 1	2 %
Limit 2	5 mOD
Calculated limit: $305.9 * 0.02 + 5 = 11.1$ mOD	
Deviation 6.9 < Limit 11.1	➡ PASSED

Report: For each standard column the position with the highest deviation is reported on the printout (columns MAX_ABS). In addition the deviation of the mean of all positions from the mean of its reference values is reported.

4.3 Precision (Short time Reproducibility)

Calculation: For each position of the four neutral density standards (columns 5 to 8 on the Checkmark plate), the standard deviation and the CV% of the 8 readings per position is calculated. The result is expressed in mOD and CV%.

Criterion: The standard deviation of each position must not exceed the calculated limit. The limit is calculated using the mean of the particular position (8 measurements) and the parameters set in instrument data.

<u>Example:</u>	Mean value of position	299.8 mOD
	Standard Deviation of position	0.53 mOD
	Limit 1	1 %
	Limit 2	5 mOD
	Calculated limit: $299.8 * 0.01 + 5 = 8$ mOD	
	Deviation $0.53 < \text{Limit } 8$	➡ PASSED

Report: For each standard column the position with the highest deviation is reported on the printout.

4.4 Linearity

Calculation: Using the mean of 8 readings and all 8 positions of each standard column (64 values = y), a linear regression is calculated against the mean reference (column, 8 values = x) of the four standards.

Criterion 1: The y-deviation of each standard point must not exceed the calculated limit for this point. The limit is calculated using the related point on the curve (calculated y) and the limits set up in instrument data:

<u>Example:</u>	Mean reference (x-value)	305.5 mOD
	Mean measurement (y-value)	299.8 mOD
	Calculated y-value on curve	301.8 mOD
	Difference of y-values	2 mOD
	Limit 1	1 %
	Limit 2	10 mOD
	Calculated limit: $301.8 * 0.01 + 10 = 13$ mOD	
	Deviation $2 < \text{Limit } 13$	➡ PASSED

Criterion 2: The coefficient of correlation (%) of the curve must not be lower than the limit of 99.5 %

Report: The reference value (x), measurement value (y), calculated value (y on curve), deviation and limit is reported for each standard on the printout.

The curve characteristics Offset-Y, Slope, Correlation % and the limit of correlation are reported on the printout.

4.5 Plate Positioning

Calculation and Criterion: The measurement results of column 1 and column 12 of the $\sqrt{\text{mark}}$ plate are checked against the limits set up in instrument data.

Interpretation: If the plate is well aligned, the beam will pass the small holes and the measured value will not exceed the limit. The limit for different instrument may not be the same since some instruments have wider beam than the holes and higher OD reading will be experienced with such instruments.

Report: The maximum value and the limit are reported on the printout.

4.6 Crosstalk

Calculation and Criterion: The results in column 2 and 3 should show overflow for covered positions and a small value in the range of a few mOD for open positions (through air). The values for overflow (dependent on the instrument!) and the limit for measurements through air are set up in instrument data.

Report: The maximum value against air, the minimum value with overflow positions and the limits are reported on the printout.

4.7 Filter check

Calculation: For each position of the filter check glass (column 9) the mean of the 8 readings is calculated and the ratio to the related reference value (from Reference Data) is determined.

Criterion: The ratio % must not exceed the lower and higher percentage limits set up in instrument data for the reference values:

Interpretation: The absorbency of the filter check glass is dependent on wavelength. This test verifies that the physical filter configuration installed in the instrument corresponds to the setup of the filters in the instrument's software. The test does not verify the absolute wavelengths of the filters but the plausibility of the order of the filters installed.

4.8 0 OD and Overflow

Calculation and Criterion: Column 10 = Overflow, Column 11 = 0 OD. All results in column 10 should show overflow and all results in column 11 should show a small value around 0 mOD (measurement through air). The values for overflow (dependent on the instrument!) and the limit for measurements through air are set up in instrument data.

Report: The maximum value against air, the minimum value with overflow positions and the limits are reported on the printout.

4.9 IR-Blocking

Calculation and Criterion: The results in column 4 should show overflow for all positions. The values for overflow (dependent on the instrument!) are set up in instrument data.

Report: The minimum value and the limit are reported on the printout.

Interpretation: The IR-blocking glass in column 4 lets pass only light in the infrared wavelength range. Therefore overflow results proof sufficient blocking of infrared light by the filters of the instrument.

4.10 Instrument Data (Limits)

The validation criteria and limits, which are set up for the different instrument types according to their technical specifications, can be viewed by selecting *Instrument* data in the Edit menu:

Run Test	Limit 1	Limit 2	Max.mOD
<input checked="" type="checkbox"/> Accuracy	2 %	5 mOD	1500
<input checked="" type="checkbox"/> Precision	1 %	5 mOD	
<input checked="" type="checkbox"/> Linearity	1 %	10 mOD	
<input type="checkbox"/> Plate Positioning	10 mOD		
<input type="checkbox"/> Cross talk	3 mOD	7000 mOD	
<input type="checkbox"/> Filter check	80 %	120 %	
<input type="checkbox"/> 0 OD / Overflow	5 mOD	7000 mOD	
<input type="checkbox"/> IR-Blocking	7000 mOD		

Options

Overflow value: 7777 mOD

Instrument Name: Ultramark

Instrument Number: 4

Users logged in at administrator (level 2 user) can change the limit Max.mOD for the Accuracy test. This allows the administrator to set up a measurement range, which will include (when set at 1500 mOD, for example) or exclude (when set at 7777 mOD) the highest neutral density standard (approximately 2 OD, dependent on wavelength). Administrator (Level 2 user) can also select or de-select validation parameters to be run for the testing.

All other settings can only be changed by Bio-Rad Service Administrators.

4.11 Report Printout:

Checkmark Print out 1.40 Page 1 Date: 1/29/02

Operator:	BIO-RAD Administrator	Date of Testrun:	1/18/02-08:59
Instrument:	Benchmark Plus	Serial Number:	10012
Manufacturer:	BIO-RAD		
Reference Plate:	Checkmark Plate	Serial Number:	0040
Date of Calibration:	2/13/01	Next Calibration:	2/13/03
Result:	PASSED	Meas.Cycles/Filter:	8

Accuracy

Filter	Ref.Value mOD	Deviation			Deviation		Limit mOD	PASSED
		MAX_ABS mOD	MAX_ABS %	PASSED	MEAN mOD	MEAN %		
405	154.0	3.1	2.03	PASSED	1.6	1.07	13.1	PASSED
	311.5	-4.0	-1.28	PASSED	-3.6	-1.15	16.2	PASSED
	1137.9	-6.0	-0.52	PASSED	-4.8	-0.42	32.8	PASSED
	2244.5	-19.6	-0.87	PASSED	-9.0	-0.40	54.9	PASSED
450	143.4	5.5	3.82	PASSED	4.5	3.11	12.9	PASSED
	290.9	4.0	1.37	PASSED	2.4	0.83	15.8	PASSED
	1017.3	17.0	1.67	PASSED	10.4	1.02	30.3	PASSED
	2032.4	-11.1	-0.55	PASSED	-7.1	-0.35	50.6	PASSED
492	140.4	5.0	3.57	PASSED	3.2	2.28	12.8	PASSED
	297.6	1.5	0.50	PASSED	0.6	0.21	16.0	PASSED
	1002.5	9.1	0.91	PASSED	8.4	0.83	30.1	PASSED
	2006.5	-21.0	-1.05	PASSED	-14.8	-0.73	50.1	PASSED
540	140.0	2.0	1.44	PASSED	-0.5	-0.37	12.8	PASSED
	286.4	3.0	1.05	PASSED	1.9	0.68	15.7	PASSED
	1017.8	-21.9	-2.14	PASSED	-20.6	-2.02	30.4	PASSED
	1980.4	-20.3	-1.02	PASSED	-14.3	-0.72	49.6	PASSED
620	145.9	2.9	1.96	PASSED	2.0	1.37	12.9	PASSED
	316.8	-2.8	-0.86	PASSED	-2.1	-0.67	16.3	PASSED
	980.0	-4.0	-0.41	PASSED	-2.3	-0.23	29.6	PASSED
	1930.6	-6.0	-0.31	PASSED	-2.5	-0.13	48.6	PASSED
690	135.5	4.0	2.96	PASSED	2.0	1.50	12.7	PASSED
	282.0	-4.9	-1.73	PASSED	-3.4	-1.21	15.6	PASSED
	812.3	-9.8	-1.19	PASSED	-7.1	-0.87	26.2	PASSED
	1589.5	-9.9	-0.62	PASSED	-6.8	-0.43	41.8	PASSED

Precision

Filter	at mOD	STDEV mOD	CV% %	Limit mOD	PASSED
405	155.6	0.53	0.34	6.57	PASSED
	307.9	0.52	0.17	8.09	PASSED
	1133.0	0.52	0.05	16.39	PASSED
	2235.5	0.92	0.04	27.39	PASSED
450	148.0	0.53	0.36	6.49	PASSED
	293.4	0.52	0.18	7.95	PASSED
	1027.8	0.53	0.05	15.33	PASSED
	2025.4	0.52	0.03	25.29	PASSED
492	143.5	0.52	0.36	6.45	PASSED
	298.4	0.53	0.18	8.00	PASSED
	1010.8	0.46	0.05	15.16	PASSED
	1991.8	0.52	0.03	24.95	PASSED
540	139.5	0.52	0.37	6.41	PASSED

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Precision

Filter	at mOD	STDEV mOD	CV% %	Limit mOD	PASSED
	288.4	0.52	0.18	7.90	PASSED
	997.1	0.53	0.05	15.03	PASSED
	1966.1	1.77	0.09	24.69	PASSED
620	147.9	0.52	0.35	6.49	PASSED
	314.6	0.52	0.16	8.16	PASSED
	977.8	0.52	0.05	14.83	PASSED
690	1928.3	0.53	0.03	24.32	PASSED
	137.6	0.52	0.38	6.39	PASSED
	278.6	0.52	0.19	7.80	PASSED
	805.1	0.53	0.07	13.10	PASSED
	1582.8	0.53	0.03	20.86	PASSED

Linearity

Filter	Ref.Value x-mOD	Meas.Value y-mOD	Calc.Value x -> y	MAXDEV mOD	Limit mOD	PASSED
405	154.0	155.6	153.4	2.24	13.07	PASSED
	311.5	307.9	310.2	-2.31	16.20	PASSED
	1137.9	1133.0	1133.2	-0.18	32.66	PASSED
	2244.5	2235.5	2235.2	0.26	54.70	PASSED
450	143.4	148.0	149.8	-1.76	13.00	PASSED
	290.9	293.4	296.5	-3.11	15.93	PASSED
	1017.3	1027.8	1019.2	8.61	30.38	PASSED
	2032.4	2025.4	2029.1	-3.74	50.58	PASSED
492	140.4	143.5	145.9	-2.35	12.92	PASSED
	297.6	298.4	301.8	-3.37	16.04	PASSED
	1002.5	1010.8	1000.7	10.12	30.01	PASSED
	2006.5	1991.8	1996.2	-4.39	49.92	PASSED
540	140.0	139.5	138.4	1.06	12.77	PASSED
	286.4	288.4	283.4	4.97	15.67	PASSED
	1017.8	997.1	1007.9	-10.77	30.16	PASSED
	1980.4	1966.1	1961.4	4.74	49.23	PASSED
620	145.9	147.9	145.8	2.08	12.92	PASSED
	316.8	314.6	316.4	-1.82	16.33	PASSED
	980.0	977.8	978.6	-0.82	29.57	PASSED
	1930.6	1928.3	1927.7	0.56	48.55	PASSED
690	135.5	137.6	134.5	3.06	12.69	PASSED
	282.0	278.6	280.3	-1.72	15.61	PASSED
	812.3	805.1	807.9	-2.83	26.16	PASSED
	1589.5	1582.8	1581.3	1.49	41.63	PASSED

Plate Positioning

Filter	MAX	Limit	PASSED
405	1.0	10.0	PASSED
450	1.0	10.0	PASSED
492	1.0	10.0	PASSED
540	1.0	10.0	PASSED
620	1.0	10.0	PASSED
690	1.0	10.0	PASSED

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Cross talk

Filter	MAX_AIR	Limit	MinOverflow	Limit	PASSED
405	0.0	3.0	7777	7777	PASSED
450	0.0	3.0	7777	7777	PASSED
492	1.0	3.0	7777	7777	PASSED
540	1.0	3.0	7777	7777	PASSED
620	1.0	3.0	7777	7777	PASSED
690	1.0	3.0	7777	7777	PASSED

Filter check

Filter	Lower Limit %	RATIO % Meas/Ref	Upper Limit %	PASSED
405	80	100.37	120	PASSED
450	80	105.81	120	PASSED
492	80	100.87	120	PASSED
540	80	100.96	120	PASSED
620	80	102.41	120	PASSED
690	80	107.15	120	PASSED

0 OD / Overflow

Filter	0 OD MAX mOD	Limit mOD	PASSED	Overflow mOD	Limit mOD	PASSED
405	0.0	5.0	PASSED	7777	7777	PASSED
450	0.0	5.0	PASSED	7777	7777	PASSED
492	1.0	5.0	PASSED	7777	7777	PASSED
540	1.0	5.0	PASSED	7777	7777	PASSED
620	0.0	5.0	PASSED	7777	7777	PASSED
690	0.0	5.0	PASSED	7777	7777	PASSED

IR-Blocking

Filter	Min	Limit	PASSED
405	7777	7777	PASSED
450	7777	7777	PASSED
492	7777	7777	PASSED
540	7777	7777	PASSED
620	7777	7777	PASSED
690	7777	7777	PASSED

Lin. Regression

Filter	Offset-Y	Slope	Correlation %	Limit %	PASSED
405	-0.0005	0.9959	99.9998	>= 99.5000	PASSED
450	7.1166	0.9949	99.9977	>= 99.5000	PASSED
492	6.6663	0.9915	99.9968	>= 99.5000	PASSED
540	-0.2287	0.9905	99.9961	>= 99.5000	PASSED
620	0.1720	0.9984	99.9998	>= 99.5000	PASSED
690	-0.2808	0.9950	99.9991	>= 99.5000	PASSED

5 Troubleshooting Guide

5.1 Error messages



The Benchmark Plus reader could not be found.

Please check the equipment (No, or Wrong instrument selected) and connections.



No File selected! Import not possible.

Select the corresponding Reference data file.



No Instrument selected! Measurement aborted.

No Instrument was selected-appears only during complete database cancellation.



WNASPI32.DLL was not found. Please check that ASPI drivers have been installed.

The driver for the SCSI-interface was not installed. The file "WNASPI32.DLL" – not included within the setup package- has to be installed.



Measurement aborted!

"Cancel reading" was pressed, or a device error has happened



No Measurement selected! Printout not possible.

User has not selected a measurement – table empty.



Read error!

A device error has happened.



No Filter selected!

No filter has been selected for a particular measurement.



Filter wavelength not correct!

Model 550 only! A manually entered wavelength was not correct.



Error during importing reference plate! Plate not imported.

Reference data file is corrupted, Disk error or non authorized manipulation of reference data file.

 **No File selected! Import not possible.**

Select a reference data file.

 **No Filter wavelength found!**

Reference data file is corrupted, Disk error or non authorized manipulation of reference data file.

 **You have not selected a valid Reference Plate! Measuring not possible.**

Install database (add reference plate) or repair database (file menu).

 **Invalid Serial number!**

“+, *, ?, -, # f.e.“ are not allowed as valid signs.

 **Database not found in selected Path! Create Database?**

A path has been selected where no $\sqrt{\text{mark}}$ database exists. (menu “System“) The option “Yes“ creates a new database, or change path to existing database.

 **New Password and Confirmation not identical!**

New Password and confirmation password mismatch. Attention pw's are case sensitive!

 **User-ID or Password not correct!**

As it says.

 **No Ultramark found!**


Switch on the instrument before starting the software.

 **Access denied!**

If Log-in procedure has been cancelled.

 **Reference Plate exists! Overwrite existing Plate data?**


If a Serial Number of an already installed reference plate and a new one are identical (f.e after recalibrating a ref plate). Choosing “Yes“ will mark the older version as “archived“ – still view- and printable and the newer one as „active“.

 **Its time to reorganize $\sqrt{\text{mark}}$ database! Would you like to compress the Database?**

Choose “Yes“ to compress database – will be asked every 100x log-ins. Every database query results in a table which is not deleted after usage – this will result in an increasing disk space usage, to reduce the amount of disk space compress database.

 **Instrument is reading! Filter setup not possible.**

It is neither possible to install a filter nor a reference plate while measurement is in process.

 **Error: Drawing (Linear Regression)**

Error occurred during drawing of a linear regression – if no or impossible values are used for calculation.

5.2 Important hints for handling and correct operation

- ◆ Never touch the optical glasses of the $\sqrt{\text{mark}}$ plate. Avoid dust and scratches!
- ◆ Always make sure that the $\sqrt{\text{mark}}$ plate is inserted in the right position
- ◆ Check before use, if the $\sqrt{\text{mark}}$ plate is perfectly clean. Clean only with optical paper and drops of 70% ethanol.
- ◆ Allow sufficient warm-up of the instrument in order to reach technical specifications before performing test-runs (see instruments manual)

6 Software History

This chapter lists all changes for every software version compared to the previous version. The first released version was Checkmark Version 1.4

Checkmark Operating Manual



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