

“README” File

Thank you for purchasing the DXDT Quantitative Retina Test Grid.

We hope that you will find it much more useful and effective than a paper Amsler grid.

We expect that you will find it capable of monitoring trends in retina health that can be used as a basis for prognoses. It can also give you an early warning of emerging threats to your retinal health. You can also determine the efficacy of treatment interventions.

Best of all, it is inexpensive enough that anyone with a computer can use it.

The Quantitative Retina Test Grid is designed to only run from the USB Drive that you have been provided.

The program is pre-installed on that drive and one can start it easily by double clicking on the “Run me” icon. You may want to make a shortcut to this program on your desktop.

There is a chance that your computer may not run the program because it does not have a special .dll program typically provided by Microsoft. This program has been provided to you on your USB drive. If your program does not run, please copy the program msvbvm60.dll from the USB drive to your “c:\Windows\system32\” directory or to “c:\WINNT\system32\” depending on what you find in your computer. Then try running the program again.

If you still have a problem, please contact dxdt by phone or e-mail.

If you are unhappy with the program for any reason, we will refund your money when you return us the USB drive.

You can reach dxdt by e-mail at dxdt@dxdtengineering.com or by phone at 301 520-1575.

Thank you for purchasing our system and good luck with your eye health and eye health maintenance.

Instructions for using the DXDT Engineering and Research Retina Health

Monitoring System

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Concept: The DXDT Quantitative Retina Test Grid employs a computer-enabled Amsler grid to characterize blind spots and distortions in vision due to retinal abnormalities. The user is provided with a modified Amsler grid that can be resized as desired. Any prescribed eyewear should be used during the test. The user selects which eye to test first and covers (or closes) the other one throughout the testing process. The user positions themselves a comfortable (and repeatable) distance from the computer monitor. The user uses the system to systematically identify blind spots in the field of view and to “correct” for retina-imposed distortions using mouse click and drag operations. The user then calculates the score for the test with the touch of a button and commits the data to a database that can be used to track trends in retina health.

Made for use at home, the system contains many warnings and prompts to avoid data irregularities. The user should read them at first and then over time may want to “click through” them.

First Use:

Profiles: The first time the system is used the user should start the program, click through the initial information block, and then click the RESET button to free the program from the default user profile. The user profile will associate a specific grid size, color scheme and center “X” size, for each user. The user should sit comfortably a fixed distance from the computer and vary the size of the grid using the slider beneath the grid. The user should also check the OPTIONS menu to try different color schemes for the grid. Once comfortable settings have been determined, the SAVE feature will allow the profile to be saved. Use the form controls to identify a place to save your profile (a .ret file). By default, the profile will save to the thumbdrive that contains the program. You may save the .ret file to your desktop for easy access if you intend to e-mail it later. Enter a name for your profile in the text box and double click in the box. Check the “Make Default “ box so the profile will be loaded automatically with each use. Then click OK. All subsequent tests using that profile should be done at the same distance from the same computer and using the same size grid in order to ensure that the collected test data remains valid.

Saving Images:

The Quantitative Retina Test Grid is capable of saving .bmp images of eye test results. If you wish to save the images, use the ADMIN choice in the OPTIONS menu to establish a location to save those files. Also, when you are committing data to the data log after each test, the ADMIN button on the “Specify Right or Left Eye” form will need to be checked.

Testing Concept: The user should close one eye and focus on the center dot in the grid. Retinal abnormalities may be manifest in the wavy lines or in vertexes in the grid that disappear. The user should practice clicking and

dragging the vertices so as to straighten the wavy lines ***while focusing on the center "X"***. The UNDO button will undo a single click and drag or blindspot drop operation. The user should also practice moving the mouse down each vertical line of the grid, from left to right, and stopping on each vertex. The user should practice using each eye.

It is likely that it will take several initial test runs to get used to the system and get used to using the drag and drop operations while maintaining focus on the center dot. Analysts will consider this learning curve when interpreting results.

Continued Use:

Blind spots: The recommended method for using the system is to begin by identifying blind spots. This is done by starting at the upper left hand corner of the grid and working down each vertical line in the grid and jiggling the mouse pointer over each vertex in the grid. If the mouse pointer cannot be seen by the user while the user maintains focus on the center dot, then the user should jiggle the mouse over an increasingly larger area until the approximate size of the blind spot is known. Then the user can focus on the blind area, place the mouse pointer on the upper leftmost corner of the blind area, right click on the mouse pointer and drag the mouse to trace the shape of the blind spot. Please use simple shapes. Complex blind spot shapes should be made from overlapping simple shapes. The computer will require a few seconds to fill in the shape that you drew. Note that the UNDO button can be used to erase the dot that has just been placed. The complete grid should be processed in this way for the eye under test.

The system has a dynamic noise feature that is accessible through the NOISE selection on the OPTIONS menu tab. The noise option allows for blind spots to be identified against a moving noise background. Healthy parts of the retina will see the noise flickering while parts of the retina impaired by blind spots will appear “quiet” and there will be no flickering. The system also has a BACKGROUND option that applies a detailed background. The detail is lost when viewing is impacted by blind spots so blind spots are easy to identify using this feature.

Retinal Aberrations: After blind spots have been mapped, the user should work from left to right to click and drag vertices carefully, to correct the bends and waves that the retinal aberrations cause in the vertical lines. The vertices that are impacted by blind spots may be omitted in the test. The more the user learns to carry out the click and drag operations while focusing on the center dot, the easier the process will become. A similar process is repeated for the horizontal rows.

Scoring: When the process is complete, press the SCORE button to determine the average deviation between the clinically corrected grid and the starting, master grid. Press the COMMIT button to enter the score into the user profile. The user will be required to identify the eye that was tested and then press OK. If the patient wants to save the grid images, the ADMIN MODE box needs to be checked. The images will be stored to the location that the user specifies using the ADMIN form accessible under the OPTIONS menu item. The default location for the images is on the thumbdrive at /dxdt/eye test/admin.

Repeat the entire test process for the other eye as required.

Alternate profiles can be loaded using the LOAD feature. There is no limit to the number of profiles that can be initiated using the SAVE feature but only one can be the default profile that loads automatically when the program is started.

NOTE: Consistency is desirable over perfection. If the user can create a consistent improvement to the grid using click and drag operations then the data over time will be useful. If the user gives up because it wasn't possible to create a perfect looking grid, then no useful data will be collected.

Eye Trainer: An off-macula visualization training tool is being provided at no cost with the Quantitative Retina Test Grid. The training tool is accessible through the EYE TRAINER menu tab on the Quantitative Retina Test Grid. This tool is intended to assist the patient in learning to use the healthier parts of the retina (identified using the Quantitative Retina Test Grid) that may be offset from the center of vision, to read with. This system contains its own instruction sheet.

Binocular Vision Analyzer: While the Quantitative Retina Test Grid characterizes and tracks the condition of a patient's retinae over time, it only considers one retina at a time. Dxdt has added a binocular vision analyzer that uses the images that the system produces for the right and left retinae to produce an image that shows the patient where their blind spots are while they are using both eyes. The system can only be used when retina grid images have been saved using the ADMIN feature (i.e., the ADMIN MODE box is checked when data is being committed to the database)

The system is accessed from the REPORT page by clicking the BINO

VISION menu item. Use the drive and file list box controls on the page in order to locate the directory where the image files are stored. This would be the same location that has been selected by the user through the ADMIN feature. Use the two file list boxes to select the left and right images to analyze together. Then press the VISUALIZE button. Wait a few seconds and the binocular vision analysis results will appear. The red areas are areas that are blind to both eyes. The white areas are blind to either the right or left eye but not both, and the green areas are seen by both eyes. The BACK button closes the Binocular Analysis page. The EXIT TEST button exits the Quantitative Retina Test Grid program.

For Help: E-mail the developer at dxidthelp@dxdtengineering.com. Ensure that the term EYE TEST appears in the subject line.

Multiple User License: Contact the developer at dxidthelp@dxdtengineering.com to inquire about purchasing the rights to use this system for multiple users.