



VISIONKEYS

BY *eyeMobil*



VISIONKEYS MANUAL

VisionKeys is an easy to use, portable, compact, universal digital visual acuity system

Software version 3.6.0

Table of Contents

Overview.....	3
Contents of Box:.....	4
Specifications:	4
Initial Setup Instructions.....	5
Monitor Mounting	5
Lane Setup and Distance Calibration	7
Additional Monitor/Tablet Settings and Control	8
Keypad Setup	9
Keypad Layout.....	10
Using the Keypad	11
Special Modes Menu.....	12
Special Functions.....	13
Ishihara Plate Key	15

Overview

Vision Keys is a digital visual acuity system that has been designed to be easy to use in any language. It can be used to check visual acuity in any room from 5 feet to 25 feet in length, with a mirrored option or using direct view. The acuity measurement can be set for feet or meters notation- (decimal and logMAR coming shortly) Vision Keys incorporates optotypes for all age groups including Sloan/Snellen letters, Vision Keys numbers, the Tumbling E, Landolt C, Allen figures and HOTV.

Features include:

- Quick Acuity Keys
- Single letter vs Line vs Multiple line presentation
- Horizontal line vs Vertical Line presentation
- Arrow to indicate specific letters
- Shuffle current optotype
- Crowding Bars option for single letter presentation
- Red/Green testing
- Pediatric fixation videos
- Astigmatic Dial or Fan
- Ishihara color testing
- Stereo testing (prototype in v3.6)
- Contrast sensitivity (coming soon)

Vision Keys features intuitive use by any doctor, technician, or assistant to check visual acuity accurately. The keypad has 18 clearly marked buttons to facilitate ease of use.

Contents of Box:

Vision Keys ships with the following:

- Touchscreen monitor (15.6" or 18.5")
- Desktop mount
- Wall mount
- Vision Keys Keypad (AAA battery included)
- Power adapter and cable (110V)
- Red/Cyan glasses (stereo testing)

Specifications:

Android 15.6" or 18.5" all-in-one touch screen monitor

- Resolution: 1920 x 1080
- CPU: Quad core ARM Cortex-A55 processor
- RAM: 2 GB
- ROM: 16 GB
- Operating System: Android 11
- Bluetooth 4.2
- WiFi 802.11b/g/n
- Ethernet: 10M/100M
- Ports: 2 USB Type A ports, USB-C, Ethernet, SD card, Headphone jack
- Speakers: 2x2W
- Camera: 2.0 MP, front camera
- VESA: 75 x 75 mm
- Power – 12V, 2A barrel connector

Initial Setup Instructions

Monitor Mounting

1. The monitor may be placed on a tabletop by attaching the black plastic stand support using the screw to hold it in place.



2. The monitor may be mounted onto a wall using the tiltable VESA mount included. There are short screws for the VESA mount and screws with optional anchors to attach the mount to the wall.



Pictured: all included hardware

Step 1 – connect mount to monitor



Step 2 – attach bracket to wall



Step 3 – place monitor bracket “hooks” on the bottom screws



Step 4 – tighten top screws

Lane Setup and Distance Calibration

1. After your monitor is mounted on a tabletop or on a wall, turn on the monitor by pressing the button on the top right side. The monitor should boot up directly into Vision Keys software.
2. Enter the setup screen by either swiping up using a finger on the touch screen or by pressing the Menu key on the keypad. (upper left)
3. Measure the horizontal red line at the top of the setup screen in mm and adjust the specified measurement to your measurement of this red line.
4. Determine your unit of distance (feet vs meters)
5. Measure the distance from the monitor to the relative position of the patient's eyes. (for mirrored setups, include the distance from the monitor to the mirror and the mirror to the patient's eyes.)
6. Adjust the screen distance setting in feet or meters to your measured actual distance used. This will adjust the size of the optotypes to be accurate readings. This adjustment must be done directly on the touch screen.
7. Choose the following additional options using the touch screen:
 - a. Default directional letters – Tumbling E vs Landolt C
 - b. Default pediatric shapes – Allen figures vs HOTV
 - c. Default for labeling each line with acuity notation
 - d. Mirror or nonmirrored image
 - e. Crowding bars on by default or not
 - f. Check for updated software
8. Once all options are chosen, click save on the touch screen.

Measure This Line
100 millimeters
- +

Unit of Distance
 Feet Meters

Directional Letters
 Tumbling E's Landolt C

Children's Optotypes
 Allen Figures HOTV

Screen Distance
20 feet
- +
0 inches
- +

Label Each Line
 On

Mirror Image
 Off

Show Crowding Bars by Default
 On

Save Cancel

v3.4.0.0

Additional Monitor/Tablet Settings and Control

1. The monitor is an Android all in one touch screen tablet and can be used like any other tablet.
2. The monitor has been pre-configured such that Vision Keys will automatically start on bootup of the system.
3. The keypad dongle must be seated in a USB port for the Vision Keys software to work.
4. The language of the monitor/tablet can be changed in the settings section but has been pre-set to the language of the country the system has been ordered for.
5. The monitor has an ethernet port and Wi-Fi to connect to the internet if desired. In order to check for software updates, an internet connection must be established via either an ethernet cable or a Wi-Fi router connected to the ethernet.
6. The volume of the internal speakers can be adjusted while watching a video using the up and down arrows.
7. The monitor does support Bluetooth and this can be used to power a wireless Bluetooth speaker (especially in case of using a mirrored setup)
8. Vision Keys software icon is on the desktop of the monitor when shipped but starts automatically. However, it can be restarted by touching this icon if needed.
9. The monitor goes into a sleep mode automatically and will power up with a press of any key on the keypad.
10. The button on the upper right of the monitor will also allow the monitor to be powered off or put into sleep mode.

Keypad Setup

1. Vision Keys software will not work unless a dongle is placed in a USB input of the monitor.
2. The keypad uses one AAA battery. (one is pre-installed in your keypad)
3. The keypad USB dongle is unique to this keypad. The dongle has already been removed from the battery compartment storage area and placed into the monitor. Be careful not to lose this dongle as your keypad cannot be programmed to use any other dongle and will be useless.

(if a dongle is lost, a replacement keypad with dongle will be needed.)

4. In case of multiple Vision Keys systems in an office, the keypad should stay in the same room as the monitor that has its dongle plugged in.
5. Once the dongle is in the monitor and Vision Keys is running, the keypad works automatically with no additional setup.
6. The Vision Keys software output to the monitor will show a black screen automatically after 30 seconds or with a push of the “enter” key (bottom right)
7. There is no need to remove the battery from the keypad unless not in use for days/months.



Keypad Layout

The 18 keys are color coded in groups of similar function.

1. Menu key
2. Video/Photo key
3. Quick Acuity keys
4. Up/Down keys
5. Single optotype key
6. Line optotype key
7. Arrow key
8. Shuffle key
9. Red/Green key
10. Optotypes keys
 - a. Letters
 - b. Numbers
 - c. Directional letters
 - d. Shapes or Pediatric optotypes
11. Enter/Blank screen key

Orange: Menu + Video/Photo

Blue: Quick Acuity keys & Up/Down

Green: Single, Line, Arrow & Shuffle

Grey: Letters, Numbers, E Game, Shapes & Enter

Red/Green



Using the Keypad

1. To begin checking visual acuity, choose your desired optotype using one of the four grey optotype keys on the bottom of the keypad
2. The Quick Acuity keys will display a multiple line display for 20/20, 20/40, 20/80 or 20/200
3. The denominator of the visual acuity is displayed in the lower left corner of the screen in bolder print. It displays the largest line in case of a multiple line display. This will be in feet or meters depending on your setup.
4. The denominator of an individual visual acuity line is displayed less prominently to the right of multi-line displays (if this is enabled on the setup screen) (see image below)
5. The up/down arrow keys will quickly change the size of the optotypes larger or smaller
6. For single letter display, push the “Single” or “x” key
7. Sequential pressing of the “Single” or “x” key will toggle the crowding bars off or on (depending on what the default setup that was chosen)
8. For a single line display, push the “Line” or “xxxx” key
9. For a vertical presentation optotypes, press the “Line” or “xxxx” key a second time. Multiple presses of this key toggles between a horizontal or vertical display of optotypes
10. The Arrow key will show an arrow pointing to a single optotype in a line of optotypes. Sequential pressing of this key will move the arrow to the next optotype.
11. The red/green key will overlay red and green over any optotype that is chosen.



Special Modes Menu

1. Special functions and modes are accessed using the menu button. A single push of the menu button shows the special functions available. A second push of the menu button returns the screen to the prior mode and turns off the menu.
2. Videos and Pictures can be accessed using the video button. A single push of the video button shows the default videos available. Using the Up/down arrows, you can choose which video to display. The enter key will start the video and a second push of the enter key will stop the video and blank the screen. A second push of the video button will show all pictures available. The up/down arrows are used to select a picture and the enter button to select and show the picture.

The default videos or pictures can be removed by navigating to the folder on the tablet where they reside and removing them using the default Android file app. In addition, a user can add videos or pictures by uploading new .mp4 videos or .jpg or .png picture files to the video or picture subdirectories on the tablet.

In addition, photos or videos that are on a flash stick can be found by Vision Keys and played simply by putting a flashstick into one of the USB ports. The videos and pictures should be in a subfolder labeled:

/videos or /pictures

3. Exit out of the special functions is achieved by pressing one of the lower 4 grey optotype buttons or one of the quick acuity buttons. (The Quick Acuity buttons do not exit the special function in the case of the Astigmatic Fan or Stereopsis Mode since they are used for another purpose in these modes)

(Please note: in version 3.4.0.0 the Quick Acuity buttons do not work to exit the user from the special function. Only the 4 Grey Optotype keys will exit from these special functions.)

Special Functions

1. **The Ishihara color plates** are accessed using the menu key and pushing enter when “Ishihara is highlighted.” The up/down keys are used to cycle through the 17 different color plates.
2. **The astigmatic dial** is opened using the menu button, up/down arrows to select and enter key once selected.
3. **The astigmatic fan** is opened using the menu button as well. Once the astigmatic fan is displayed, the up/down keys are used to point to an individual axis. The Quick acuity keys are used to jump to either 90 degrees or 180 degrees in this mode.
4. **The stereo testing mode** is opened using the menu button also. The red/cyan glasses are needed for the patient for this testing. Once the stereo mode is entered, the up/down keys are used to increase or decrease the displayed stereo seconds of arc.

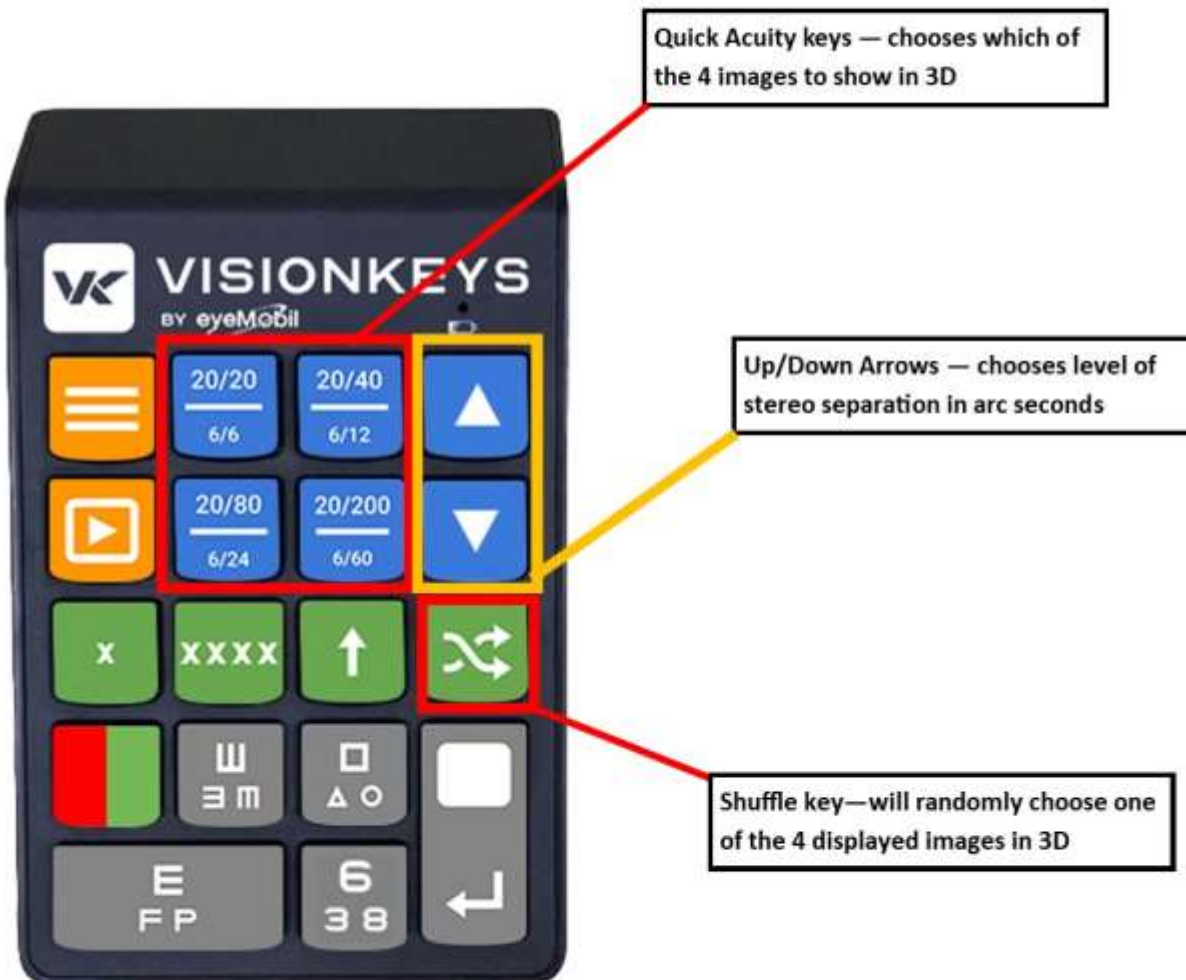
The 4 Quick acuity keys are used by the examiner to select which image is elevated to the viewer. For instance, pressing the top left quick acuity key will cause the top left image to be elevated to the viewer. The shuffle key will randomly choose one of the four images to be elevated. The up/down keys will change the stereo seconds of arc but does not change which image is elevated.

The seconds of arc for each level are displayed in the lower left corner. Also, in the setup screen, you may choose whether to display 4 targets for stereo testing or to display 4 animals.

(Please note: Stereo testing mode has been added into Version 3.6.0.0 but is in a prototype phase for testing only)


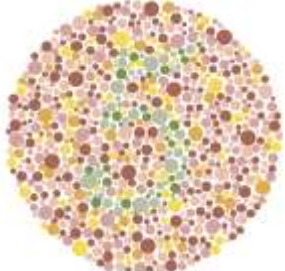
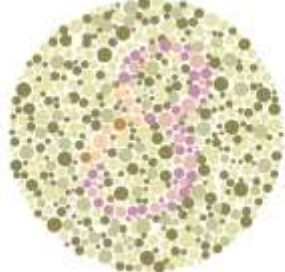
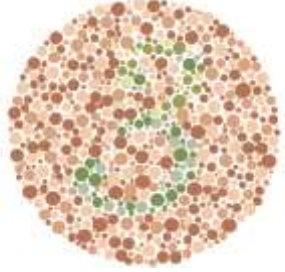
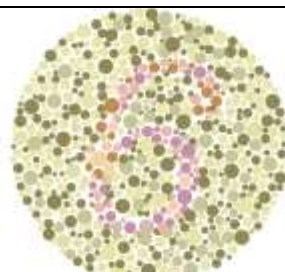
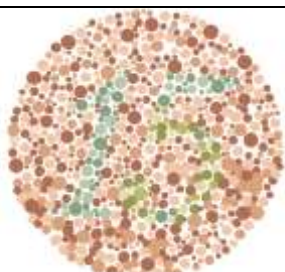
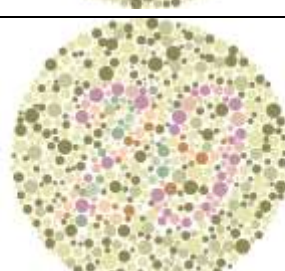
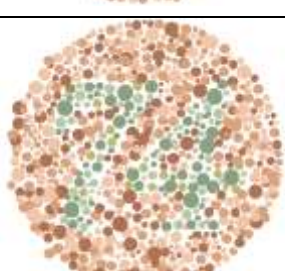
Keypad Use for Stereo Testing

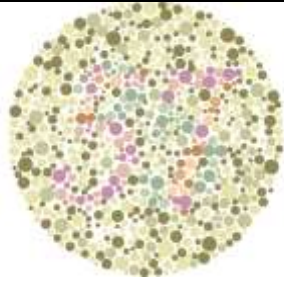
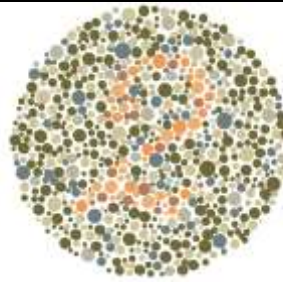

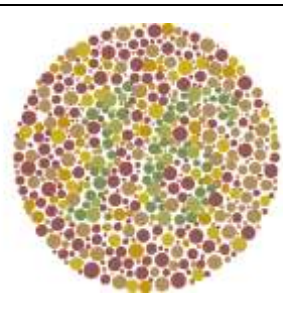
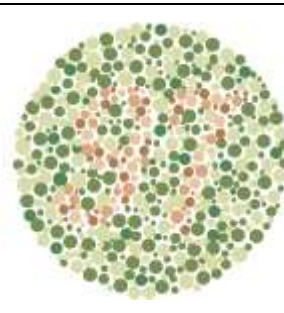
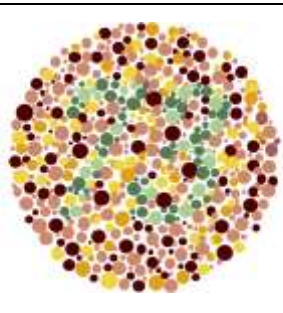
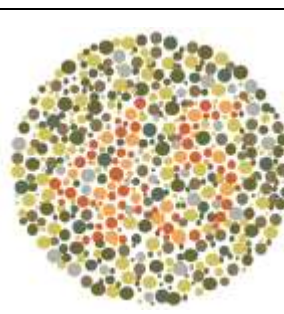
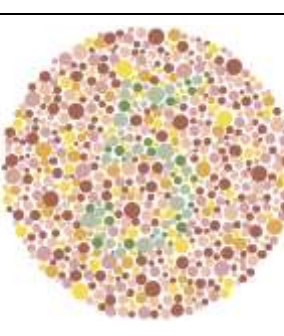
1. Enter Stereo Testing via the Menu Key (top left on keypad)
2. Select "Stereo testing" using up and down arrows and then enter
3. You will see 4 images in 4 corners of the screen.
4. Use the 4 quick acuity keys (outlined in red above) to choose which image is show in 3D
5. Use the up and down arrows to change stereo seconds of arc from 800 to 50
6. Level of arc seconds will show in lower left corner of screen

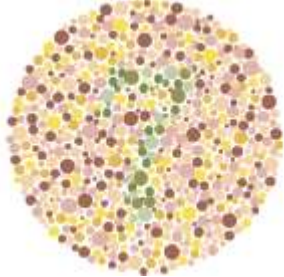


Ishihara Plate Key

#1 is the control plate that anyone should be able to see despite color blindness.

Color Plate	Answer	Color Plate	Answer
1 	12	6 	5
2 	8	7 	3
3 	6	8 	15
4 	29	9 	74

<p>5</p> 	<p>57</p>	<p>10</p> 	<p>2</p>
<p>11</p> 	<p>6</p>	<p>16</p> 	<p>16</p>
<p>12</p> 	<p>97</p>	<p>17</p> 	<p>73</p>
<p>13</p> 	<p>45</p>		
<p>14</p> 	<p>5</p>		

<p>15</p> 	<p>7</p>		
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