

USER MANUAL

VAA-2000PSE EN
V1.0-MAR 2019

Self Vision Tester (VAA-2000PSE)



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1. INTRODUCTION

1.1. Outline of Product

The VAA-2000PSE is a self-vision checker that allows users to check their own eyesight without the assistance of a specialist or specialist such as an optometrist or optician.

When users put their forehead to the forehead sensor, VAA-2000 starts the examination automatically. To see the indications (pictures, numbers, Korean Alphabet, Landolt rings and etc.) through the tester's eyepiece, users keep eyes on the indication in the middle of background and the indications on every sides. Then move the lever to the same indication to the indication in the middle. If users cannot distinguish the indications, push on of the red buttons on the left and right sides to forgive. Then it skips the phase and change to next indication. When the exam finished, the device analyzes user's choices and give the result data of the exam. Users can check their eyesight data by printing it from device.

In addition, the device prevents user's mistake by voice guidance.

1.2. Purpose of Use

Self Vision Tester [1]: It reflects optotypes or symbols for eyesight test. Devices that use power, identified at typical viewing distances.

1.3. Classifications

Classification of equipment: Class I

Applied part of equipment: No applied part

- Protection against electric shock: Class I;
- Protection against harmful ingress of water: Ordinary (IPX0);
- Method of sterilization: Not applicable;
- Stability of use in an Oxygen Rich Environment: Not suitable;
- Mode of operation: Continuous operation

1.4. Certification



2. SAFETY INFORMATION

2.1. Introduction



⊠**Warning**⊠ indicates the presence of a hazard that could result in severe personal injury, death or substantial property damage if ignored



⊠**Note**⊠ describes information for the installation, operation, or maintenance of which is important but hazard related if ignored.



⊠**Caution**⊠ indicates the presence of a hazard that could result in minor injury, or property damaged if ignored.

Safety is everyone's responsibility. The safe use of this equipment is largely dependent upon the installer, user, operator, and maintainer. It is imperative that personnel study and become familiar with this entire manual before attempting to install, use, clean, service or adjust this equipment and any associated accessories. It is paramount that the instructions contained in this manual are fully understood and followed to enhance safety to the patient and the user/operator. It is for this reason that the following safety notices have been placed appropriately within the text of this manual to highlight safety related information or information requiring special emphasis. All users, operators, and maintainers must be familiar with and pay particular attention to all Warnings and Cautions incorporated herein.

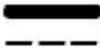
This device is compliant with  marking. Date of first marking: September 2018

2.2. Safety Symbols

The International Electro-technical Commission (IEC) has established a set of symbols for medical electronic equipment which classify a connection or warn of any potential hazards.

The classifications and symbol are shown below.

	TYPE B Applied Part
	I and O on power switch represent ON and OFF respectively
	Attention, consult ACCOMPANYING DOCUMENTS
	Alternating current

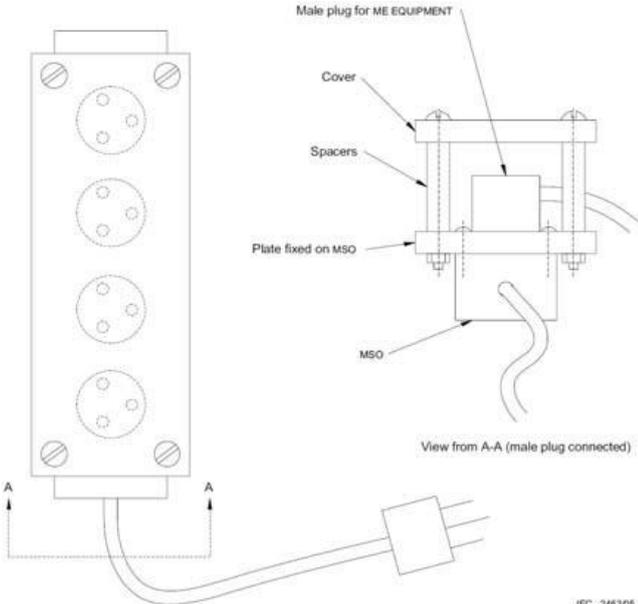
	Direct current
	Identifies the point where the system safety ground is fastened to the chassis. Protective earth connected to conductive parts of Class I equipment for safety purposes
	Manufacturer / DATE OF MANUFACTURE
	Follow operating instructions
	<p>Disposal of your old appliance</p> <ul style="list-style-type: none"> • When this is crossed-out wheeled bin symbol is attached to a product it means the product is covered by the European Directive 2012/19/EU. • All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities. • The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health. • For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or the shop where you purchased the product.

2.3. Environmental Factors

Avoid the following environments for operation or storage

	Where the equipment is exposed to water vapor. Don't operate an equipment with a wet hand
	Where the equipment is exposed to direct sunlight.
	Where the temperature changes extremely Normal operating temperature range is from 10°C to 40°C, Humidity is from 30% to 75%.
	Where it is near the heat equipment.
	Where the humidity is extremely high or there is a ventilation problem.
	Where the equipment is subject to excessive shocks or vibrations
	Where equipment is exposed to chemical material or explosive gas

	Be careful not to be inserted dust, especially, metal
	Don't disassemble the product or open. The warranty is void.
	Be careful not to close the fan located on the lateral or back side of the equipment.
	Don't plug the AC power cord into the outlet before the connection between devices of the equipment is completed. This can generate the defect.
	Pull out the power cord with holding the plug, not the cord.
	To avoid the risk of electric shock, this equipment must only be connected to supply mains with protective earth.
	VAA-2000PSE Shall be connected to the separate power supply as supplied by View-M Technology Co., Ltd.
	Do not position the equipment to make it difficult to operate the disconnection device. (Appliance coupler or separable plug)
	Ahead of going into the discard, ask way to do it or consult with selling agency
	This device incorporates a lithium battery on the main board. Incorrect replacement of which would result in an unacceptable RISK. Therefore, replacement by inadequately trained personnel could result in a HAZARD (such as excessive temperatures, fire or explosion)
	Do not placed the multiple socket-outlet for VAA-2000PSE system on the floor in order to prevent liquid penetration and damage to the product
	VAA-2000PS system shall not be connected with additional multiple socket-outlets or extension cords in addition to a designated single multiple socket-outlet.
	Maximum permissible load of each socket-outlet used for the VAA-2000PSE system, shall not be less than 60VA.
	Do not connect the device which is not a supplement of VAA-2000PSE with the Multiple socket-outlet of VAA-2000PSE.

	<p>Multiple socket-outlet should be a grounding-type and complied with IEC 60884-1.</p>
	<p>Connection of the plug shall be possible only by using the tool. (Refer to the figure below.)</p> 

Avoid places where the ambient temperature falls below 10°C or exceeds 40°C for normal operation, or below -10°C or exceeds 55°C (14°C-131°C) for transportation and storage. Humidity should be maintained between 30 and 75% (Atmospheric pressure: 70 to 106kPa) for normal operation, or between 10 and 95% (Atmospheric pressure: 50 to 106kPa) for transportation and storage. Avoid environments where the equipment is exposed to excessive shocks or vibrations.

2.4. Safety Precautions

This equipment has been developed and tested according to safety standards as well as national and international standards. This guarantees a very high degree of safety for this device. The legislator expects us to inform the user expressly about the safety aspects in dealing with the device. The correct handling of this equipment is imperative for its safe operation. Therefore, please read carefully all instructions before switching on this device. For more detailed information, please contact our Customer Service Department or one of our authorized representatives.

1. This equipment is used with spare parts provided by View-M Technology. Co., LTD. If consumer want to use the other manufacturer's spare parts, safety must be checked and convinced by the manufacturer.

2. Modifications of this equipment may only be carried out by trained service technicians in View-M Technology. Co., LTD. or the other authorized person.
3. Customer maintenance of this equipment may only be performed as stated in the User's Manual and Service Manual. Any additional maintenance may only be performed by trained service technicians in View-M Technology. Co., LTD. or the other authorized person.
4. The manufacturer is only responsible for effects on safety, reliability, and performance of this equipment when the following requirements are fulfilled: ① The electrical installation in the respective room corresponds to the specifications stated in this manual and ② This equipment is used, operated, and maintained according to this manual and Service Manual.
5. The equipment must be operated only by, or under direct supervision of a properly trained and qualified person.
6. Keep the User's Manual and Service Manual in a place easily accessible at all times for person operating and maintaining the equipment.
7. Please do not pull on any cable. Always hold on to the plug when disconnecting cables.
8. This equipment may be used for the international application related to (*Usage of Device) according to this manual.
9. Before each operation, visually check the equipment for exterior mechanical damage(s) and for proper function.
10. Immediately turn off and unplug any equipment that gives off smoke, sparks, strange noises or odors.
11. This equipment must not be used (a) in an area that is in danger of explosions and (b) in the presence of flammable, explosive, or volatile solvent such as alcohol, benzene or similar chemicals.
12. Do not put or use this device in humid rooms. Humidity should be maintained between 30% to 75% for normal operation.
13. The manufacturer is not liable for damage caused by unauthorized tampering with the device(s). Such tampering will forfeit any rights to claim under warranty.

3. PRECAUTIONS

3.1. Precaution of Installation

1. Install the device in place where water cannot reach.
2. Be careful of safety conditions such as slope, vibration, shock (including in transport).
3. Install in a place where there is no possibility of adverse effect on the product such as air pressure, temperature, humidity, direct sunlight and etc.
4. Please install in a place without dust, salt and sulfur.
5. Pay attention to the allowable capacity value (or power consumption).
6. Install the device on the immovable table without wheels.

3.2. Precaution of Use

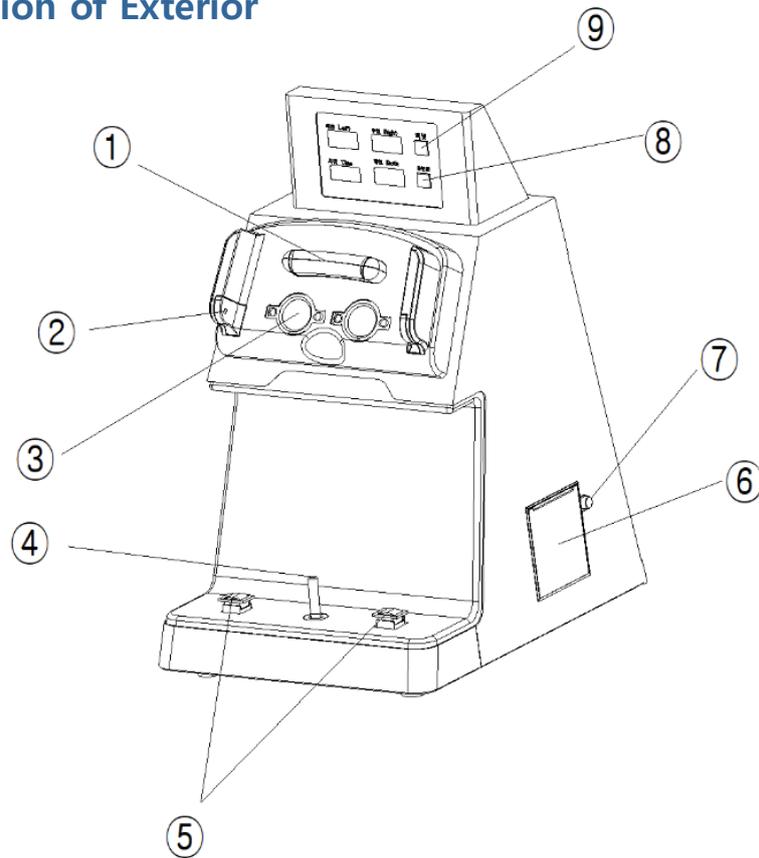
1. Make sure that the product-wide and users are appropriate with their use.
2. If an abnormality is found in the product or user, first take the safety of the user into consideration and take appropriate action such as stopping the operation of the device.
3. When you want to use it in low temperature, please turn on the product and wait 5 minutes for safe operation.
4. Turn off the power with the power switch at the given position and unplug the power cord.
5. When unplugging the power cord, do not apply excessive force, such as holding the wire.
(Risk of malfunction)
6. Please turn off the device after using it.

3.3. Storage Precaution

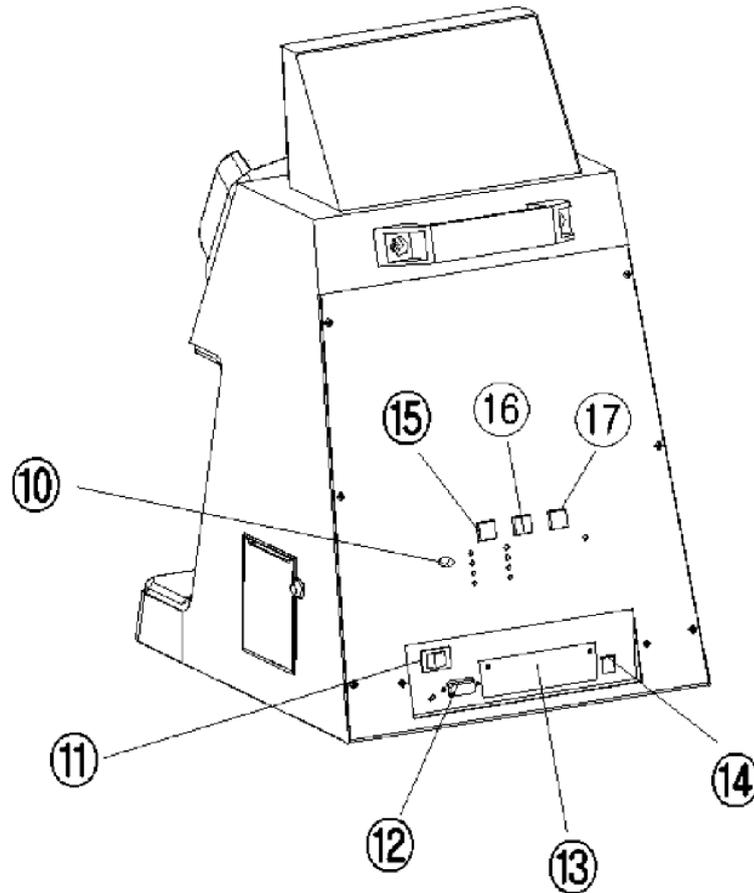
1. Keep it in place where water cannot reach.
2. Be careful of safety conditions such as slope, vibration, shock (including in transport).
3. Keep it aware of temperature, humidity, direct sunlight.
4. Keep it in place where dust, salt and sulfur does not exist.
5. Clean the accessories, cords, etc. before storage.
6. Not using it for a long time, disconnect the power from the outlet and store it.
7. Keep it clean for the next use.
8. Cover it by dust cover if you do not use it for a long time.

4. STRUCTURE

4.1. Instruction of Exterior

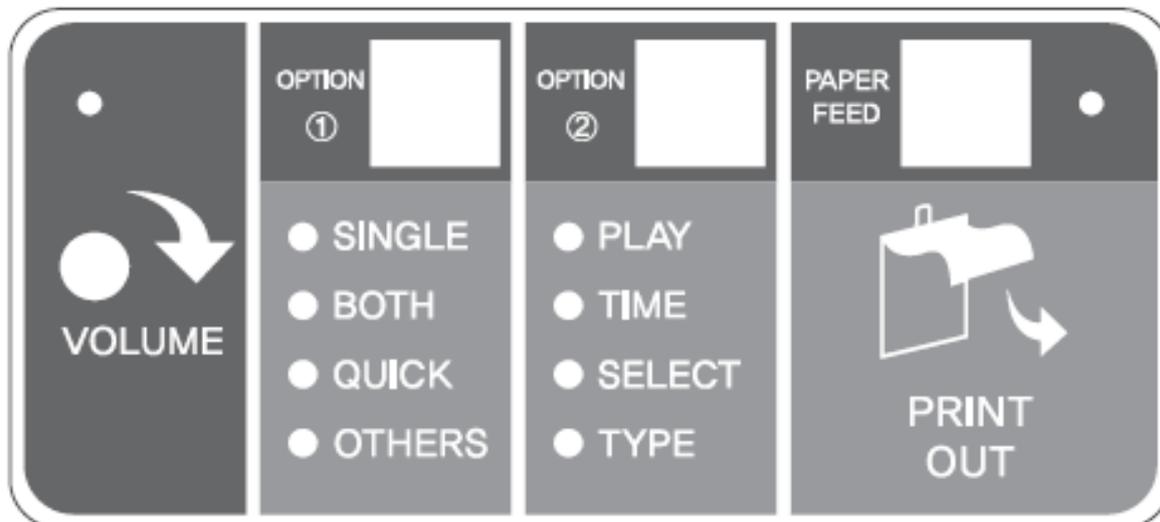


Name	Function
1 Forehead Support	Support which users put their forehead on
2 Facial Sensor	Sensor recognizes the user's face, and when it is detected, the test starts automatically
3 Eyepieces	Window to see the indication with optical distance
4 Joystick	Joystick which can be moved to guidance (black background) of the indications (pictures, numbers, Korean Alphabet, Landolt rings and etc.)
5 Skip Buttons	Button to press when the indications (pictures, numbers, Korean Alphabet, Landolt rings and etc.) are not clear
6 Print Tray Cover	Cover for printing paper
7 Print Tray Button	When the button is pressed, the paper tray cover opens and the paper can be replaced.
8 Print Button	Print the result data from the print tray.
9 Reset Button	Make the last exam-data disappeared on the device.



Name	Function
10 Volume	Knob which can control the voice guidance volume
11 Power ON/OFF Switch	Switch to turn the device on/off
12 External Connection	A connection device that sends the exam-data to the outside
13 USB Port	A device that can store program update or vision value record, dispatched with a metal plate and the peripheral part is closed
14 Power Supplier	A device to connect with power cable
15 Option 1 Button	Button for selecting the exam program
16 Option 2 Button	Button for selecting the option of examination
17 Paper Feed Button	Button to push out a print paper

4.2. Instruction of Backside Option Settings



Name	Function
VOLUME	Control the voice guidance volume
OPTION ①	Selecting the exam program
SINGLE	A single eye exam mode
BOTH	A single eye + both eye exam mode
QUICK	Fast single eye exam mode
OTHERS	The other exam mode (=OEM exam mode)
OPTION ②	Selecting several option settings
PLAY	Operation exam mode
TIME	Time setting
SELECT	Settings for paper saving mode, controlling communication speed, and low vision alert.
TYPE	Select one of vision units from A-Type (Decimal), B-Type (Feet), and C-Type (Meter).
PAPER FEED	To push out the print paper.

5. INSTALLATION

1. Please install the device on the table without wheels.
2. Connect the power cord to the power supplier.
3. Refer to the "How to Put Print Paper" to put a print paper appropriately.

6. PREPARATION

6.1. Standard Setting

Turn on the device by lifting "I" of power switch, and set as below order.

1. Check the date and time and reset if it does not match to the current time.
2. Set your vision unit type.
3. Set your low vision alert value.

6.2. Settings before Test

1. OPTION ① Setting
Set the exam mode to one of three. [OPTION①: SINGLE / BOTH / QUICK]
2. OPTION ② Setting
When OPTION① is done, put the OPTION② on PLAY.
3. Distance Setting
Choose the distance lever on the right side of the device. Mostly it is set as 5m distance for an exam.

※ When the eyesight is examined with the following two visual acuity distances in the unclear state without wearing glasses and the visual acuity test value is higher than the visual acuity test distance at the below visual acuity test distance, you can be suspicious information after "→" mark.

▶ 5m distance → A long-distance "presbyopia" suspicion

7. VISION TEST

Please refer to below information before the examination.

1. During the test, users should open both of eyes naturally. It is same when users have a single eye examination too. Do not cheat to see Indications well. If you cheat, the result may not be accurate.
2. Do not take your forehead off before the voice guidance tell you "Time is over".
If so, the result could not be accurate.
3. When users cannot distinguish the indication, press one of the skip buttons on each side of joystick.
4. If test result from VAA-2000PSE is not good, consult an ophthalmologist.

Examination conducted by voice guidance

The exam begins when the examiner's forehead is close to the forehead support. All instructions are carried out by voice guide, it will guide the exam until the exam is finished. The voice guide will give you the proper voice when you use the device. The volume level of the voice guide can be controlled with the voice volume control knob on the back of the unit.

7.1. Test Methods

Put the power switch on the back of the device in "I" direction to turn on the device and start the exam.

1. Put your face nearby the forehead support.
2. Watching the screen through the eyepieces, move the joystick to the indication same as on the middle of the background. If you cannot distinguish an indication, please press one of the skip buttons.

**If users go farther away from the device, the voice guidance sounds "Put your head closer".
If the forehead is not in contact with the forehead support within 6 seconds, the instrument is considered to have been done.**

3. When another screen is displayed, move the joystick to the indication as same as above direction.
4. When the exam is finished, you will hear the voice guidance telling "Time is over" to you. The display shows the result of the visual acuity check. When you press the print button, the test result is printed out on the thermal paper.

When the test is finished, the result value is displayed on the display device located at the top, and when the print button is pressed, the result value is printed out. Since the print paper with thermal paper on which the test results are printed is weak to heat, the quality of the printed data will deteriorate over time. Take a photo of result if you want to save for a long time.

If the test result is lower than the set value, the following message will be printed out.

"Note: The Low Vision is expected!"

If you see any of the above phrases, please consult your ophthalmologist or optician.

Option) If this unit is connected to another unit, the test results are automatically transferred to the other unit that is connected.



[Example of exam result paper]

8. VISION TEST PROGRAMS

There are 3 kinds of Vision Test Programs, SINGLE, BOTH, and QUICK.

Program	Exam Mode	Sequence	Vision results by visual unit type step and range
A single eye exam	SINGLE	Right and left eyes	A: 0.1/0.2/0.3/0.4/0.5/0.6/0.7/0.8/0.9/1.0/1.2/1.5/2.0 B: 200/100/66.7/50/40/33.3/28.6/25/22.2/20/16.7/13.3/10 C: 60/30/20/15/12/10/8.6/7.5/6.7/6/5/4/3
A single eye + both eyes exam	BOTH	Right eye, left eye, and at the same time, visual acuity of both eyes is measured	A: 0.1/0.2/0.3/0.4/0.5/0.6/0.7/0.8/0.9/1.0/1.2/1.5/2.0 B: 200/100/66.7/50/40/33.3/28.6/25/22.2/20/16.7/13.3/10 C: 60/30/20/15/12/10/8.6/7.5/6.7/6/5/4/3
Fast single eye exam	QUICK	Rapidly right and left eyes	A: 0.1/0.2/0.3/0.4/0.5/0.6/0.7/0.8/0.9/1.0/1.2/1.5/2.0 B: 200/100/66.7/50/40/33.3/28.6/25/22.2/20/16.7/13.3/10 C: 60/30/20/15/12/10/8.6/7.5/6.7/6/5/4/3

9. VOICE GUIDANCE & AUDITORY SIGNAL

Voice Guidance Lines

- √ "Let's start."
- √ "Push the joystick toward it." / "Push the joystick toward the opened circle."
- √ "If you make a mistake, try again." / "Try again."
- √ "Press button if you don't know."
- √ "How about this?"
- √ "Find the same picture as the middle picture."
- √ "Put your head closer."
- √ "Time is over."
- √ "Check the test paper."

Announcement Cases

- √ 40 seconds after turned on → Voice guidance let users know that it is ready for exam.
- √ If users take forehead off from the sensor during the exam → Voice guidance tell users to continue the exam.

10. SETTINGS

OPTION 1: Vision test mode setting

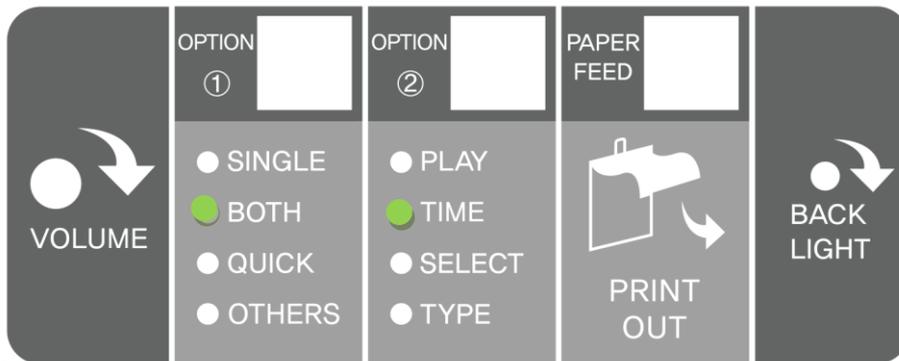
- SINGLE A Single Eye Mode
- BOTH A Single Eye + Both Eyes mode
- QUICK Fast Single Eye Mode
- OTHERS OEM Mode

OPTION 2: Function setting

- PLAY Operation Mode
- TIME Time Setting
- SELECT Selection Setting
- TYPE Unit Setting

10.1. Vision Test Mode - Default

Default Mode: Single Mode

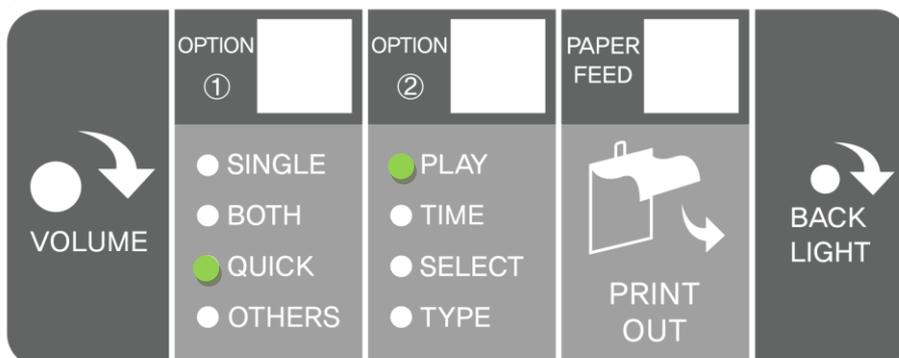


[OPTION 1]: Single Eye + Both Eyes Exam

[OPTION 2]: Operation (PLAY)

10.2. Vision Test Mode Setting

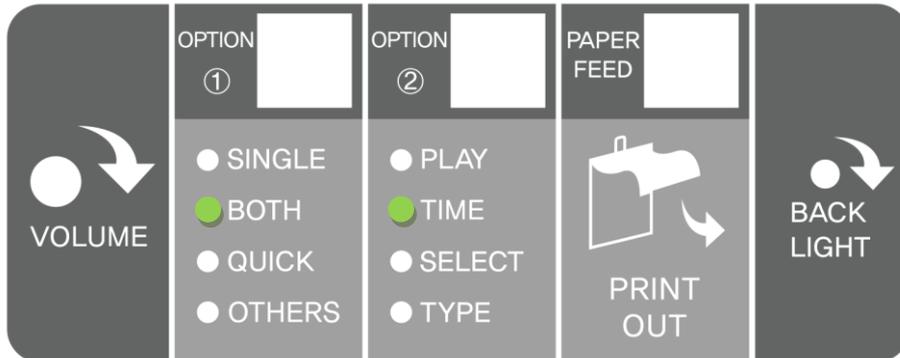
[PAPER FEED] + [OPTION 1]



While pressing the [PAPER FEED], Press the [OPTION 1] button to select the test mode.

10.3. Time Setting

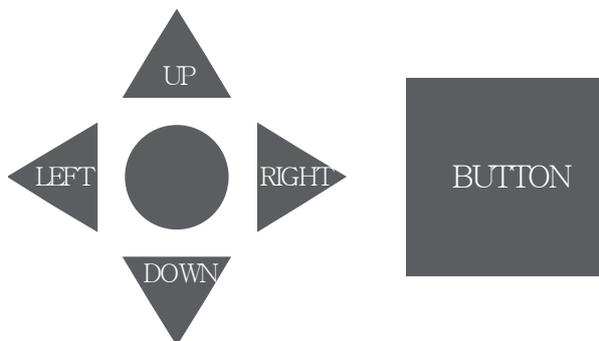
[PAPER FEED] + [OPTION 2]



While pressing the [PAPER FEED] button, Press the [OPTION 2] button to [TIME] and current time is printed out from thermal printer.

Current Time : 2018 6/22 14:12

Setting for Time Detail



Users can set the time by using joystick and skip buttons.

<Year> - Month – Day – Hour – Minute

UP : Increase

DOWN : Decrease

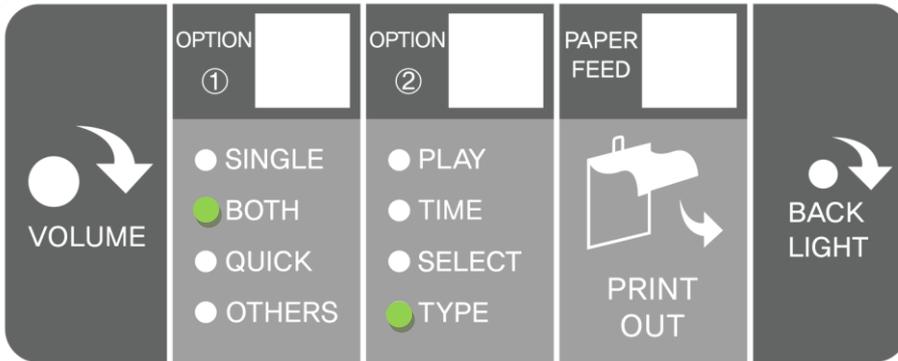
RIGHT : Next section

LEFT : Previous section

BUTTON : Save

10.4. Vision Type Setting

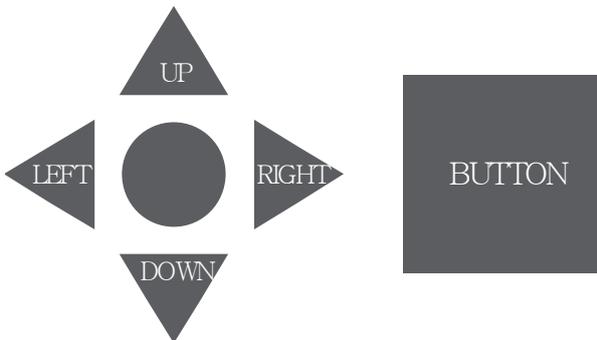
[PAPER FEED] + [OPTION 2]



While pressing the [PAPER FEED] button, press the [OPTION 2] button to [TYPE] to set vision unit type. Then current visual unit type is printed out from the thermal printer.

Current Unit : TYPE A

Setting for Unit Detail



Users can set the unit type by using joystick and skip buttons.

UP : A type (Decimal)

DOWN : B type (Feet)

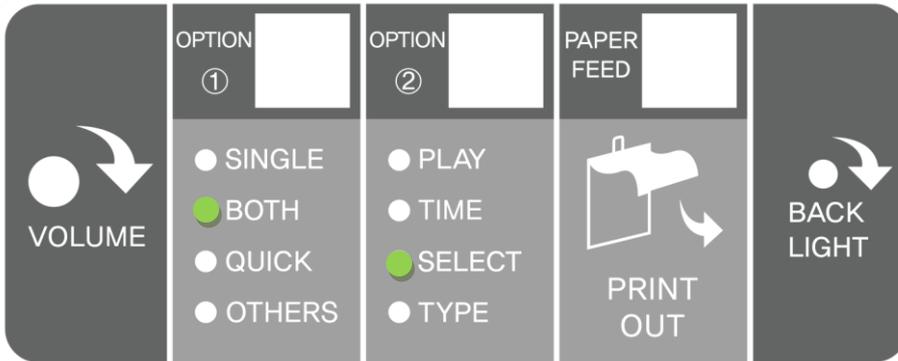
RIGHT : C type (Meter)

LEFT : Current type

BUTTON : Save

11.5. Select for Settings

[PAPER FEED] + [OPTION 2]



```

=====
The Configuration for ETC
=====
[OptAcuity: 0.0]
[Name: print]
[Title: print]
[Alarm: 0.5]
[Date: print]
[Language: KOREAN]
[Printer: on]
[Style: basic]

[UP ] == Increment ++
[Down ] == Decrement --
[Right] == Next item
[Left ] == Previous item
***Save-> [Button]

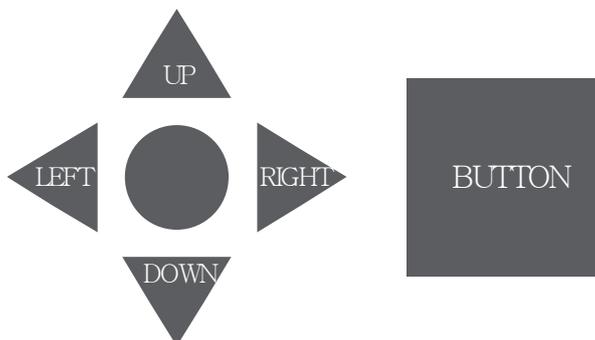
-optAcuity-name-title-alarm-date
-language-printer<style>
    
```

While pressing the [PAPER FEED] button, press the [OPTION 2] button to [SELECT] to set . Then current option setting is printed out from the thermal printer.

Setting for Option Detail

If the current setting value is changed after SELECT, the first selection part will be set to opt Acuity, and if you move to the next item (operation with joystick RIGHT), Name: print will be output and until the desired setting part (operation with joystick LEFT, RIGHT) you can move the items. (When you move to RIGHT or LEFT, the corresponding part of the setting part will be output) After you move to the desired part, you can change the current option. (operation with joystick UP and DOWN) When you have finished making changes, press the red button to save.

- UP : Increase
- DOWN : Decrease
- RIGHT : Next
- LEFT : Previous
- BUTTON : Save



Details of Selection parts

Information (VAA-2000PSE)	
[OptAcuity : 0.0]	Correct visual acuity results (Ability to increase or decrease test results) Selectable from [-0.3 to +0.3]
[Name : print]	Whether the name is displayed on the printout -Print : displaying -off: not displaying
[Title : print]	Whether the title is displayed on the printout -Print : displaying -off: not displaying
[Alarm: 0.5]	For which you can select the caution and visual acuity value Selectable from [off / 0.5 / 0.6 / 0.7 / 0.8 / 0.9] Below the selected visual acuity value, the following text is printed. (Note : The Low Vision is expected!)
[Date: Print]	Whether the date is displayed on the printout -Print: displaying -off: not displaying
[Language: KOREAN]	Options to change the language - Selectable from [KOREAN / ENGLISH]
[Printer: on]	Whether the printer is used or not -on: Automatic output -off: not using the printer
[Style : basic]	Selecting the styles on the printout -basic: Standard style -simple: Only vision acuity value -over 0.8: If it is 0.8 or more, "0.8 or more (normal)" is displayed. -over 0.9: If it is 0.9 or more, "0.9 or more (normal)" is displayed. -over 1.0: If it is 1.0 or more, "1.0 or more (normal)" is displayed. -over 1.2: If it is 1.2 or more, "1.2 or more (normal)" is displayed.

10.6. How to use and set SEGMENT

How to set Segment Time



Reset Button (Hour Setting)

When you press the "Reset" button for more than 3 seconds, it increases by time unit 1.

Setting Time Button (Minute setting)

When you press the "Setting Time" button for more than 3 seconds, it increases by minute unit 1.

How to use Segment

Reset Button

If you want restart during the test, press "Reset" button.

When you press "Reset" button after the test, "Left" and "Right" eyesight value will be initialized.

Setting Time Button

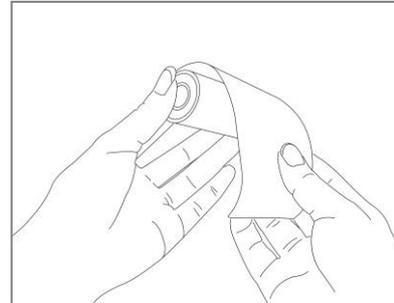
Can be changing time. When you press "Setting Time button"

11. HOW TO PUT PRINT PAPER

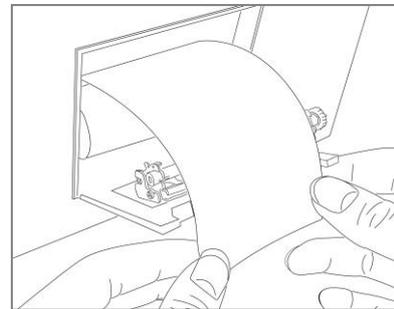
If a red line appears on the print paper, please replace the print paper with a new one as soon as possible.

1. Hold the top of the paper roll as shown in the illustration.

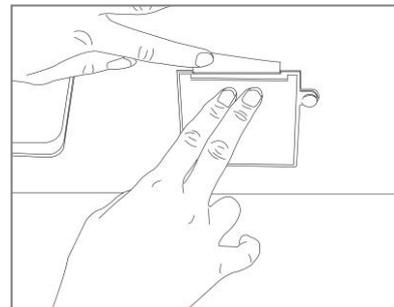
Caution: If you reverse the paper, the contents will not print on the paper.



2. Put the paper in the paper tray and align the paper in the middle of the rollers.



3. Close the cover at the top center with a small amount of print paper.



12. MAINTANACE & REPAIR

12.1. Cleaning the Product

1. Cover

- (1) Turn the device off and disconnect the power cable from the DC output terminal.
- (2) Wipe with soft and dried cloth.
- (3) Please cover the device with a dust cover after using it.

2. Eyepieces

Use BLOWER to remove dusts on the device. Blow away any dust or dirt on the glass surface when the lens is stained with fingerprints or oil stains. And then wipe the surface lightly by mixing alcohol and ether solution at a ratio of 2: 8 and dampening it with clean gauze or lens cleaning paper.

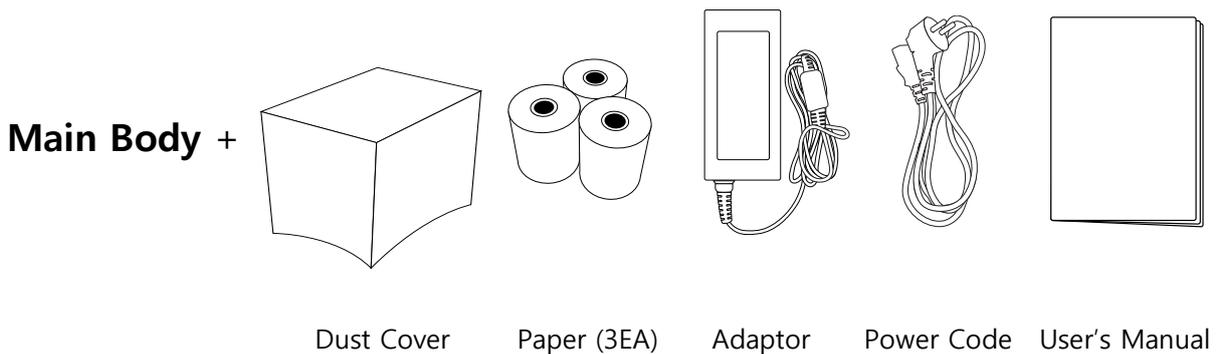
12.2. Service Information

For more detailed inspection services, please contact View-M Technology CO., Ltd.

13. ETC.

Suddenly applying heat in a cold place can cause compression in the lens. In this case, leave the tester for at least about 40 minutes after heating it. Wait until the compression disappears before starting the test.

14. COMPONENTS LIST



15. SPECIFICATIONS

Product	Self Vision Tester
Distance	5m
Opto-type	Picture, Number, Alphabet, Landolt ring (Option)
Power Source	DC +12V $\overline{\text{---}}$ 3A (Power Adaptor)
Dimension / Weight	270(W) x 355.93(D) x 468(H)mm / 7.6kg
Indication Method	1) Vision Test Result on LED Display (left Eye, right Eye and both Eyes) 2) Current Time on LED Display 3) Vision Test Result on Printing Paper (left Eye, right Eye and both Eyes)
Choice Control Device	1) Joystick Lever (for Vision Test) 2) Left/Right Choice Abandonment Buttons (for Vision Test)
Buttons	1) Result Setting Time Button for Vision Test (White) 2) Result Reset Button for Vision Test (Yellow) 3) Left/Right Choice Abandonment Buttons for Vision Test (Red)
A Type Unit Grade	0.1/0.2/0.3/0.4/0.5/0.6/0.7/0.8/0.9/1.0/1.2/1.5/2.0
B Type Unit Grade	200/100/66.7/50/40/33.3/28.6/25/22.2/20/16.7/13.3/10
C Type Unit Grade	60/30/20/15/12/10/8.6/7.5/6.7/6/5/4/3
Control Device	Joystick and Skip Buttons
Output	LED 7-Segment Display
	Thermal Printer
	RS-232C
Backside Panel	Power ON/OFF Switch: Buzzer, Voice Guidance OPT1: Single, Both, Quick, and etc. OPT2: Play, Time, Select, Type Serial Port, Plug-In
Operating System	WinCE

About Warranty of VAA-2000PSE

The warranty period of the product is one year after shipment from manufacturer

But accident or abnormal occurrence due to any of the following reasons will not be covered by the warranty.

- **In case of malfunction by users' negligence**
- **In case of malfunction by using different way without specified usage in the manual.**
- **In case of malfunction by natural disasters**
- **In case of malfunction by private remodelling**
- **In case of malfunction by connection with other equipment or PC not approved**

Also, the free warranty range is limited to repairing the product itself.

Damages caused by equipment failure, loss of opportunity on users, connection with not approved equipment or PC, are excepted from warranty.



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