User Manual

LCD VISUAL CHART YPB-2100

Version: 1.2

Date: 20171222

Preface

Thank you for purchasing and using our LCD visual chart.

Please read this User Manual carefully before using this device. We sincerely hope that this User Manual will provide you with sufficient information to use the device.

Our pursuit is to provide people with high-quality, complete-function and more personalized devices. Information in promotional materials and packing boxes is subject to changes due to performance improvement without additional notice. Chongqing Yeasn Science & Technology Co., Ltd. reserves the rights to update the devices and materials.

If you have any questions during using, please contact at our service hotline: (86-023) 62797666, we will be very happy to help you.

Your satisfaction, our impetus!

Information of manufacturer

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1. Basic information

Produce name: LCD visual chart.

Model:YPB-2100

Software version number：V1.00

Intended Product Application: applied to exam patient's visual sensitiveness, refractive properties and binocular visual function**.**

Contraindications：No found any contraindications.

If cleaning and maintenance needed, please power off the product and unplug from the socket.Detailed cleaning and maintenance method, please refer to7. Cleaning and Protection8.Maintenance.

1.1 Performance Parameters

1.1.1 LCD displayer: 21.5 inches (1920 x 1080 pixels)

1.1.2 Optometry distance: 1.5~7.3m optional, step 0.1m

5-24ft optional, step 0.5ft

1.1.3 Optotypes

1）Visual Chart

Used for vision test, including 6 types Charts such as "E", "C", Letter, Number, Kids and ETDR.

2）Functional Chart (applies to YPB-2100)

Used for visual function test, including 14 functional Charts.

1.1.4 Testing range of vision

The testing ranges of all types of visual Charts are (in decimal): 0.05~2.0 for "E", "C", Letter and Number, 0.05~1.0 for Kids and 0.3~2.0 for ETDRS.

The testing ranges of all types of visual Charts are (in Metric/6m): 150~3 for "E", "C", Letter and Number, 150~7.5 for Kids and 20~3 for ETDRS.

The testing ranges of all types of visual Charts are (in Imperial/20ft): 500~10 for "E", "C", Letter and Number, 500~25 for Kids and 63~10 for ETDRS.

Remarks: When the optometry distance is less than 2 meters, Visual Chart 2.0(unit:decimal), 3(Metric/6cm) and 10 (Imperial/20ft) are only for evaluation reference.

1.1.5 Visual Charts display modes: all, single, row and column.

1.1.6 Automatic screensaver: 3 mins, 5 mins and 10 mins are optional.

1.2 Power Supply Parameters

1) Input voltage AC 100V~240V(±10%)

2) Input frequency 50/60 Hz

3) Input power 70 VA

1.3 Weight and Size

1) Wall-mounted

Weight	Host: about 4kg
	Remote controller: about 80g
Size	Host: 519mm (L) × 70mm (W) × 327.7mm (H)
	Remote controller: 186mm (L) × 55mm (W) × 17.2mm (H)

2) Desktop

Weight	Host: about 3.55kg
	Remote controller: about 80g
Size	Host: 519mm (L) × 167.5mm (W) × 391.7mm (H)
	Remote controller: 186mm (L) × 55mm (W) × 17.2mm (H)

**** The design and specifications are subject to changes due to technical updates without additional notice.***

2.Safety Precautions

Please read the following precautions carefully to avoid personal injury, device damages or other possible hazards:

●Use the device indoors and keep it clean and dry; do not use it under inflammable, explosive, high temperature and dusty environment;

●Do not use the device near water; also be careful not to make any kinds of liquid drop onto the device. Do not place the device in damp or dusty places, nor place it where humidity and temperature change quickly;

●When mounting the device on the wall, make sure the wall is able to withstand the weight of 5 kg;

●When mounting the device on the wall, reserve a gap over 50mm all around the device;

●The device is hung on the rack. Be careful when touching the device on the wall: Upward

displacement may cause the device unhooked and fall, resulting in personal injury or device failure;

●Dedicated power adaptor configured for the device should be used:

model : UE36LCP1－140257SPA, Input 100-240V～0.9A 50-60Hz, Output14V 2.57A;

● Make sure the input voltage is consistent with rated input voltage and the electric wire is correctly connected and well grounded;

●Do not use multiperture socket or extend the power cord to insert the plug of the device into power socket;

●Unplug power cord and cut off power supply line especially under emergency circumstances; hold the power plug to pull out it from the socket rather than pulling the power cord;

●Do not touch the power cord with wet hands. Check the power cord and do not allow the power cord to be stamped, pressed by heavy objects or knotted;

●Power cord damage may cause fire or electric shock. Please check it regularly;

●Cut off power before cleaning or disinfecting the device;

●Do not dismantle or touch the interior parts of the device, otherwise it may cause electric shock or device failure;

●The device has passed electromagnetic compatibility test. Follow below instructions related to EMC (electromagnetic compatibility) when mounting and using the device:

- Do not use the device with other electric devices to avoid electromagnetic disturbance to the device;
- Do not use the device nearby other electric devices to avoid electromagnetic disturbance to the device;
- Do not use a power adaptor that is not configured with the device, otherwise it may increase the electromagnetic emission amount, which may reduce the capacity of resisting disturbance.

⚠ Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.

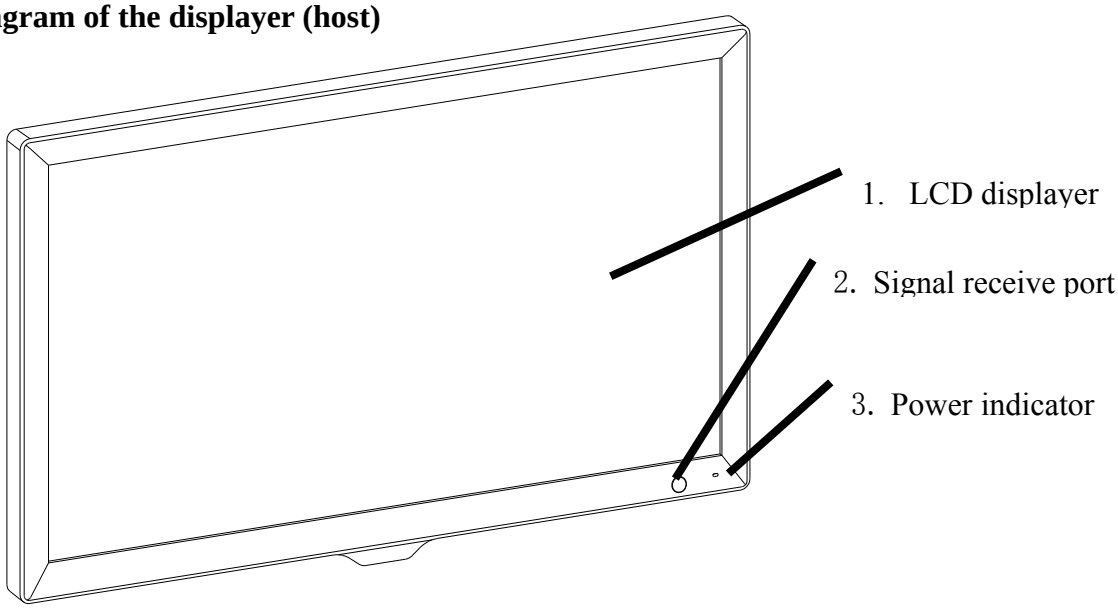
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

3.Main Structure

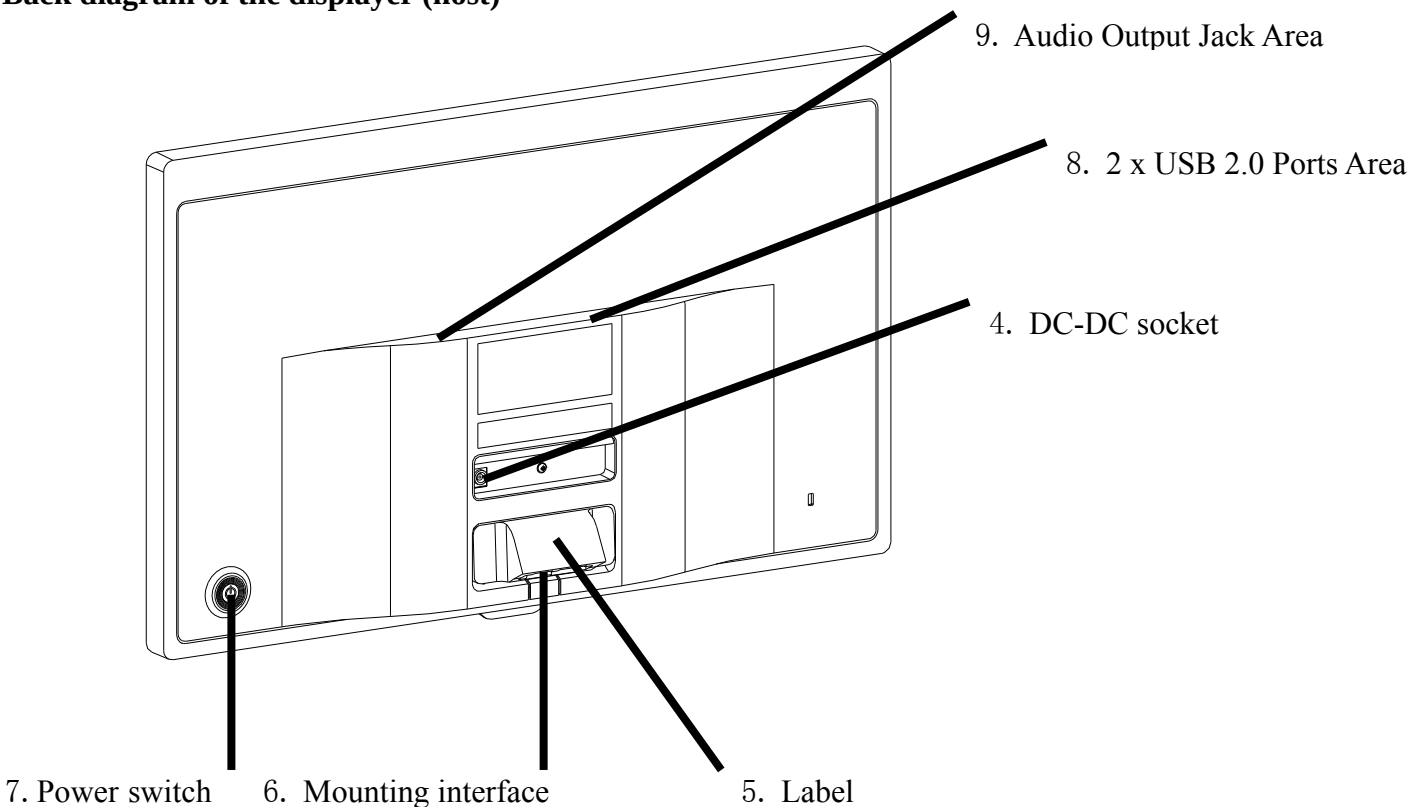
3.1 Host

3.1.1 Wall-mounted device (Hung on the wall)

Front diagram of the displayer (host)



Back diagram of the displayer (host)



1. LCD displayer

Displays Charts and vision record.

2. Signal receive port

Receives signals from the remote controller.

3. Power indicator

Power indicator is lit on when the device is connected to power and enters standby mode.

4. DC-DC socket

Power adaptor socket.

5. Label

Product label.

6. Mounting interface

Mounting interface of the device.

7. Power switch

Power switch of the LCDLCD visual chart.

8. 2 x USB 2.0 Ports

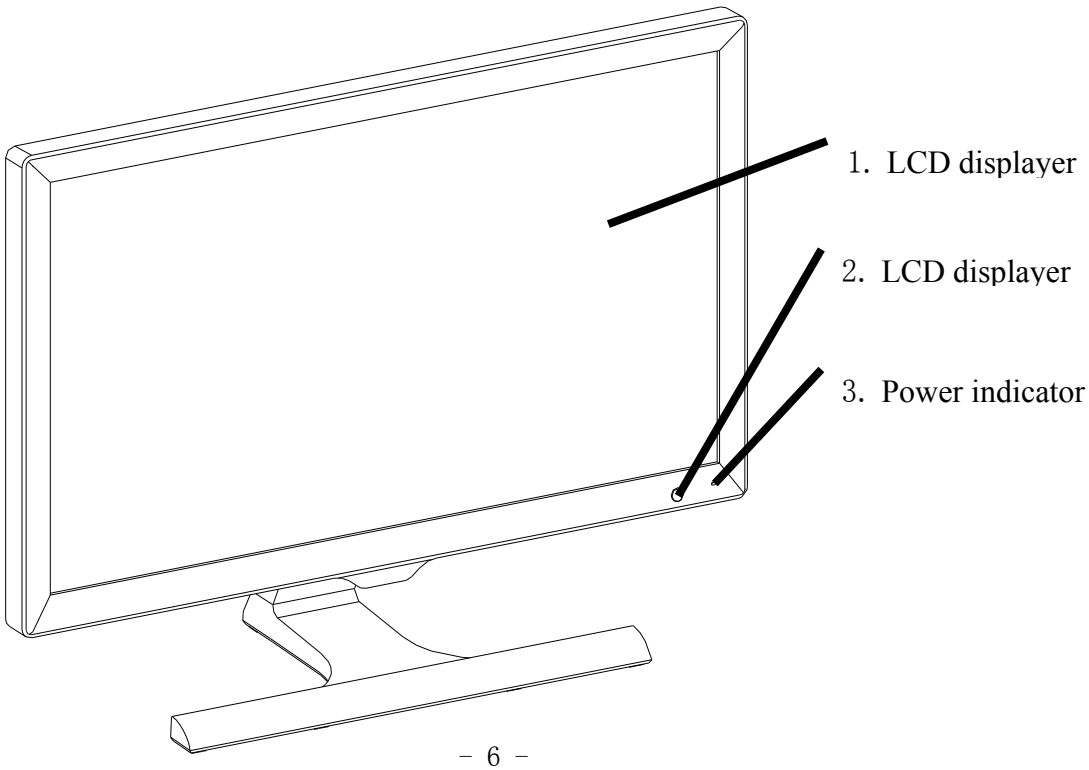
Can carry out program upgrading, video and image play through USB flash disk.

9. Audio Output Jack

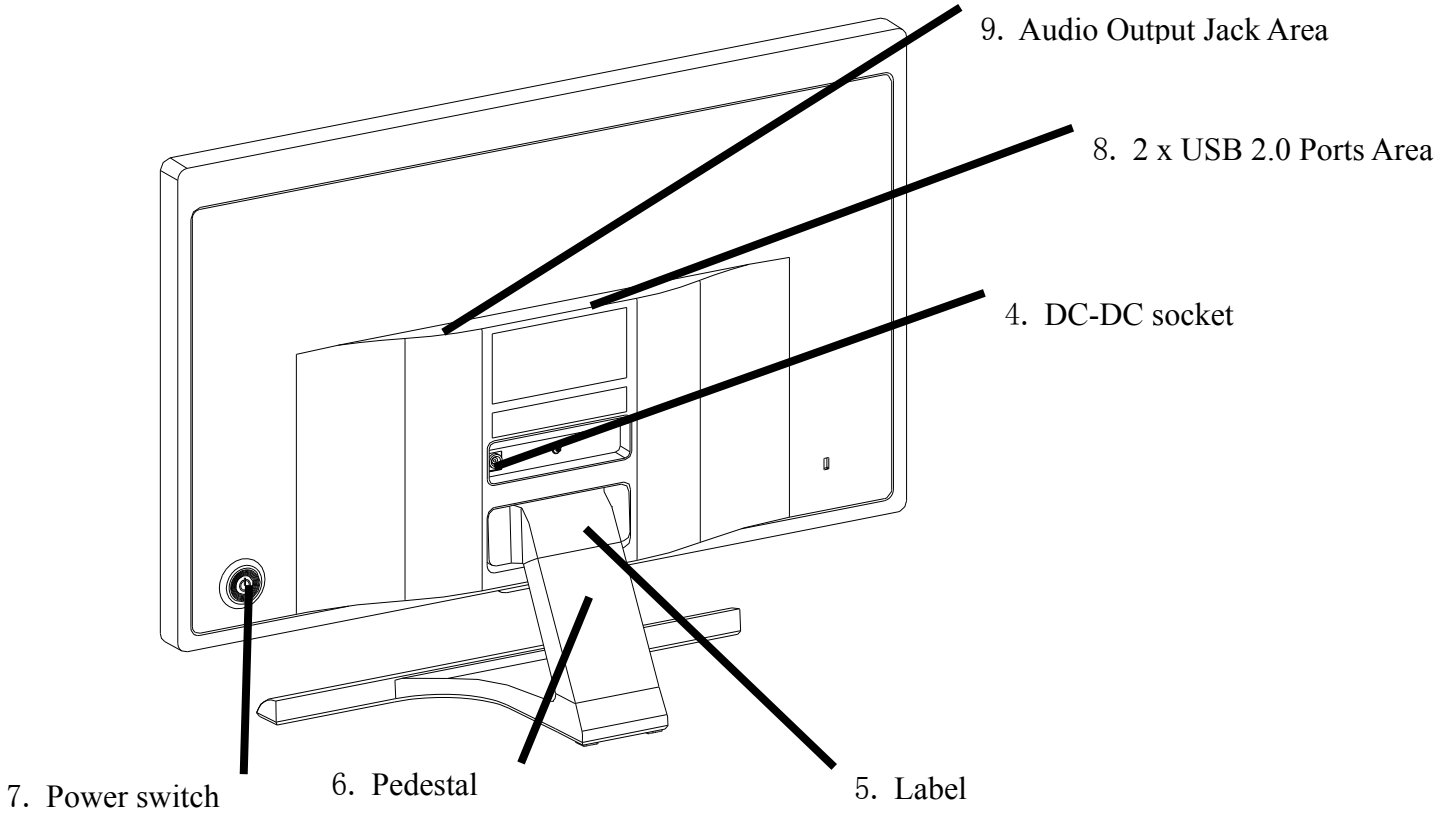
Connect to speaker.

3.1.2 Desktop Device (Used on the worktable)

Front diagram of the displayer (host)



Back diagram of the displayer (host)



1. LCD displayer

Displays Charts and vision record.

2. Signal receive port

Receives signals from the remote controller.

3. Power indicator

Power indicator is lit on when the device is connected to power and enters standby mode.

4. DC-DC socket

Power adaptor socket.

5. Label

6. Pedestal

Pedestal of the device.

7. Power switch

Power switch of the LCD visual chart.

8. 2 x USB 2.0 Ports

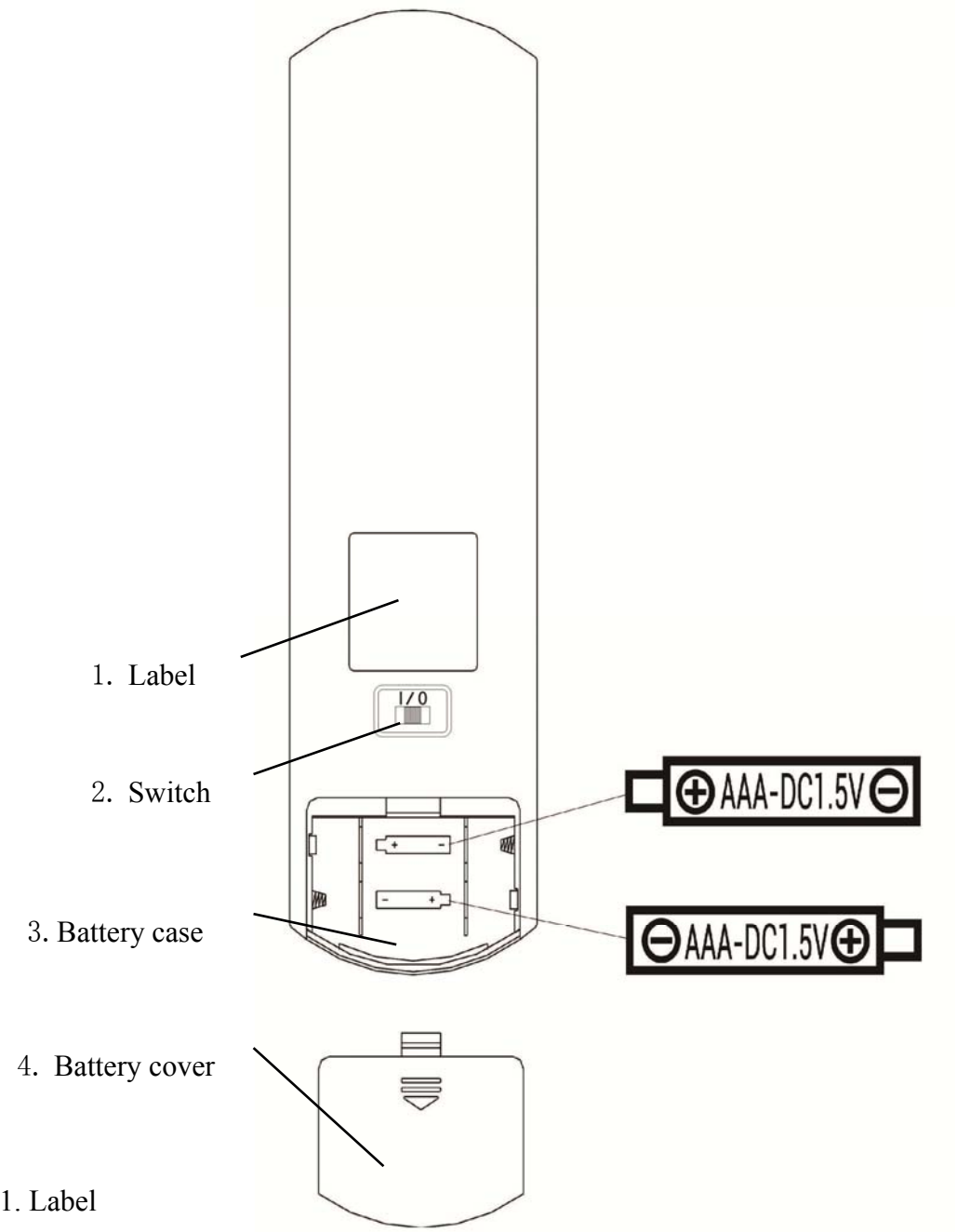
Can carry out program upgrading, video and image play through USB flash disk.

9. Audio Output Jack

Connect to speaker.

3.2 Remote Controller

Back diagram of the remote controller



1. Label

Remote controller label.

2. Switch

Remote controller switch.

3. Battery case

Install two AAA grade alkaline batteries

4. Battery cover

4 Installation

4.1 Part List

1) Displayer (host) 1 Set
2) Hex screw with round head 1 Pc
3) Rack 1 Pc
4) Cross-recessed wood screw with countersunk head 4 Pc
5) Wall bearing 1 Pc
6) Plastic expansion pipe 4 Pc
7) Remote controller 1Pc
8) Red-and-green glasses 1 Pair
9) Hex wrench (2.5mm) 1Pc
10) Power adaptor 1Pc
11) Pedestal 1Pc
12) Connecting screw 1Pc
13) Supporting base 1Pc

4.2 Installation Instructions

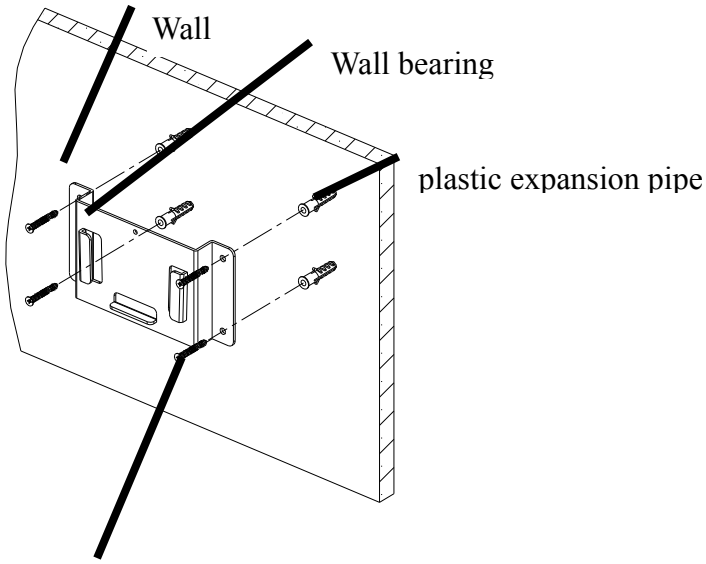
4.2.1 Installation Instructions for Wall-mounted Device

When installing the device on the rack, make sure to hang the device on the wall that is able to withstand a weight of 5kg. Reinforce the wall if necessary.

4.2.1.1 Installation of wall bearing

Drill appropriate installation holes in the wall body and insert the plastic expansion pipe. hen, penetrate 4 cross-recessedwood screws with countersunk head through the installation holes, screw into the plastic expansion pipes and install the bearing onto the wall.

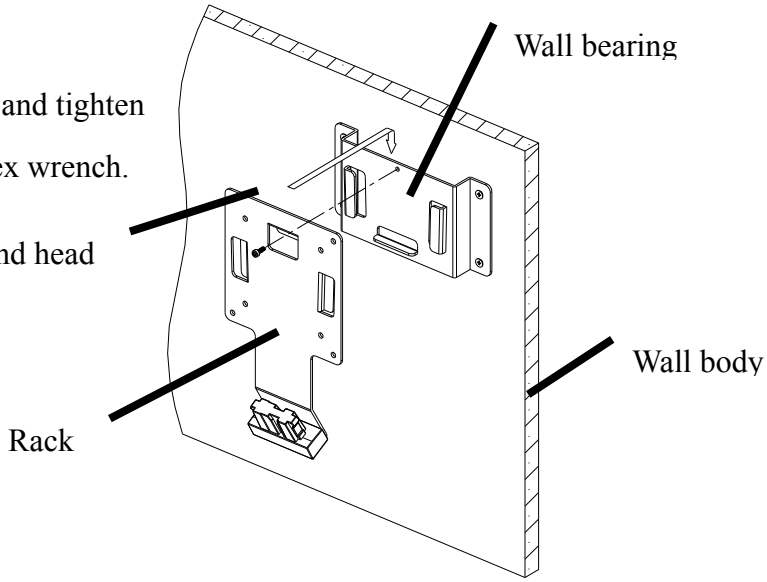
Keep the rack level during installation.



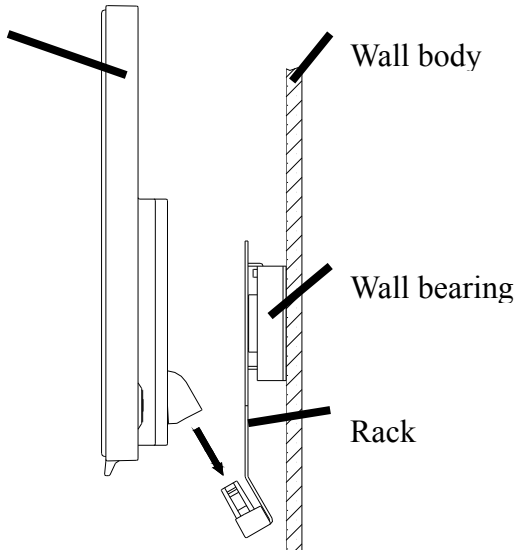
Cross-recessed wood screws with countersunk head

4.2.1.2 Installation of rack

Mount the rack into the wall bearing and tighten the hex screw with round head the hex wrench.



4.2.1.3 Installation of the device



Hang the device on the hook of the rack as showed in the figure.

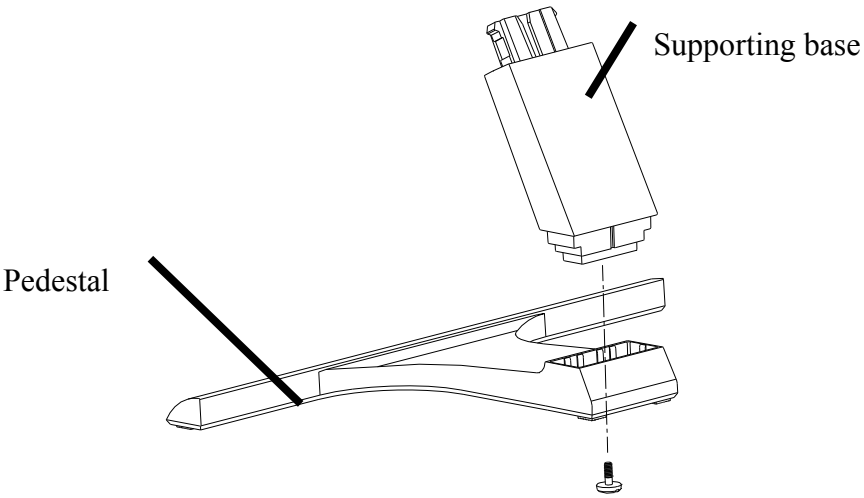
On the hearing of buckle clatter, it indicates that the installation is finished.

Reserve at least 50mm gap all around the device to ventilate the device.

4.2.2 Installation Instructions for Desktop Device

4.2.2.1 Installation of Pedestal

Install the supporting base into the Pedestal, and then penetrate theconnecting screws into the Pedestal and screw into the supporting base and tighten it.

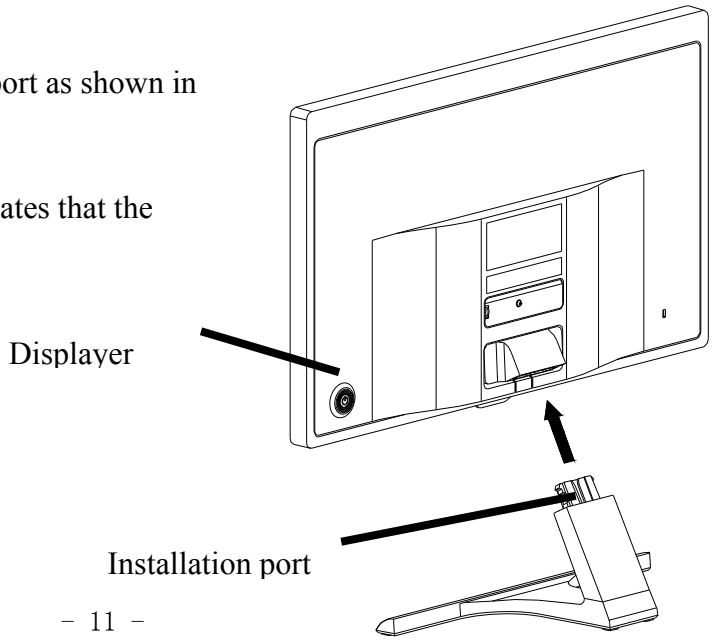


4.2.2.2 Installation of displayer

Place a cushion or a soft cloth on a tidy desk and then put the displayer on the cushion or cloth facing down.

Insert the Pedestal into the installation port as shown in the figure.

On the hearing of buckle clatter, it indicates that the installation is finished.



4.2.3 LCD Dip Angle Adjustment

After Installation, hold the top edge of the LCD screen, Turn forward or back to adjust the dip angle of LCD screen.

5. Directions for Use

5.1 Device Startup and Shutdown

5.1.1 Device startup

5.1.1.1 Turn on the displayer.

Press the power switch to turn on the displayer.

5.1.1.2 Main module: When choosing module，press OK key to enter。

VISION TEST: Visual Test。

VIDEO PLAYER: Can carry out program upgrading, video and image play through USB flash disk.

Press ◀ key to fold USB flash disk folders, press ▶ key to unfold, press OK key to play.

⚠ **It is recommended to unplug the adapter firstly, then plug the USB flash disk, otherwise there is the risk of file damage.**

After selecting the video file, press the OK button to start playing. Fast forward and backward through the left and right selection keys ◀ ▶ (each change time is 30 seconds);

Adjust the volume through the up and down selection keys ▲ ▼ ; press the OK button to pause during the video playing process. Press other keys to exit video playing.

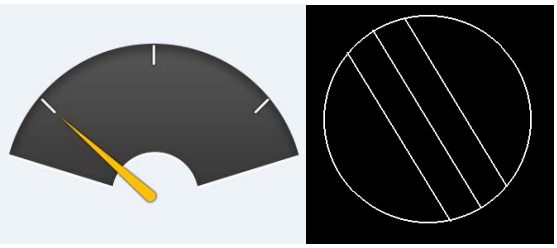
EYES $ VISON：Functional Test, including Contrast sensitivity Function, Structure of Eye and Vision

CSF Test:

①Select the contrast sensitivity functional (CSF) and press the OK button to enter the test interface.

②Start the measurement by pressing the OK button.

③The direction of the measured image can be controlled by the direction key of the remote controller. The picture pointer will follow the change. If you can confirm the direction of the picture, press the OK button to select, and if you can't, press the OK button to skip the determination of the picture directly.



④The test results will be displayed after all the pictures have been determined.

SETTINGS：Setting Parameters.

5.1.1.3 Chart display

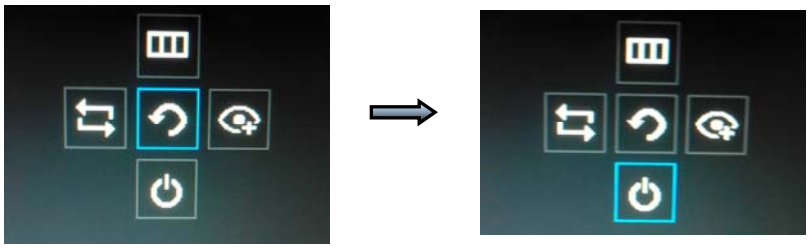
Aim the signal emitter of the remote controller at the signal receive port of the displayer and then press the chart key on the controller to select the chart you need.

5.1.2 Recover from screensaver status

The displayer is automatically turned off and enters screensaver status when the device stops working for 3 minutes (you can also set it to 5 minutes, 10 minutes). Press any key on the controller to light up the displayer and enter working state.

5.1.3 Device shutdown

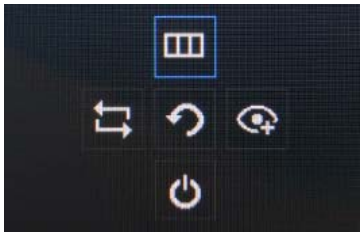
Press the power switch, select Shutdown icon and then press again to turn off the displayer.



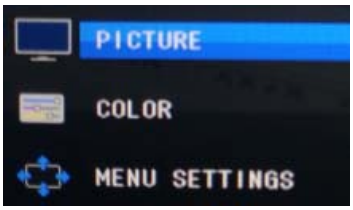
5.1.4 Brightness Adjustment

The brightness of the test zone of this equipment is （80～320）cd/m2.

The way to adjust brightness is as follows: Press the Power button and move the Power button up to choose Menu icon and then press the power button again to enter Menu interface.

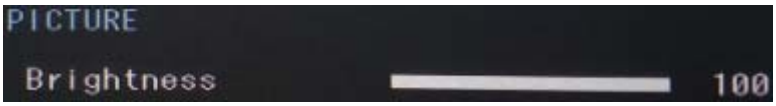


Choose “Image”by press Up and Down button.



Press Right button to choose Brightness option and press Power button and enter Brightness Adjustment interface.

Press Right button to increase brightness and press Left button to decrease brightness.

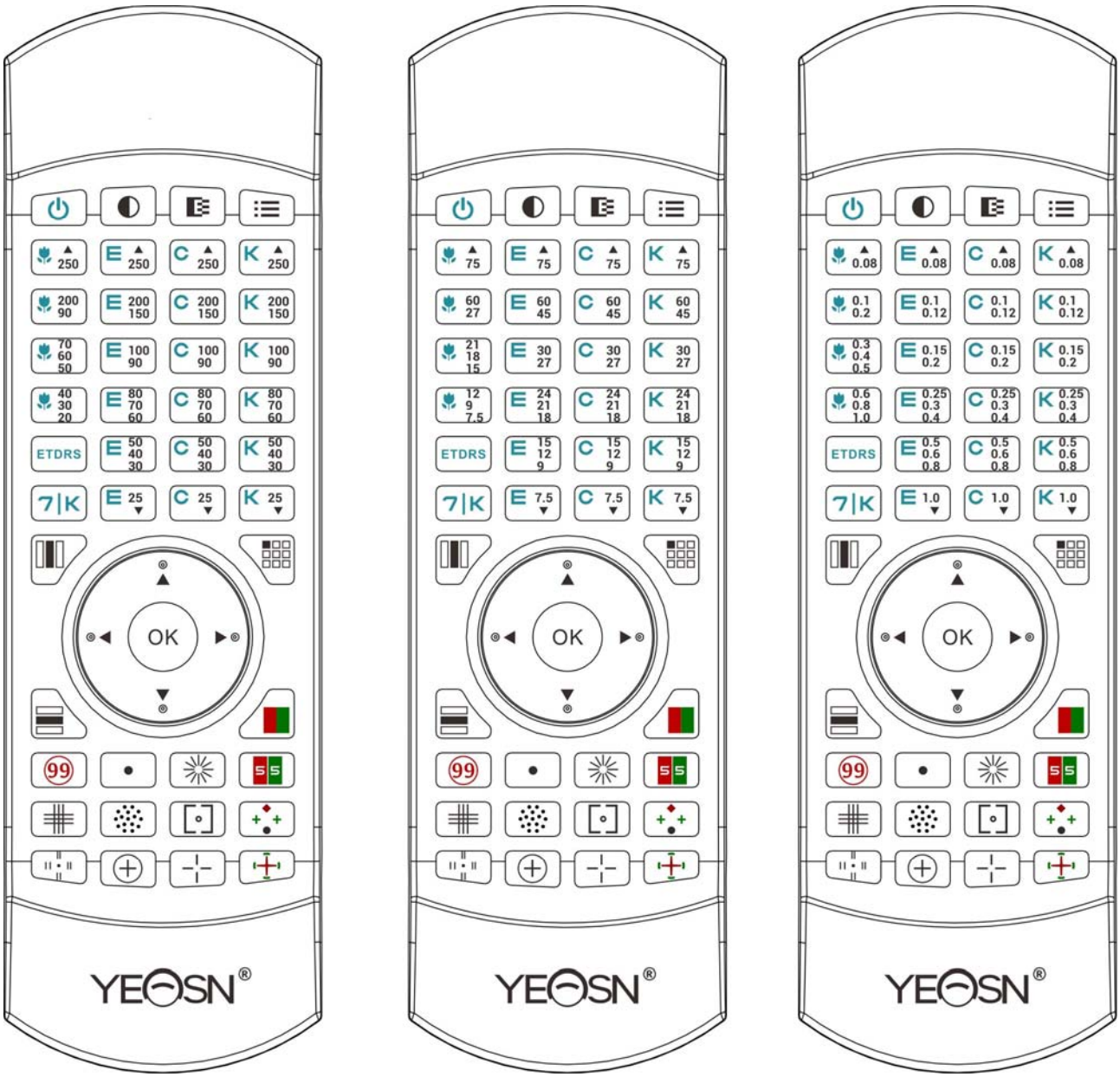


Except brightness, all other parameters have been well set up, please do not make any change. Otherwise, it may have an impact on the normal use of the LCD visual chart.

5.2 How to use the Remote Controller

5.2.1 Remote controller

There are three remotes available for option: Decimal standard, Inch standard and Metric Standard



Below examples are based on Decimal standard remote

Setup Methods of Multi-Channel for Remote Controller

Before entering multi-channel setup, to make sure only one LCD visual chart within operation region and be in working. Otherwise, will possibly cause operation mistake to other LCD visual chart

First, to press one time, and then press one time. Repeat 3 times and then automatically enter the setup mode of channel

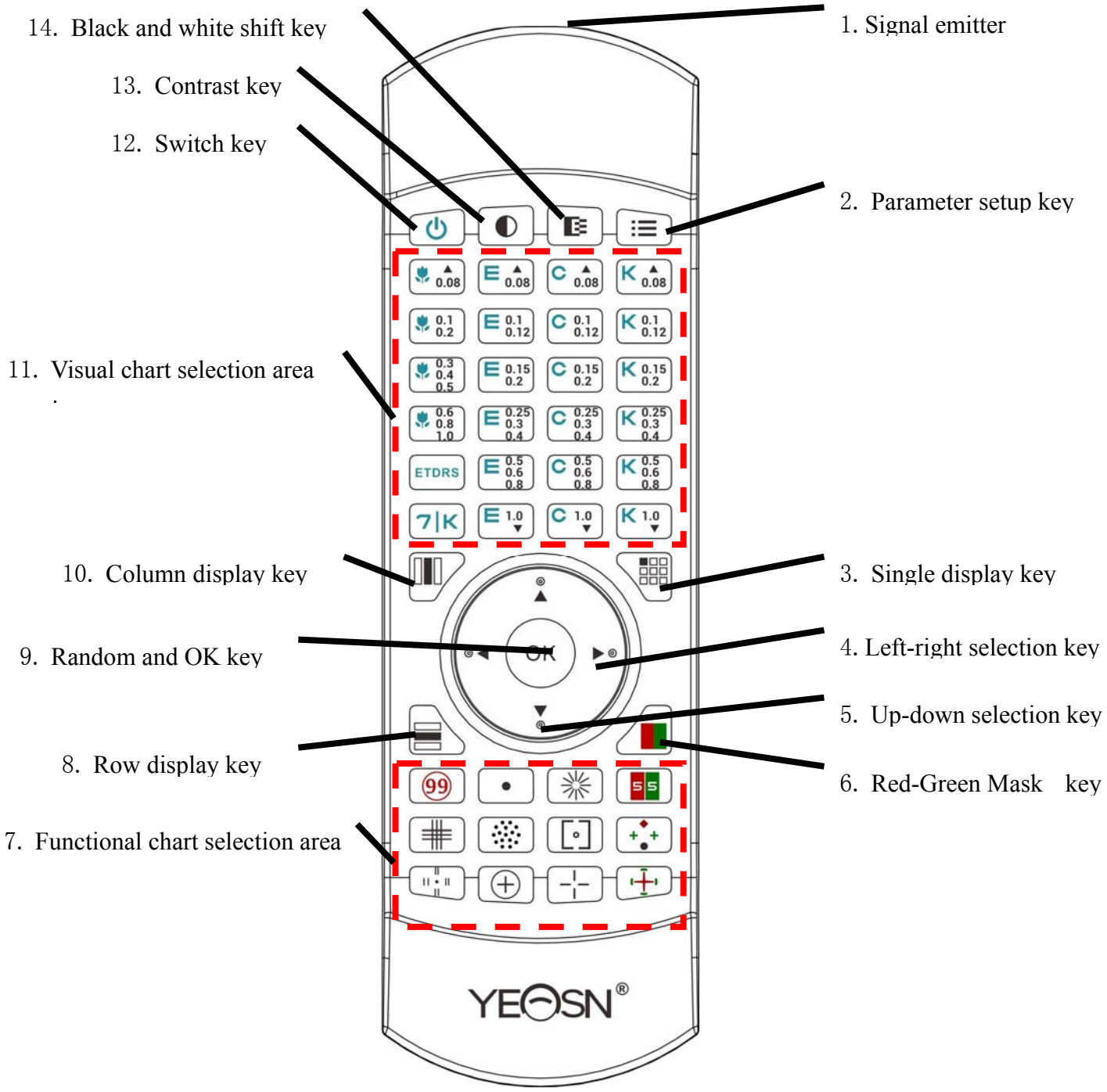
Continuously press OK + 3 seconds and visual chart will be set as channel 1

Continuously press OK + K 0.08 3 seconds and visual chart will be set as channel 2

Continuously press OK + K 0.1 0.12 3 seconds and visual chart will be set as channel 3

Continuously press OK + K 0.15 0.2 3 seconds and visual chart will be set as channel 4

Front diagram of the remote controller



1. Signal emitter

Emit signals to the displayer.

2. Parameter setup key

Set up device parameters.

3. Single display key

Press this key to shift between single chart and all charts: press once to display single chart, press again to display all charts.

4. ◀ , ▶ Left-right selection key

When single chart displays or charts display in column, press this key to shift the chart left or right on the same visual chart.

5. ▲ , ▼ Up-down selection key

When visual charts display, press this key to display last or next screen of visual charts.

When single chart displays or charts display in column, press this key to shift the chart up or down on the same visual chart.

6. Red-Green Mask key

Press this key the Red-Green background will be loaded.

7. Functional chart selection area

Select charts with functions to be tested.

8. Row display key

Press this key to shift between row charts and all charts: press once to display row chart, press again to display all charts.

9. OK Random and OK key

Press this key，the slection of visual chart can be randomized.

10. Column display key

Press this key to shift between column charts and all charts: press once to display column chart, press again to display all charts.

11. Visual chart selection area

Select charts to test vision.

12. Switch key

Turn on or off the LCD displayer. The host can't be started up or shut down by pressing this key.

13. Contrast key

Select Chart contrast. Press this key to shift among 100% → 25% → 12% → 6% → 100% in loop.

14. Black and white shift key

Press this key to shift the Charts between black mark on white background and white mark on black background.

5.2.2 About the battery in the remote controller

Two AA before use.

Take out these batteries if the device will not be used for a period of time.

Attention:

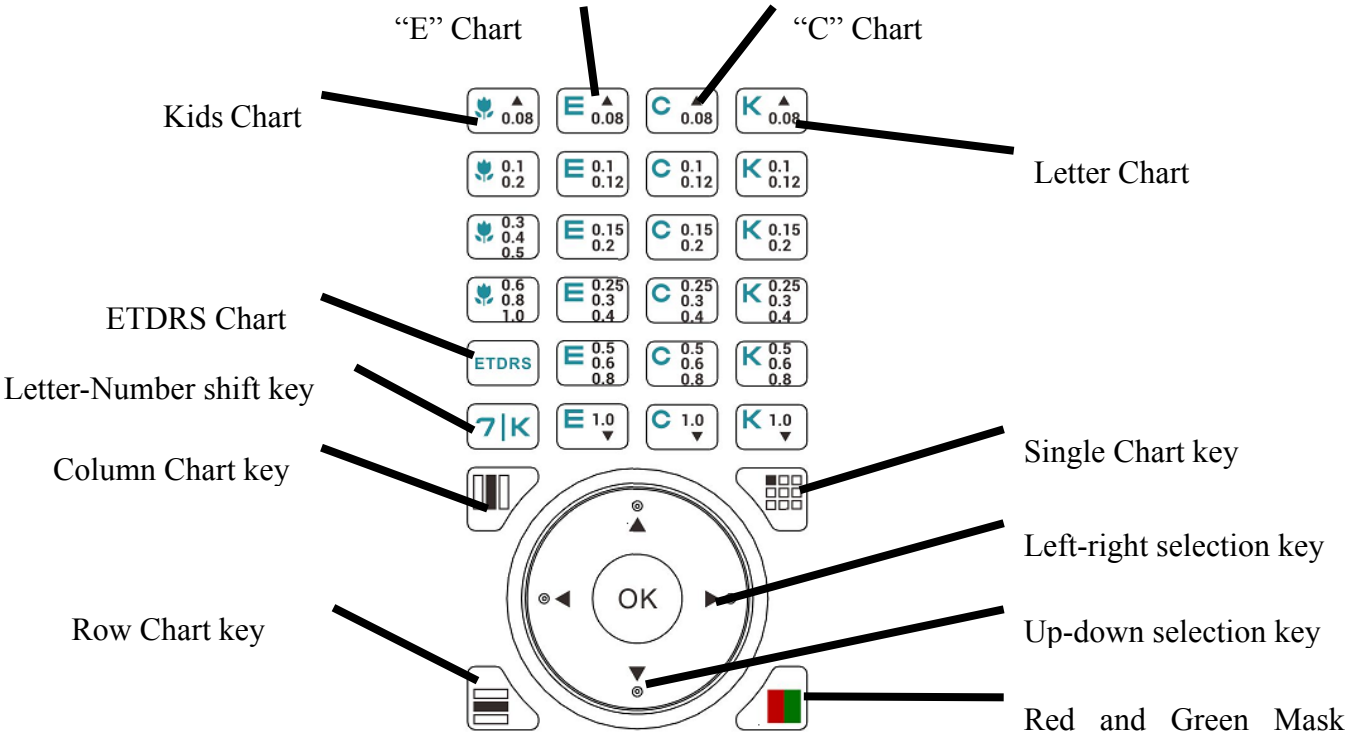
- ***Do not use ordinary acid battery, only alkaline batteries can be used to avoid device damage due to battery leakage.***
- ***Pay attention to the polarity of the battery when replacing it.***
- ***Dispose of used battery properly to avoid environment pollution.***
- ***Operator is not allowed to touch the batter and the patient at the same time.***

5.3 Visual chart Display

5.3.1 Visual chart display

Press the chart key on the controller as needed to display corresponding chart.

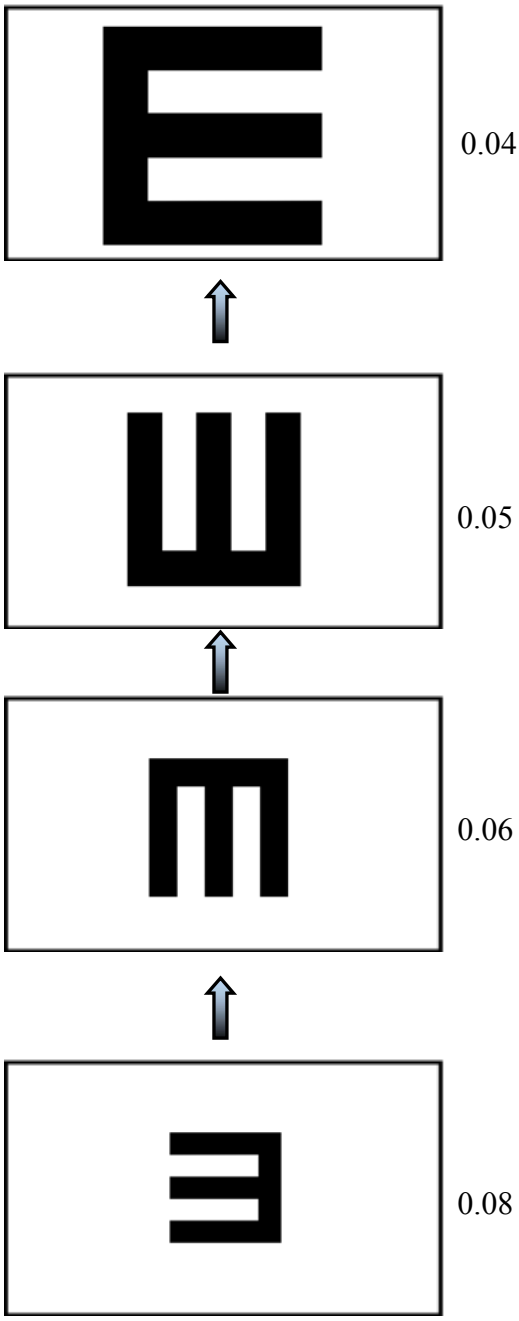
There are six types of charts in visual chart selection area: “E” chart, “C” chart, Letter chart, Number chart, Kids chart and ETDRS chart.



5.3.1.1 0.04, 0.05 and 0.06 charts display

When 0.08 chart displays, press ▲ to display 0.04, 0.05 and 0.06 charts.

E.g.: 0.04, 0.05 and 0.06 “E” charts display



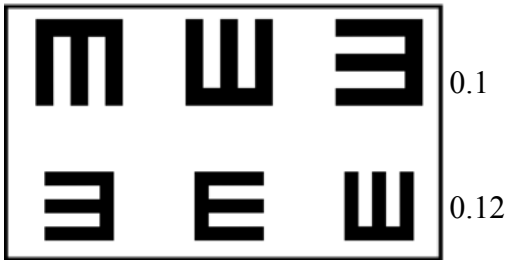
5.3.1.2 “E”, “C” and Kids charts display

1）Press chart keys to display

Press the chart key on the controller as needed to display corresponding chart.

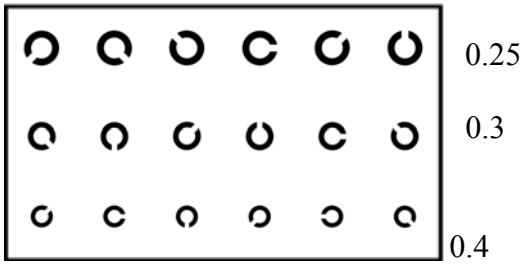
E.g.: Press

to display 0.1 and 0.12 “E” charts.



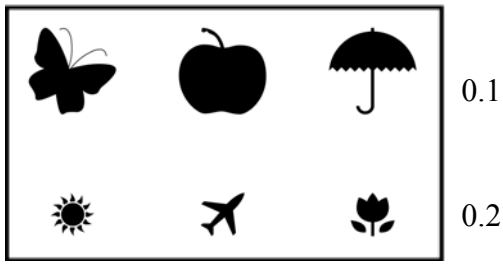
E.g.:Press

to display 0.25, 0.3 and 0.4 “C” charts.



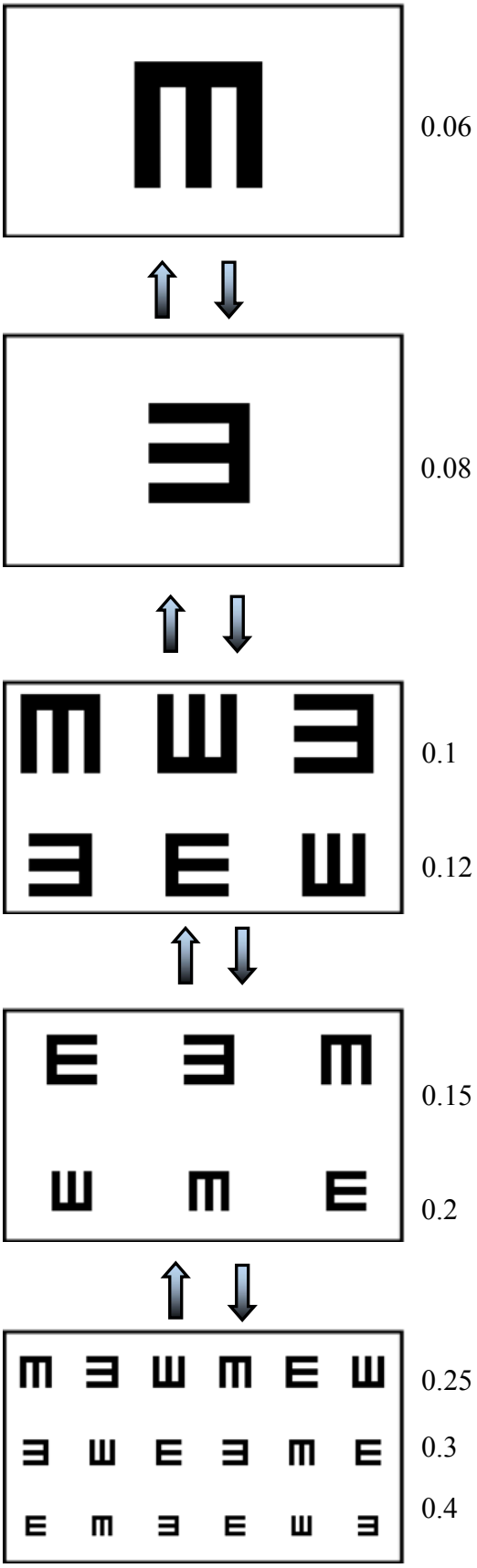
E.g.: Press

to display 0.1 and 0.2 Kids charts.



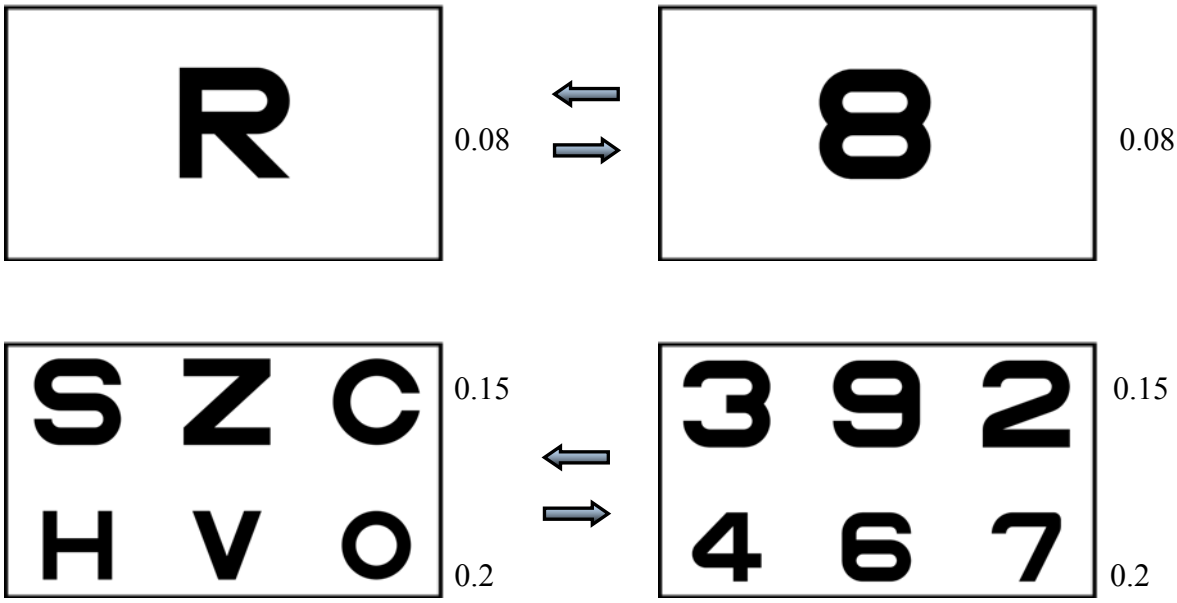
2）Press Up-down selection key ▲ ▼ to display

When a screen of charts displays, press Up-down selection key ▲ ▼ to display last or next screen of charts. For example:



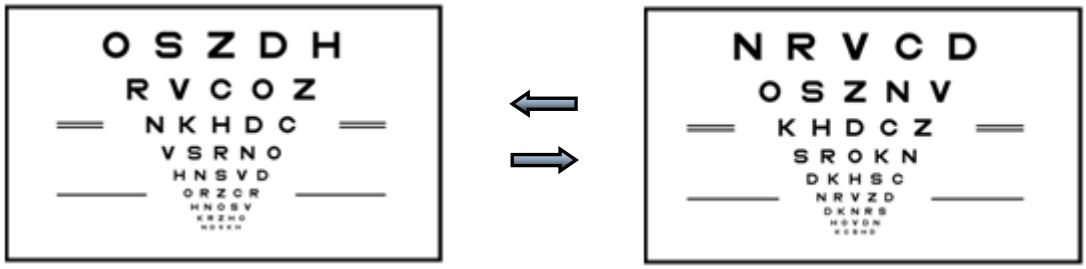
5.3.1.3 Number and Letter charts display

When a screen of Number (Letter) charts display, press Letter-Number shift key 7|K to shift to Letter (Number) charts with the same vision.



5.2.1.4 ETDRS charts display

Press ETDRS once to display one screen of ETDRS charts, press again to display the other.

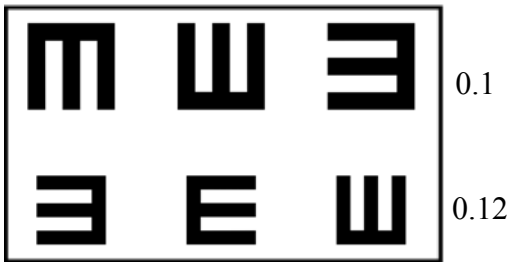


5.3.2 Visual charts display modes

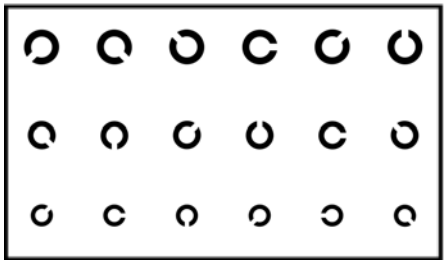
5.3.2.1 Full word charts display

Press the chart key on the controller as needed to display corresponding full word charts (default).

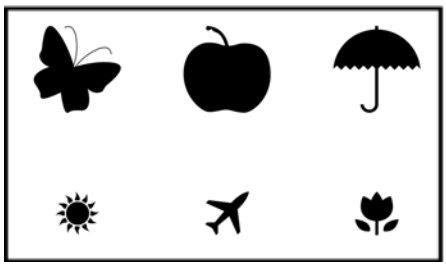
E.g.: Press E 0.1 0.12 to display all 0.1 and 0.12 full "E" charts.



E.g.: Press to display all 0.25, 0.3 and 0.4 full “C” charts.

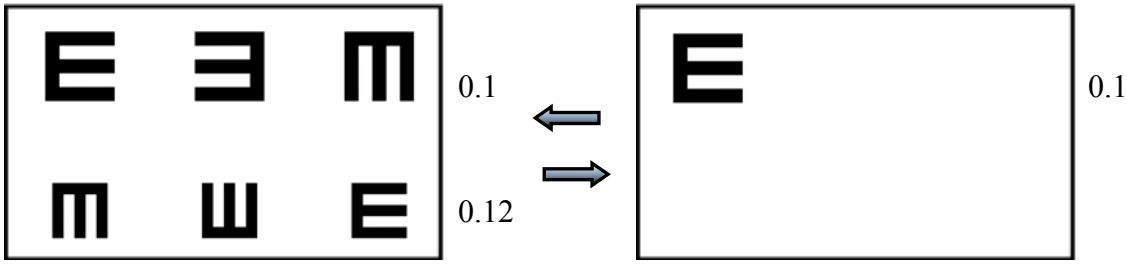


E.g.: Press to display all 0.1 and 0.2 Kids charts.



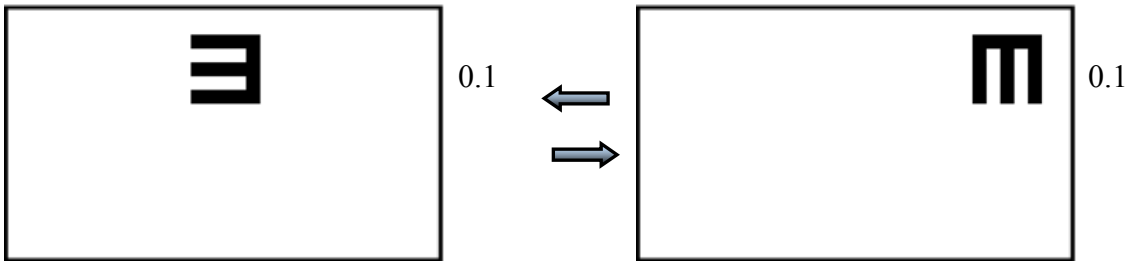
5.3.2.2 Single word chart display.

When full word charts display, press to display single word chart.



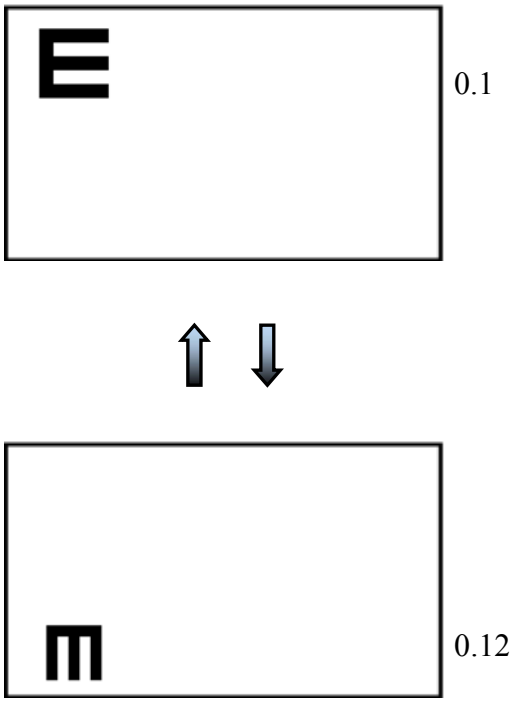
When one single word charts display, press ◀ ▶ to display another single word chart in one row.

For example:



When one single Charts displays, press ▲ ▼ to display another single Chart in last or next row.

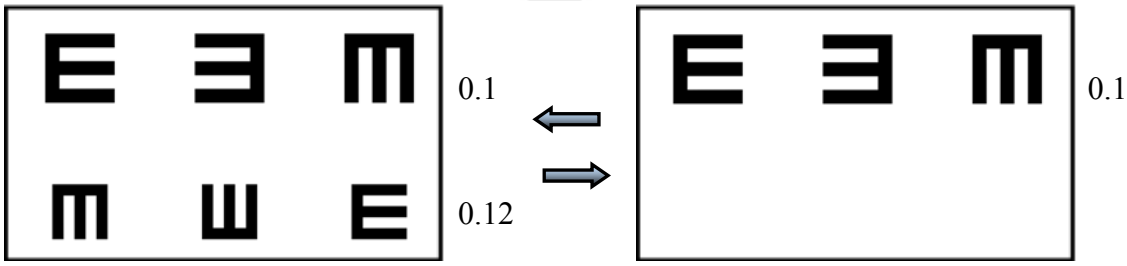
For example:



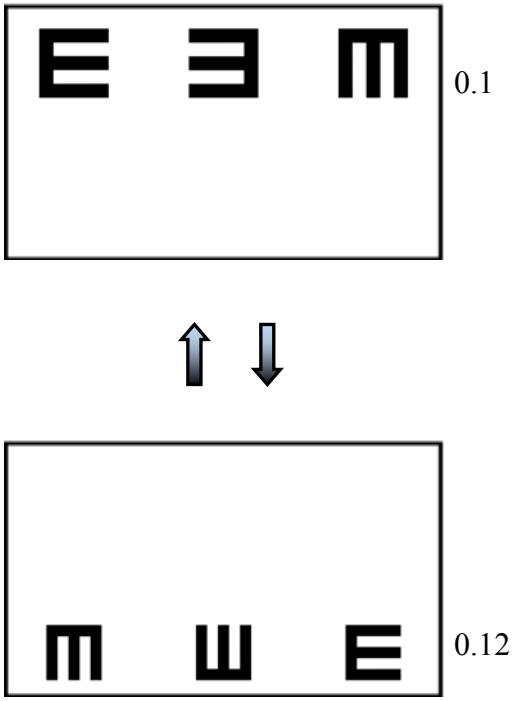
When single word chart displays, press to recover full word charts.

5.3.2.3 Row charts display

When full word charts display, press to display row charts. For example:



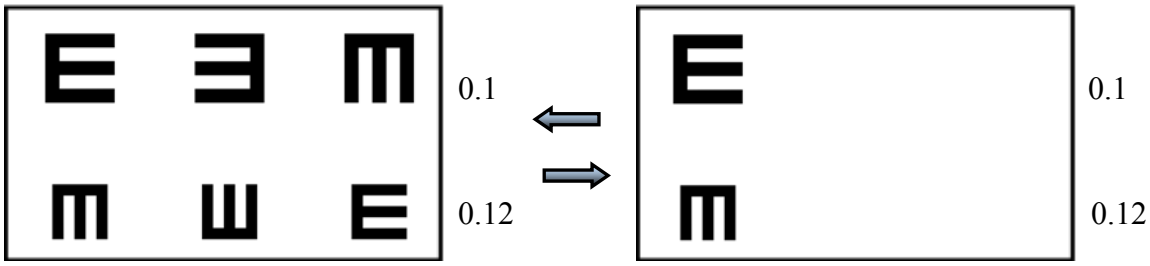
When row charts display, press to display last or next row of charts. For example:



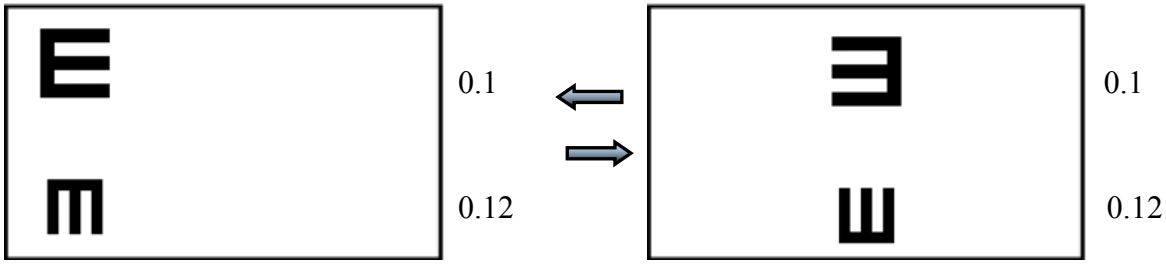
When row charts display, press to recover full wordcharts.

5.3.2.4 Column charts display

When full word Charts display, press to display column charts. For example:



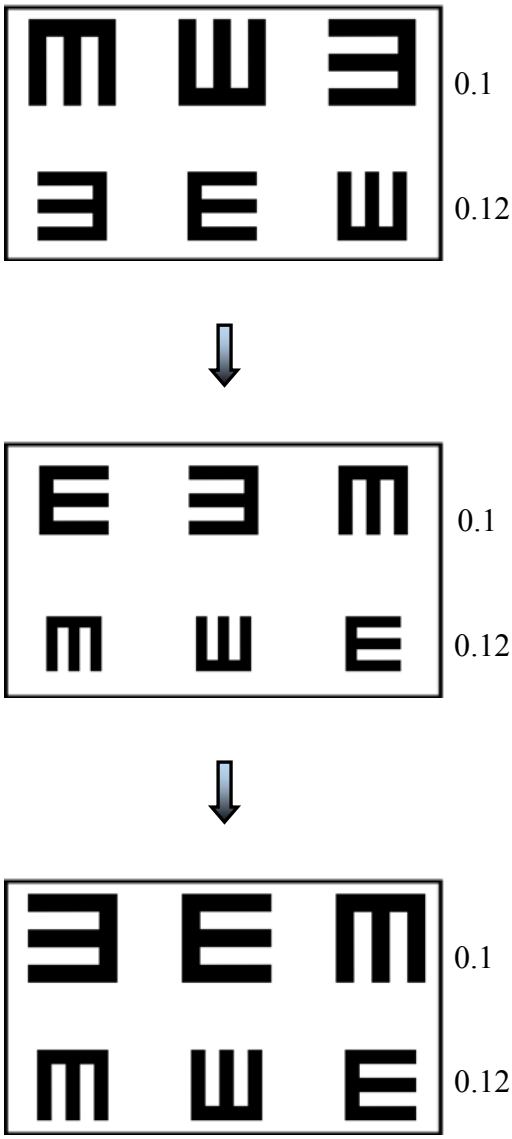
When column charts display, press ◀ ▶ to display left or right column of charts. For example:



When column charts display, press to recover all charts.

5.3.3 Visual chart change

When a screen of charts display, press OK key to display the randomly rearranged charts.



5.3.4 Chart contrast

Chart contrast function is used to evaluate the contrast sensitivity and observe the changes of visual acuity under low contrast conditions.

This device provide four options of contrast which are 100%、25%、12%、6%.

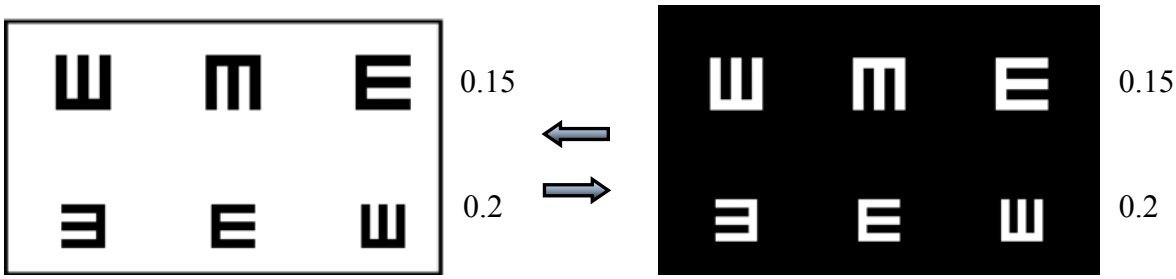
When a chart displays, press key, the contrast of chart can be shifted following 100%→25%→12%→6%→Exit

5.3.5 Black and white shift

The black and white shift of the charts are used for amblyopia test, and the vision value is just for reference.

The black charts are on white background during normal use and white charts are on black background when reversing it.

When a screen of chart displays, press the charts can shift between black characters on white background and white characters on black background. For example:



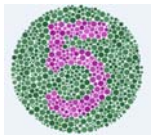
5.4 Functional chart Display

Press the functional chart key on the remote controller to display corresponding icons.

5.4.1 Functional chart display

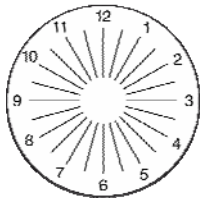
There are 14 types of functional charts in the functional chart selection area of the device used to test the binocular vision balance, binocular simultaneous perception, fusion, binocular image inequality, heterophoria, binocular stereopsis and other visual functions.

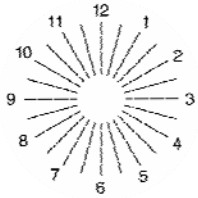
5.4.1.1 The types of functional charts are shown below:



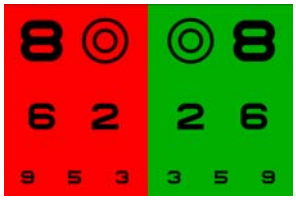
1

2

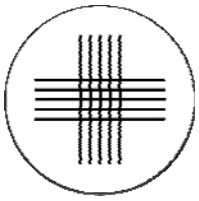




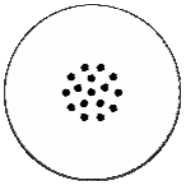
3



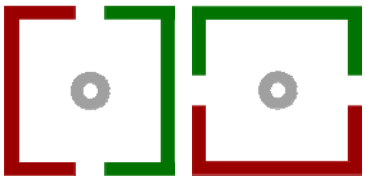
4



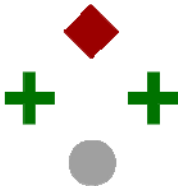
5



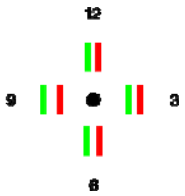
6



7

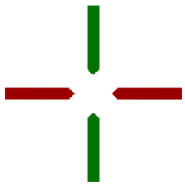


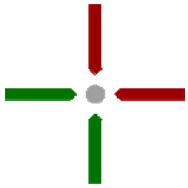
8



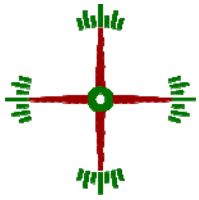
9

10





11



12

1. Ishihara 2.Maddox rod 3.Astigmatic disc 4.Red and green 5.Cross grid 6.Speckle 7.Vertical alignment and Horizontal alignment 8.Worth 4 points 9.Stereo 10.Cross ring 11.Cross and Cross and dot 12.Clock disc

The YPB-2100 Chart has no polarization function.

5.4.1.2 Functional chart display

1.Ishihara Chart

Press 99 key, the color blindness will pop-up. Press ◀ ▶ ▲ ▼ key to shift among different

color blindness visual charts. Press OK key, shows the test result.

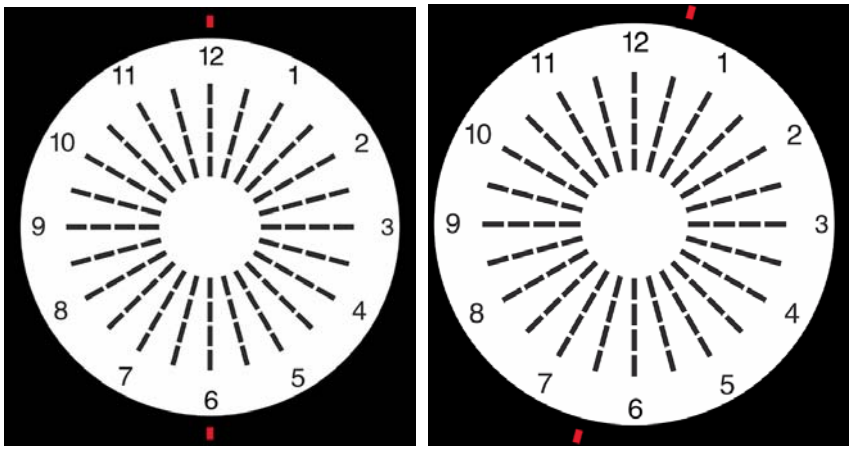
2. Maddox rod chart

Press • to display Maddox rod chart, used to test heterophoria.

3. Astigmatic disc chart (two options)

Press there are two chart options, solid line and dotted line astigmatic discs, Each pressis to shift between these two charts. They have the same function, both used to test astigmatic axial and degree.

Press OK key, display red indicating visual chart. Press ◀ ▶ to adjust the location of red indicating visual chart.



4. Red and green Chart

Press to display red and green chart, used to test spherical vision.

5. Cross grid chart

Press to display cross grid Chart, used to test spherical vision.

6.Speckle Chart

Press to display speckle chart, used in crisscross cylinder to test astigmatic axial and degree and binocular vision balance.

7. Vertical alignment and Horizontal alignment chart

Press to display red and green vertical alignment chart, used to test vertical heterophoria and binocular image inequality. Press again, to display red and green horizontal alignment chart, used to test horizontal heterophoria and binocular image inequality.

8. Worth 4 Dots chart

Press to display Worth 4 Dots chart, used to test binocular simultaneous perception, fusion and

euphoropsia.

9. Stereo chart

Press to display red and green stereo chart, used to test stereopsis.

10. Cross ring chart

Press to display red and green cross ring chart, used to test heterophoria.

11. Cross chart and cross fixation chart (two options)

Press there are two chart options, red and green cross chart and red and green cross and dot chart; Each press can shift between these two Charts. They have the same function, both used to test heterophoria.

12. Clock disc Chart

Press to display clock disc chart, used to test rotatory heterophoria.

5.5 Parameter Setup

1.Press to enter parameter setup interface.

2.Press ▲ ▼ ◀ ▶ to select needed parameters to change parameter setup. When the item to be set up is selected, the item is highlighted.

3. When the setup is finished, press to return to test interface.

The detailed parameters are set up as follows:

1） Language: Chinese, English

Factory default: Chinese

2）Distance (meter): 1.5m- 7.3m, step:0.1m.

Factory default: 5m

Distance (feet): 5ft- 24ft, step:0.5ft.

Factory default: 20ft.

Optometry distance can be set based on the situation of the optometry room.

3）Balance: 155, 160, 165, 170, 175, 180, 185, 190 and 195.

Factory default: 175

Take 5 as step to set up green to make red and green equilibrated.

4）Mirror: normal and mirror

Factory default: normal

Set normal chart display and mirror chart display.

5）Unit : decimal, 5-Grade, Metric, Imperial, LogMAR

Factory default: decimal

Set vision value display method.

6）System

Screensaver : off, Blank Screen, play video (product promotion material)

Factory default: close screensaver

Stand-by time: 3 min, 5 min and 10 min

Factory default: 3 min

Buzzer:Off,On

Vision: After being selected, display different pictures to judge the far and near visual ability.

Initial Chart: Default Chart，Current Chart

Default Chart：Turn on the Chart, “E”chart will be displayed。

Current Chart: Turn on the Chart，selected chart will be displayed。

6. Troubleshooting

In the event of device trouble, please check the device as per below chart to obtain guidance. If the trouble is not shot, please contact with Chongqing Yeasn Science & Technology Co., Ltd. Maintenance Department or the authorized dealer.

Trouble	Reasons	Solutions
Displayer is not bright	The power cord is not correctly connected to the socket	Connect the power cord correctly
Visual chart is not clear	The displayer is not clean	Clear up the displayer
Visual chart disappears suddenly	The device enters standby mode	Press any key on the controller
Remote controller keys don't work	There is an obstacle between the controller and the displayer	Move away the obstacle
	Wrong installation of battery	Install the battery correctly
	Insufficient battery capacity	Replace the battery

7. Cleaning and Protection

Attention: Do not use any corrosive detergent to clean the device, so as not to damage the device surface.

7.1 Clean LCD displayer

You need to clean the LCD screen if it's too dirty to see the visual chart clearly.

1)Cut off power.

2)Unplug the power cord from the socket.

3)Wipe the LCD screen with soft and clean cotton cloth or absorbent wool gently.

Attention: Cut off power and unplug the power cord from the socket before cleaning. Otherwise, it may cause electric shock.

Attention: Do not wipe the LCD screen with stiff cloth or paper; otherwise it may scratch the screen.

Attention: Make sure not to leave water drop on the LCD screen; if there is a water drop, please wipe it away with soft and clean cotton cloth or absorbent wool.

Otherwise, it may leave a stain on the LCD screen,

Attention: Wipe the LCD screen gently when cleaning it. Otherwise, it may cause device failure.

7.2 Clean external parts

When the external parts, such as the enclosure or panel, get dirty, please wipe them gently with clean and soft cloth.

For intractable stains, please dip the clean soft cloth in mild detergent to scrub the stains away and then wipe it with dry soft cloth.

8. Maintenance

To guarantee the normal and safe operation of the equipment, a preventive check and maintenance should be conducted for the ME equipment and its parts every 6-12 months (including performance check and safety check)

8.1 Replace battery

Follow below steps to change the battery

1)Remove battery cover.

2)Take out old batteries.

3)Put in new batteries.

4)Install battery cover.

Attention: Do not use ordinary acid batteries, only alkaline batteries can be used. Otherwise, it may cause device damage due to battery leakage.

Attention: Pay attention to the polarity of the battery during installation, making sure the polarity of the battery is consistent with the polarity mark ⊕ and ⊖ in the battery case.

Otherwise, the remote controller will not work; moreover, the controller may not work due to battery leakage.

Attention: Please dispose of the used battery properly to avoid environmental pollution.

8.2 Repairable and replaceable parts, such as remote controller and power adapter, etc., provided by the company can only be used; other unauthorized parts may reduce the minimum safety of the device.

8.3 The fuse of the device is included in the power adapter; if damaged, please replace it with the power adapter provided by the company with fuse type of T3.15A/250V.

8.4 Do not disassemble or repair the device arbitrarily when a failure occurs, please contact with local dealer or manufacturer.

8.5 The company is committed to providing users with necessary circuit diagrams, part list and other relevant materials as needed.

9.Environmental Conditions and Service Life

9.1 Environmental conditions for normal operation

Environment temperature: 10℃~35℃

Relative humidity: 30%~80% (no condensation)

Atmospheric pressure: 800hPa~1060hPa

Indoor conditions: clean and without direct high light.

9.2 Environmental conditions for transportation and storage

Environment temperature: -10℃~+45℃

Relative humidity: 10%~90% (no condensation)

Atmospheric pressure: 700hPa~1060hPa

Indoor conditions: good ventilation and without corrosive gas.

9.3 Service life

The service life of the device is 8 years from first-time use with proper maintenance and care.

10. Environmental Protection

Please recycle or properly dispose of the used batteries and other wastes to protect the environment; please package the device at the end of life to the company, or handle it in accordance with local provisions related to environmental protection.

11. Manufacturer's Responsibility

The company is responsible for the safety, reliability and performance impact under below circumstances:

- Assembly, addition, modifications, alterations and repairs are carried out by authorized personnel by the company;
- Electrical facilities in the room are in conformity with relevant requirements, and
- The device is used according to the User Manual.

12. Symbol Description

The applied part of the device is Type BF

Class II device

Attention! Please refer to accompanying documents.

Refer to instruction manual/ booklet

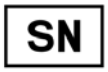
Manufacture date

MFG. DATE Manufacture date

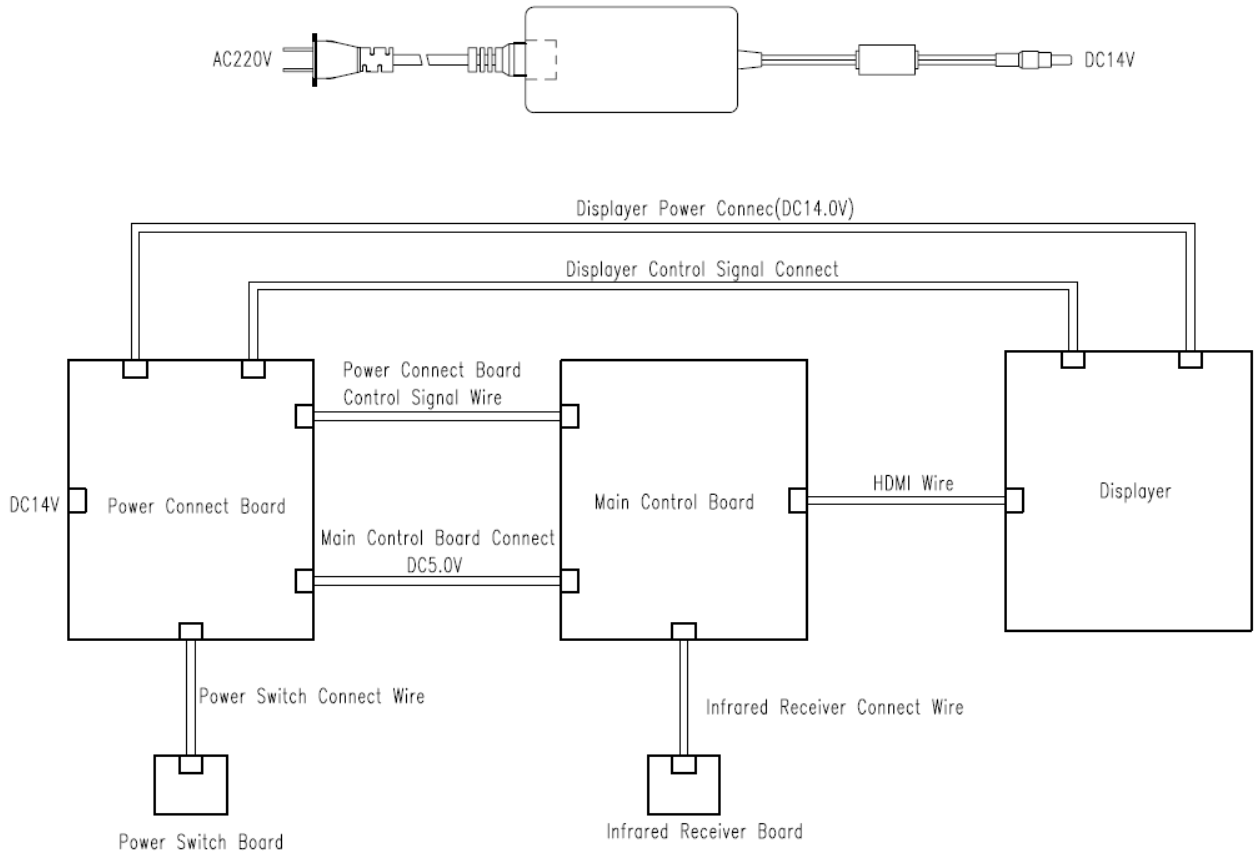
Manufacturer

European certificate of conformity

Correct Disposal of This Product (Waste Electrical & Electronic Equipment) Statement: Contact the local authorities to determine the proper method of disposal of potentially bio-hazardous parts and Accessories.

 Product serial number

13. Electrical Schematic Diagram



For further information and services, or any questions, please contact with the authorized dealer or manufacturer. We will be happy to help you.

14. Guidance of EMC and other interference

1)* This product needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided, and this unit can be affected by portable and mobile RF communications equipment.

2)* Do not use a mobile phone or other devices that emit electromagnetic fields, near the unit. This may result in incorrect operation of the unit.

3)* Caution: This unit has been thoroughly tested and inspected to assure proper performance and operation!

4) * Caution: this machine should not be used adjacent to or stacked with other equipment and that if adjacent or stacked use is necessary, this machine should be observed to verify normal operation in the configuration in which it will be used.

Guidance and manufacture's declaration – electromagnetic emission		
The YPB-2100/YPB-2100P is intended for use in the electromagnetic environment specified below. The customer of the user of the YPB-2100/YPB-2100P should assure that it is used in such an environment.		
Emission test	**Compliance**	**Electromagnetic environment – guidance**
RF emissions CISPR 11	Group 1	The YPB-2100/YPB-2100P use RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emission CISPR 11	Class B	The YPB-2100/YPB-2100P is suitable for use in all establishments, other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Guidance and manufacture's declaration – electromagnetic immunity			
The YPB-2100/YPB-2100P is intended for use in the electromagnetic environment specified below. The customer or the user of YPB-2100/YPB-2100P should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floor are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2kV for power supply lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	±1 kV differential mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5% UT (>95% dip in UT) for 0.5 cycle 40% UT (60% dip in UT) for 5 cycles 70% UT (30% dip in UT) for 25 cycles <5% UT (>95% dip in UT) for 5 sec	<5% UT (>95% dip in UT) for 0.5 cycle 40% UT (60% dip in UT) for 5 cycles 70% UT (30% dip in UT) for 25 cycles <5% UT (>95% dip in UT) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the YPB-2100/YPB-2100P requires continued operation during power mains interruptions, it is recommended that the YPB-2100/YPB-2100P be powered from an uninterruptible power supply or a battery.
Power frequency (50Hz/60Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE UT is the a.c. mains voltage prior to application of the test level.			

Guidance and manufacture's declaration – electromagnetic immunity			
The YPB-2100/YPB-2100P is intended for use in the electromagnetic environment specified below. The customer or the user of the YPB-2100/YPB-2100P should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
Conducted RF IEC 61000-4-6 Radiated RF IEC 61000-4-3	3 Vrms 150 kHz to 80 MHz 3 V/m 80 MHz to 2.5 GHz	3 Vrms 3 V/m	Portable and mobile RF communications equipment should be used no closer to any part of the YPB-2100/YPB-2100P, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = 1{,}2\sqrt{P}$ $d = 1{,}2\sqrt{P}$ 80 MHz to 800 MHz $d = 2{,}3\sqrt{P}$ 800 MHz to 2,5 GHz Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,a should be less than the compliance level in each frequency range.b Interference may occur in the vicinity of equipment marked with the following symbol:
NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies. NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land
mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the YPB-2100/YPB-2100P is

used exceeds the applicable RF compliance level above, the YPB-2100/YPB-2100P should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the YPB-2100/YPB-2100P.

b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Recommended separation distances between portable and mobile RF communications equipment and the YPB-2100/YPB-2100P .

The YPB-2100/YPB-2100P is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the YPB-2100/YPB-2100P can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the YPB-2100/YPB-2100P as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter (W)	**Separation distance according to frequency of transmitter (m)**		
	150 KHz to 80 MHz $d = 1{,}2\sqrt{P}$	80 MHz to 800 MHz $d = 1{,}2\sqrt{P}$	800 MHz to 2.5 GHz $d = 2{,}3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.