User Manual

LCD VISUAL CHART YPB-2100

Version:1.0

Date: 20190918

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

Name: CHONGQING YEASN SCIENCE–TECHNOLOGY CO., LTD

Address: 5 Danlong Road, Nan’an District, Chongqing, 400060, P.R.China

Tel: 86-23 62797666

Content

1. Basic information

Produce name: LCD visual chart.

Model: YPB-2100

Software version number: V3.00

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: 23.8 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

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

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

1.1.5 Automatic screensaver: 5 mins, 15 mins and 45 mins are optional.

E/C/Letter/Number/Kids							
5-Grade	LOG	decimal1	decimal2	Imperial	Metric	decimal3	decimal4
3.6	1.4	0.04	0.05	20/500	20/500	0.04	0.04
3.7	1.3	0.05	0.06	20/400	20/400	0.05	0.05
3.8	1.2	0.06	0.07	20/300	20/300	0.06	0.066
3.9	1.1	0.08	0.08	20/250	20/250	0.08	0.08
4	1	0.1	0.09	20/200	20/200	0.1	0.1
4.1	0.9	0.12	0.1	20/150	20/150	0.125	0.133
4.2	0.8	0.15	0.2	20/100	20/100	0.16	0.2
4.3	0.7	0.2	0.3	20/90	20/90	0.2	0.222
4.4	0.6	0.25	0.4	20/80	20/80	0.25	0.25
4.5	0.5	0.3	0.5	20/70	20/70	0.32	0.285
4.6	0.4	0.4	0.6	20/60	20/60	0.4	0.33
4.7	0.3	0.5	0.7	20/50	20/50	0.5	0.4
4.8	0.2	0.6	0.8	20/40	20/40	0.63	0.5
4.9	0.1	0.8	0.9	20/30	20/30	0.8	0.66
5	0	1	1	20/25	20/25	1	0.8
5.1	-0.1	1.2	1.2	20/20	20/20	1.25	1
5.2	-0.2	1.5	1.5	20/15	20/15	1.6	1.33
5.3	-0.3	2	2	20/10	20/10	2	2

Remarks: When distance less than 2.5m, Chart “E”, “C”, Letter, Number, Kids will be influenced by pixel size, the last three lines optotypes of above chart will be shielded.

ETDRS							
5-Grade	LOG	decimal1	decimal2	Imperial	Metric	decimal3	decimal4
4.5	0.5	0.3	0.3	20/63	6/20	0.32	0.32
4.6	0.4	0.4	0.4	20/50	6/15	0.4	0.4
4.7	0.3	0.5	0.5	20/40	6/12	0.5	0.5
4.8	0.2	0.6	0.6	20/32	6/9.5	0.63	0.63
4.9	0.1	0.8	0.8	20/25	6/7.5	0.8	0.8
5	0	1	1	20/20	6/6	1	1
5.1	-0.1	1.2	1.2	20/16	6/5	1.25	1.25
5.2	-0.2	1.5	1.5	20/13	6/4	1.6	1.6
5.3	-0.3	2	2	20/10	6/3	2	2

1.2 Power Supply Parameters

1) Input voltage AC 100V~240V(±10%)

2) Input frequency 50/60 Hz

3) Input power 1.0-0.5A

1.3 Weight and Size

1) Wall-mounted

Weight Host: about 4.65kg

Remote controller: about 80g

Size Host: 595.6mm (L) × 388.7mm (W) × 62mm (H)

Remote controller: 186mm (L) × 55mm (W) × 17mm (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 8 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 : GSM40A15, Input 100-240V～1.0-0.5A 50-60Hz, Output15V, 2.67A;

● 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:

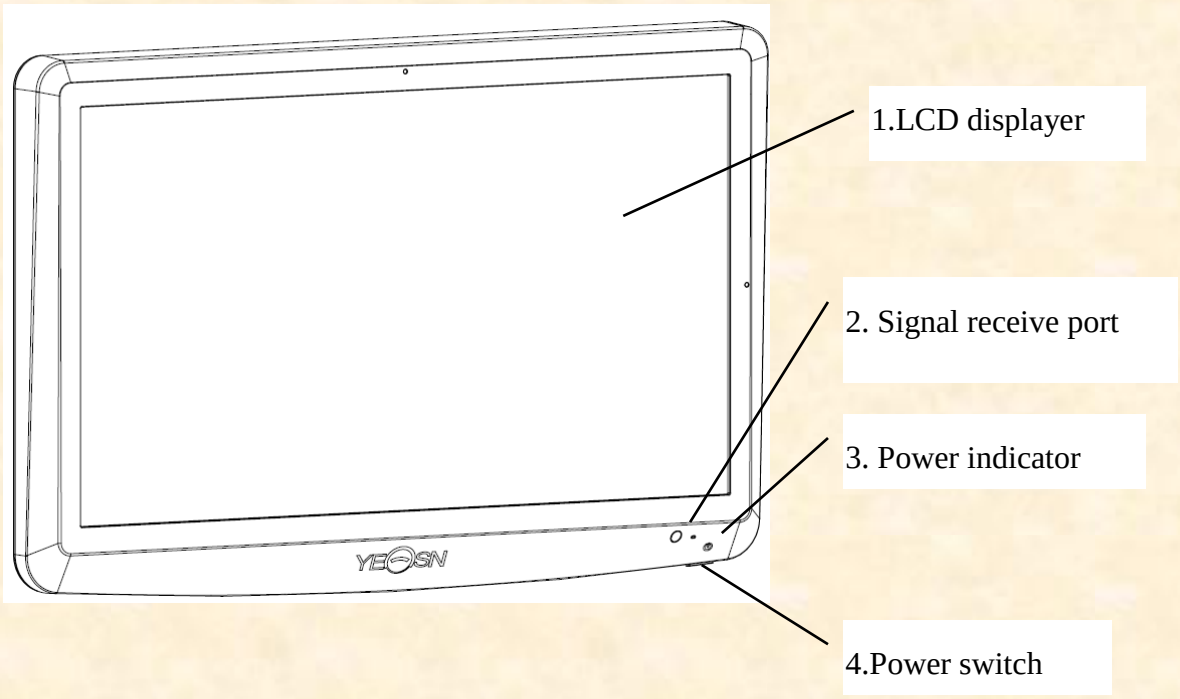
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

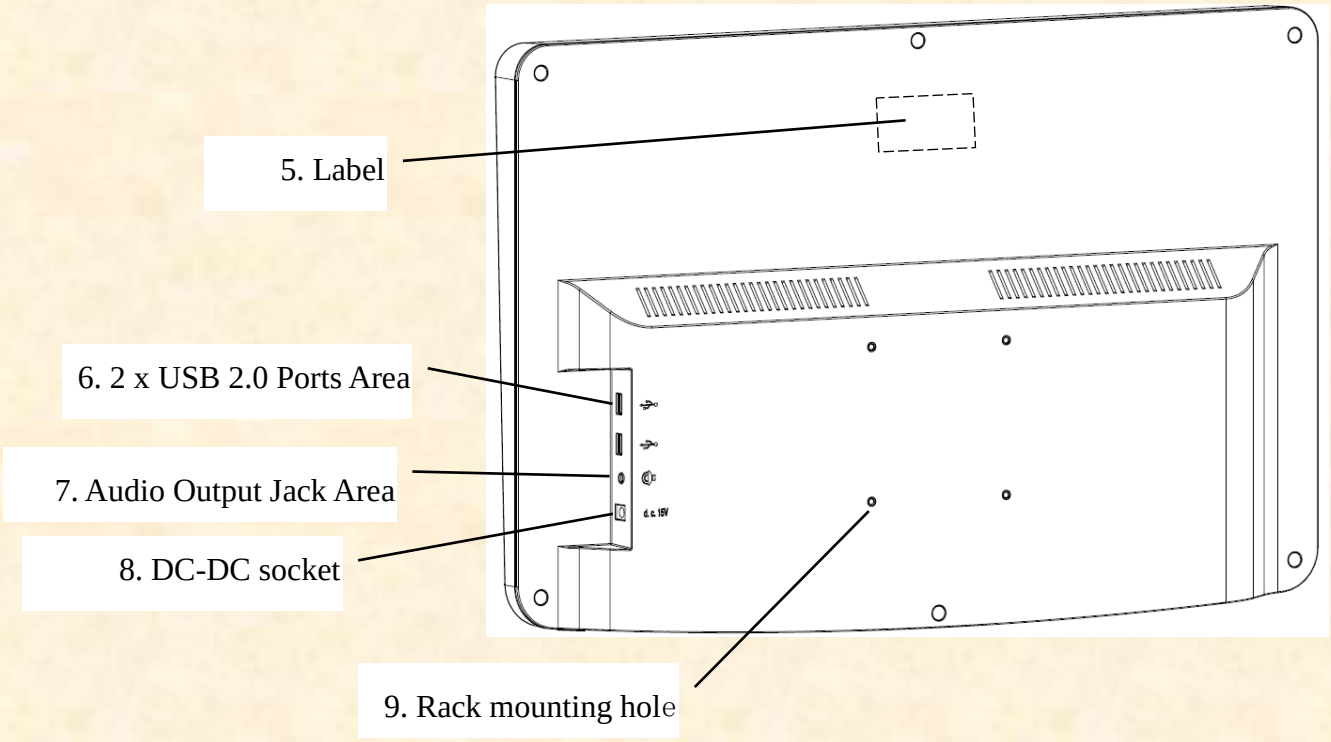
3.Main Structure

3.1 Host

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. Power switch

Power switch of the LCDLCD visual chart.

5. Label

Product label.

6. 2 x USB 2.0 Ports

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

7. Audio Output Jack Area

Connect to speaker.

8. DC-DC socket

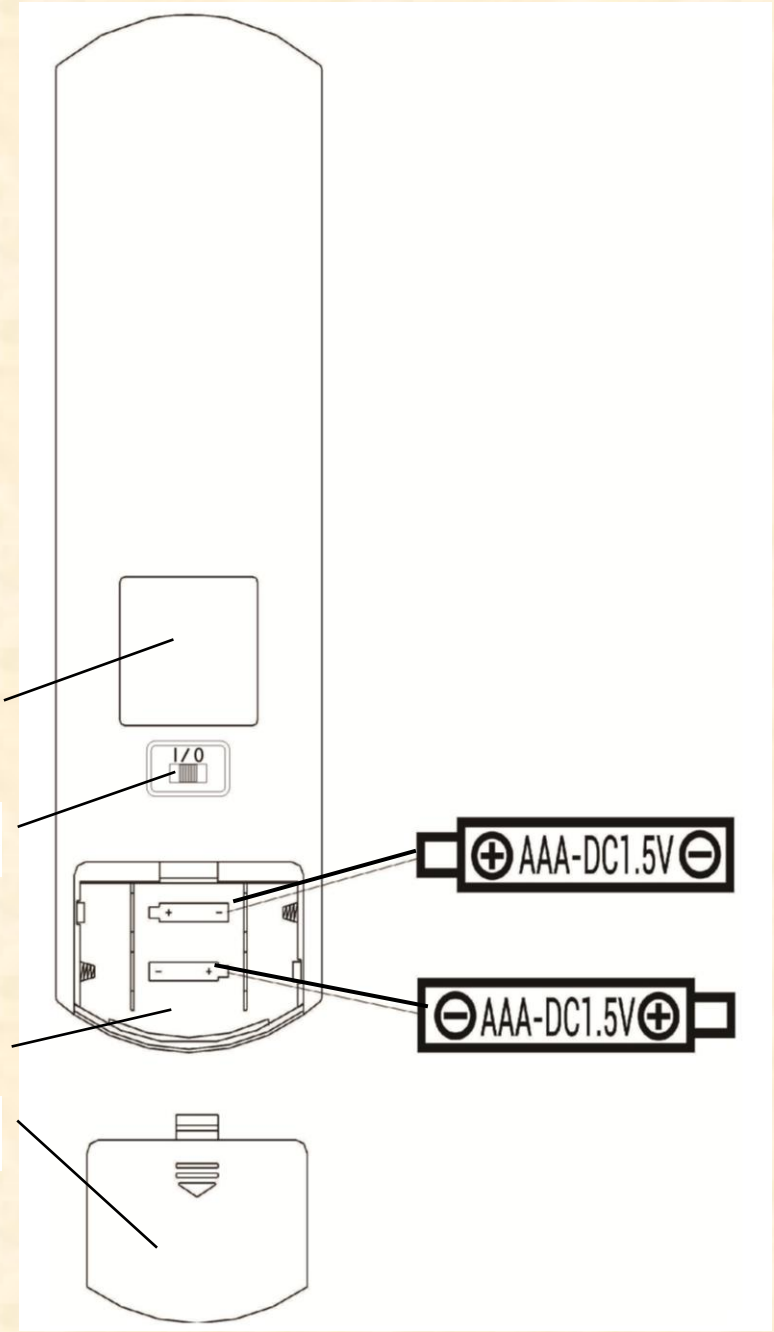
Power adaptor socket.

9. Rack mounting hole

It is used for installation of hanger frame. 4 holes in total.

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) Rack 1 Pcs
3) Pan head screws with cross recessed M4×12 5 Pcs
4) Plain washer grade A φ4 4 Pcs
5) Spring lock washers, square ends φ4 4 Pcs
6) Wall bearing 1 Pcs
7) Plastic expansion pipe 2 Pcs
8) Pan head tapping screws with cross recessed ST6.3×64 2 Pcs
9) Remote controller 1Pcs
10) Red-and-green glasses 1 Pair
11) Hex wrench 1Pcs
12) Power adaptor 1Pcs
13) Adaptor Rack 1Pcs
14) Plain washer grade A φ6 2Pcs

4.2 Installation Instructions

4.2.1 Installation Instructions for Wall-mounted Device

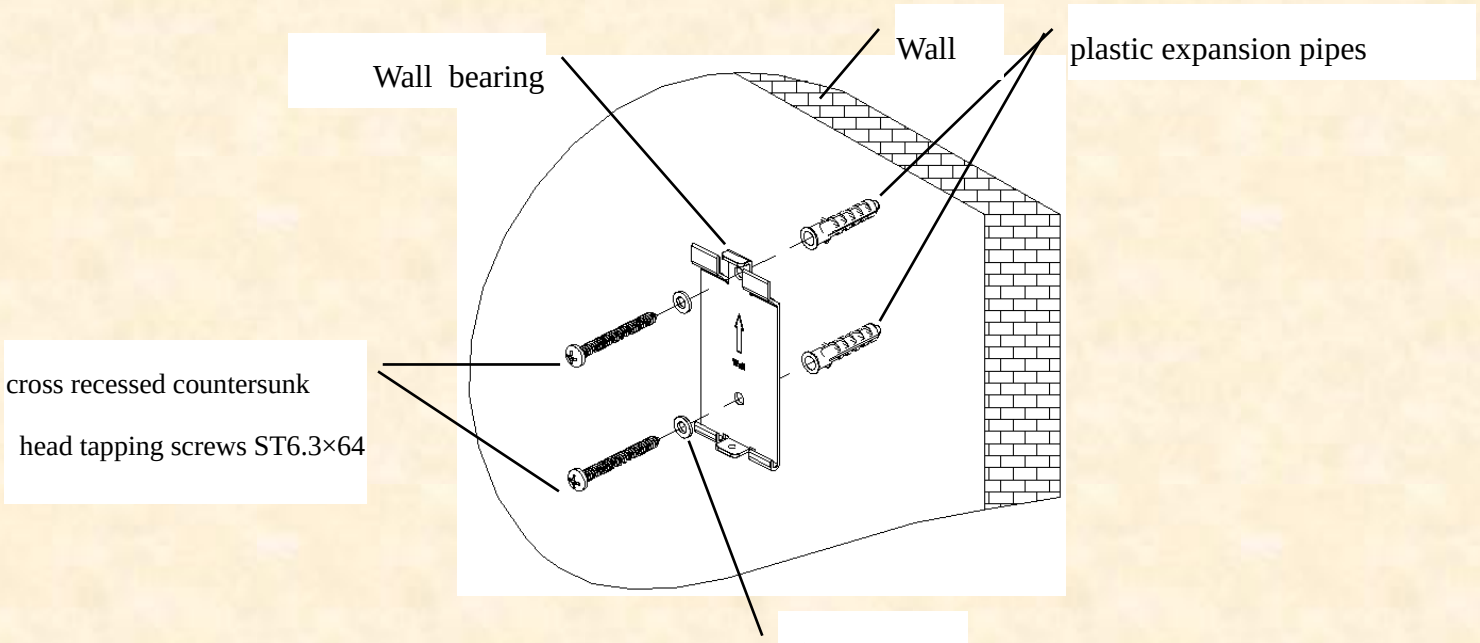
When using the rack to mount the device, the device must be hung on a wall that can withstand a weight of 8 kg. If necessary, reinforce the wall.

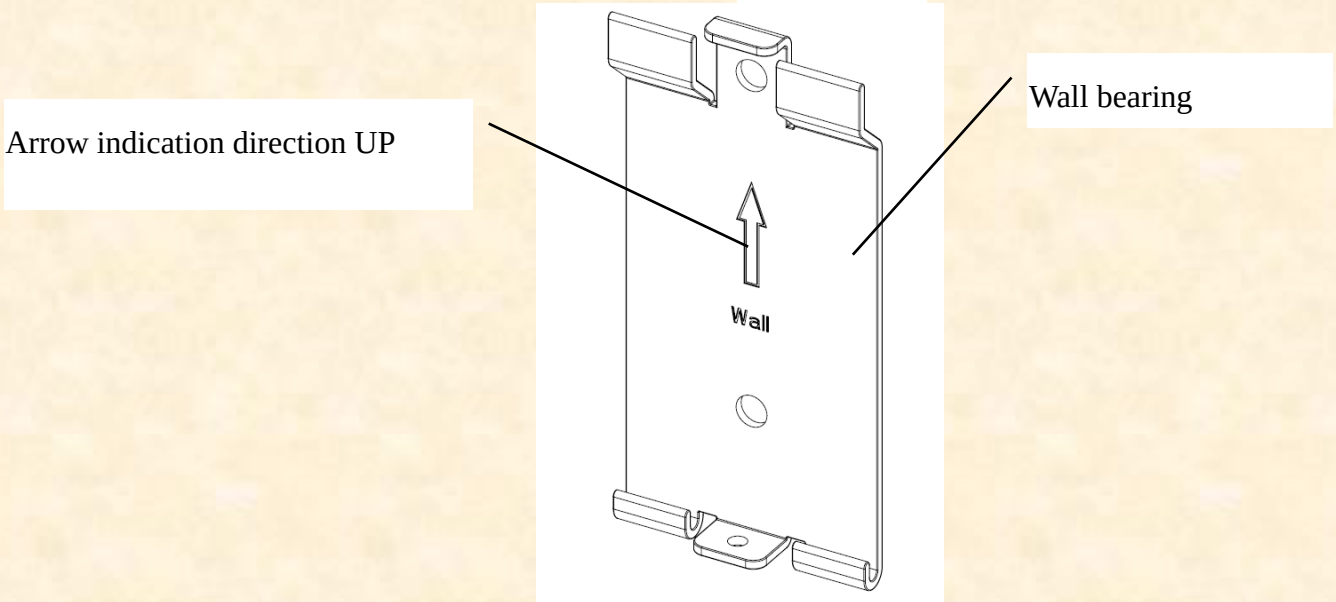
2. 1 Install the wall bearing

Drill suitable mounting holes on the wall and insert the plastic expansion tubes.

Then insert 2 cross recessed countersunk head tapping screws ST6.3X64 with 2 plain washers into the mounting holes and screw them into the plastic expansion pipes to install the bearing in the wall.

Pay attention to retain the level of the bearing when installing. Perform the installation according to the arrow indication direction.

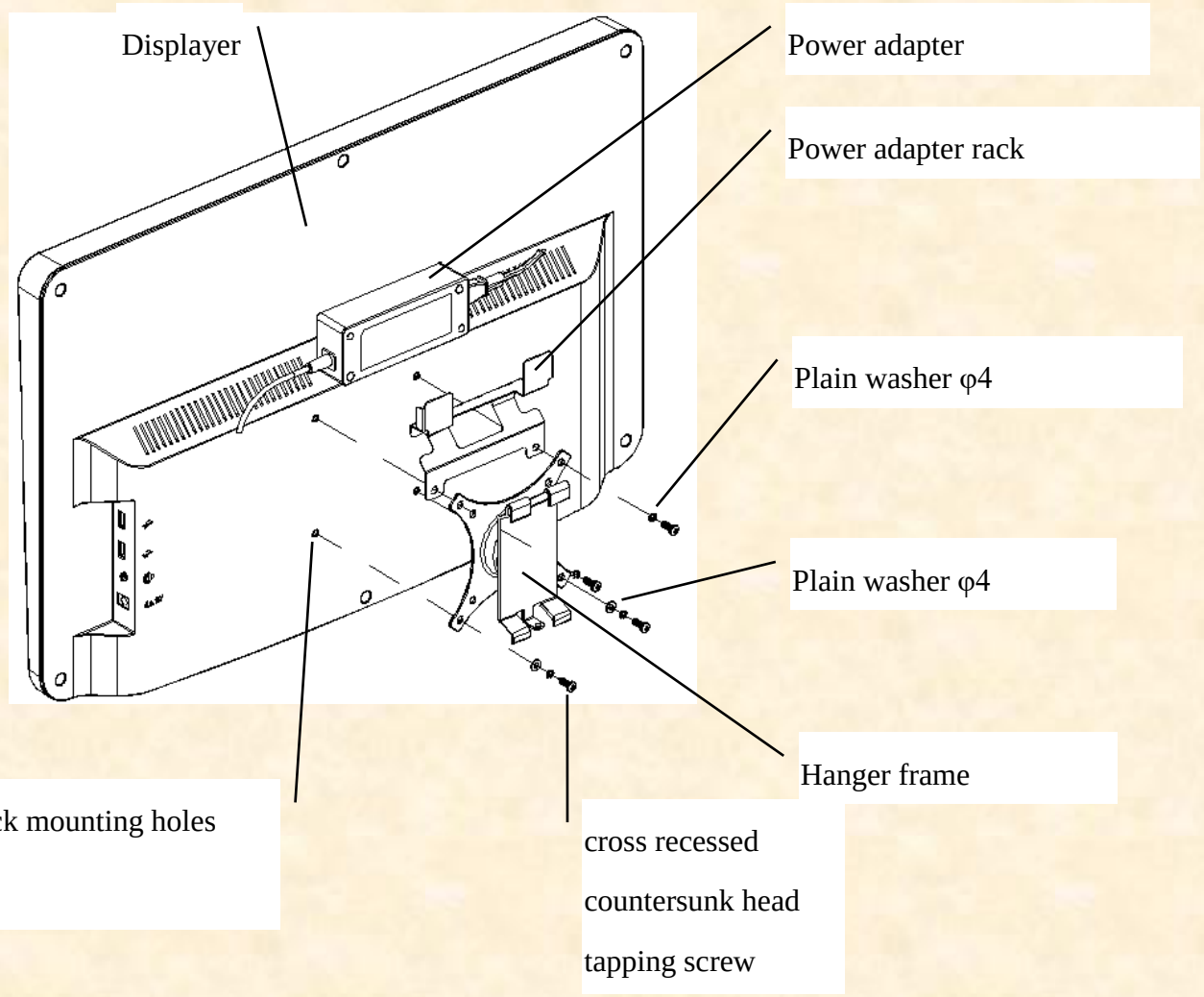




2.2 Installation of hanger frame

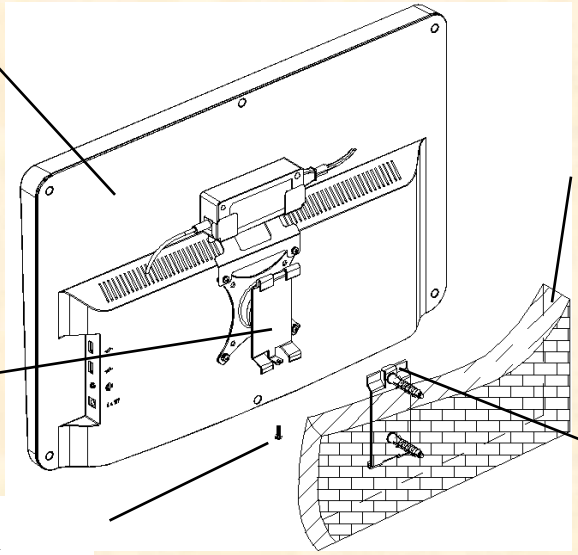
Install rack and power adapter rack on the mounting holes and then use screwdriver to tighten the bolts. Adjust the rack angle according to the mounting positions.

After the power adapter hanger frame is installed, put the power adapter on the rack.



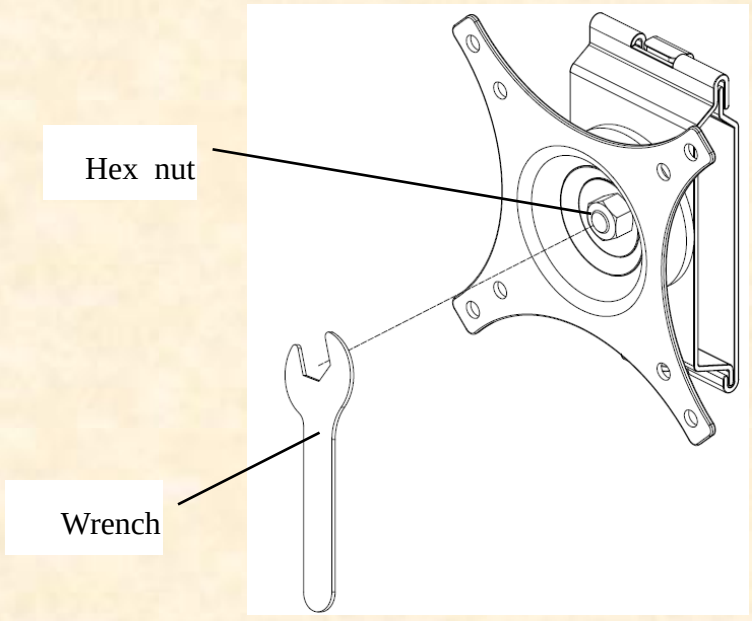
2. 3 Install the device

Hang the device on the bearing and tighten the screws.



Keep a clearance of at least 50 mm around the device for ventilation.

When the device is shipped from the factory, the hex nut has already been adjusted with appropriate pre-load force by wrench.



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.

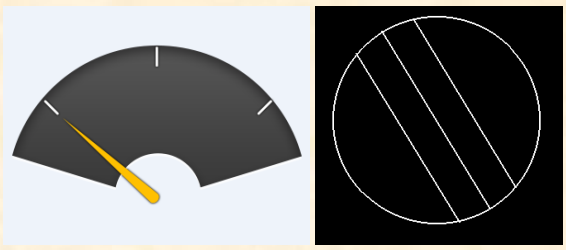
EYES $ VISON：Functional Test, including Contrast sensitivity Function, Structure of Eye and Vision

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.

The results of CSF test are for reference only, and can not be used as clinical evaluation data.

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 5 minutes (you can also set it to 15 minutes, 45 minutes). Press any key (except device power on/off button） on the controller to light up the displayer and enter working state.

5.1.3 Device shutdown

Press button  on the remote or power on-off button on the device to turn off the displayer.

5.1.4 Brightness Adjustment

The brightness of the test zone of this device is (80～320) cd/m^2.

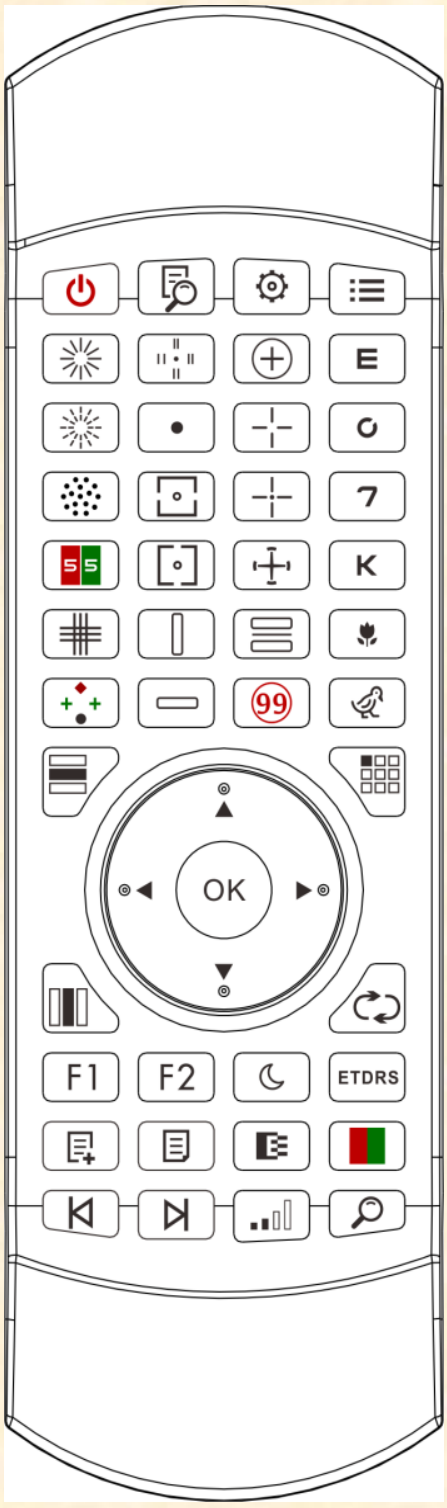
The procedure for adjusting the brightness is described as follows:

Press button  on the remote, choose “system” by pressing  . Move to the screen brightness option by pressing  . Select Low, intermediate, high and ultrahigh to adjust the screen brightness and then confirm the settings by press button  for every parameter.

 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



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.

5.2.3 Setup Methods of Multi-Channel

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 + E 3 seconds and visual chart will be set as channel 2

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

Continuously press OK + 7 3 seconds and visual chart will be set as channel 4

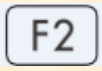
5.2.4 Communication with YPA-2100

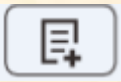
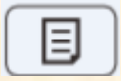
Press the key button on the remote control and enter the setting interface.

Select the WIFI network you need to connect to from the wireless networks list and then tap OK key twice to enter the WIFI password and tap ENTER. After the confirmation WIFI network connection is completed.

Connect YPA-2100 to the same WIFI network in accordance with the Instruction manual of YPA-2100 digital refractor. Then the communication between YPA-2100 and YPB-2100 is completed.

5.2.5 Introduction of function key button

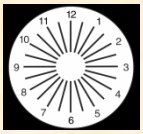
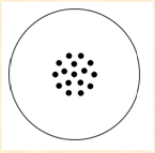
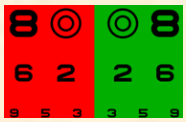
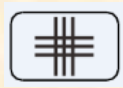
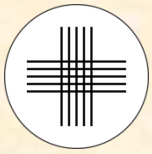
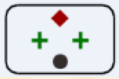
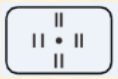
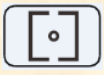
Remote control key button icons	Function
	Switch key: Turn on or off the LCD displayer.
	Help function
	Setting function key
	return key
	Left-right selection key: When single chart displays or charts display in column, press this key to shift the chart left or right on the same visual chart.
	Up-down 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.
	Function confirmation key: 1) Operation confirmation; 2) Color blind test, display answer; 3) Astigmatic disc mark, display red dot mark
	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.
	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.
	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.
	Press this button to rearrange optotypes randomly on the visual chart.
	Reserved function key
	Reserved function key
	Night vision test button: low brightness test, convenient for night vision test

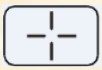
	Pressing it one time to display ETDRS format, pressing it again to go back to standard format.
	Add custom programming steps
	Custom program selection
	custom programming optotypes back to the previous step.
	Custom programming startup key, custom programming optotypes advance to the next step.
	Black and white shift key: Press this key to shift the Charts between black mark on white background and white mark on black background.
	Contrast key: Select Chart contrast.
	Red-Green Mask key: Press this key the Red-Green background will be loaded.
	Fast locate optotype

5.2.6 Optotype key introduction.

Remote control key icon	Chart types display of YPB-2100 visual chart	Function
	visual chart display E chart	E chart, used for visual acuity test of adults and children
	visual chart display C chart	C chart, used for visual acuity test of adults and children
	visual chart display NUMBER chart	Number chart, used for visual acuity test of adults and children
	visual chart display LETTER chart	Letter chart, used for visual acuity test of adults and children
	visual chart display KIDS chart	Kids chart, used for visual acuity test of children
	visual chart display KIDS chart	Kids chart, used for visual acuity test of children

5.2.7 Other tests function

Remote control key icon	Chart types display of YPB-2100 visual chart	Function
		Solid line Astigmatic disc， used for test astigmatism axis and degree
		Dotted line Astigmatic disc， used for test astigmatism axis and degree
		Cross cylinder optotype, used for detecting the position and the degree of astigmatism of a crossed Cylindrical lens, and also used for binocular balance test.
		Red - green Optotype, used for test the spherical vision.
		Cross grid optotype, used for test the spherical vision.
		Worth 4-point optotype, used for detecting binocular simultaneous visual function、fusion, dominant eye
		Stereo optotype, used for stereo vision detection
		Fixation point optotype, Used for detection of heterophoria.
		Horizontal alignment optotype, used for detecting anisophoria, binocular aniseikonia.
		Vertical alignment optotype, used for detecting anisophoria, binocular aniseikonia.

		Vertical line optotypes, used for detecting horizontal heterophoria
		Horizontal line optotypes, used for detecting vertical heterophoria
		Cross ring optotype, used for detecting heterophoria
		Cross view optotype, used for the detection of heterophoria.
		cross fixed view optotype, used for the detection of heterophoria.
		Clock disc optotype, used for the detection of rotating heterophoria
		Red and green binocular balanced optotype, used for the detection of binocular balance
	Ishihara (indcluding traffic light)	Ishihara, used for the detection of parachromatoblepsia

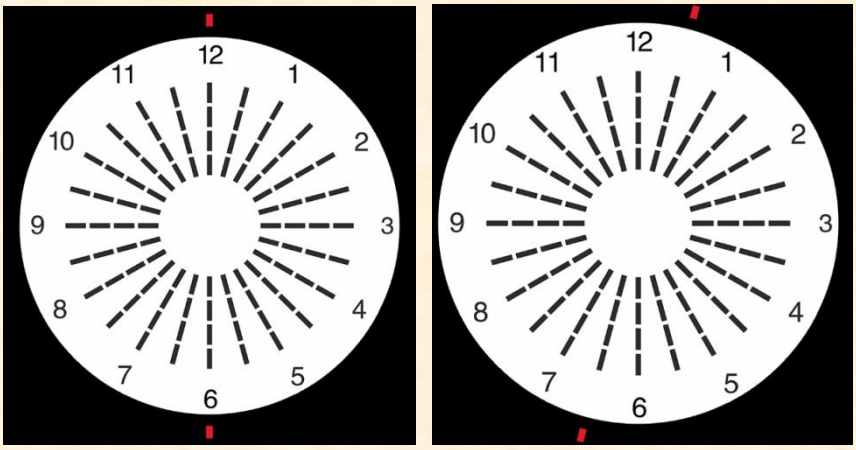
Remarks:

1.Ishihara Chart

Press  key, the color blindness will pop-up. Press  key to shift among different color blindness visual charts. Press  key, shows the test result.

2. Astigmatic disc chart (two options)

Press  or  and then Press  key, display red indicating visual chart. Press  to adjust the location of red indicating visual chart.



5.2.8 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）Display

a）Mirror: normal and mirror

Factory default: normal

Set normal chart display and mirror chart display.

b）Sight mark spacing: small, intermediate, big. Factory default: intermediate.

c）Sight mark arrangement: regular, V type. Factory default: regular.

d）Unit background: white, black. Factory default: white.

e）Browsing mode: page by page, row by row. Factory default: page by page.

f）Contrast level: Level 4, level 6, level 8. Factory default: level 6.

g）Default sight mark: off, E, C, letter, number. Factory default: off.

Set defaulted start-up sight mark mode.

2）Calibration

Operators conduct settings and calibration of screen parameters according to their demands and needs.

3）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.

4）Operators decide whether sight marks are effective according to their own needs and demands: highlighted marks are effective and low-lighted are ineffective. When they are effective, the corresponding sight mark type key on the remote control has the reusable function, it means that by tapping the corresponding sight mark type key effective sight marks can be changed by pressing  key.

5）Unit: decimal1, decimal2, decimal3, decimal4, 5-Grade, Metric1, Metric2, Metric3, Imperial, Imperia2, Imperia3, LogMAR1, LogMAR2, LogMAR3, VAR1, VAR2, VAR3

Set vision value display method.

Factory default: decimal1.

（6） Propotion

Red green sight mark: equidistant, maintain. Factory default: maintain.

Spot sight mark: equidistant, maintain. Factory default: maintain.

Binocular balance sight mark: equidistant, maintain. equidistant, maintain. Factory default: maintain.

Critical distance: at critical working distance operator can proportionally zoom in so as to perform examination of critical visual acuity.

Factory default: unadjustable by default.

7）System

a）Screen saver: On, off, video (product promotion material)

Factory default: On

b）Sleeping mode: 5 mins,15 mins and 45 mins

Factory default: 5 mins

c）Auto power-off: 1 hour, 3 hours, 5 hours, off

Factory default: off

d）Buzzer: Off, low, intermediate, high

Factory default: Off

e）Screen brightness: low, intermediate, high, ultrahigh

Factory default: intermediate

f）Language: Chinese, English

Factory default: English

g）Reset

Press the reset key to reset the factory default settings.

h）User: common, YPA, administrator

Factory default: administrator

8） About

Displaying the system information

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 T2A/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

Audio interface

The USB interface

Nonionizing radiation

Switch Mark

It indicates that the package contains fragile items and should be handled with care

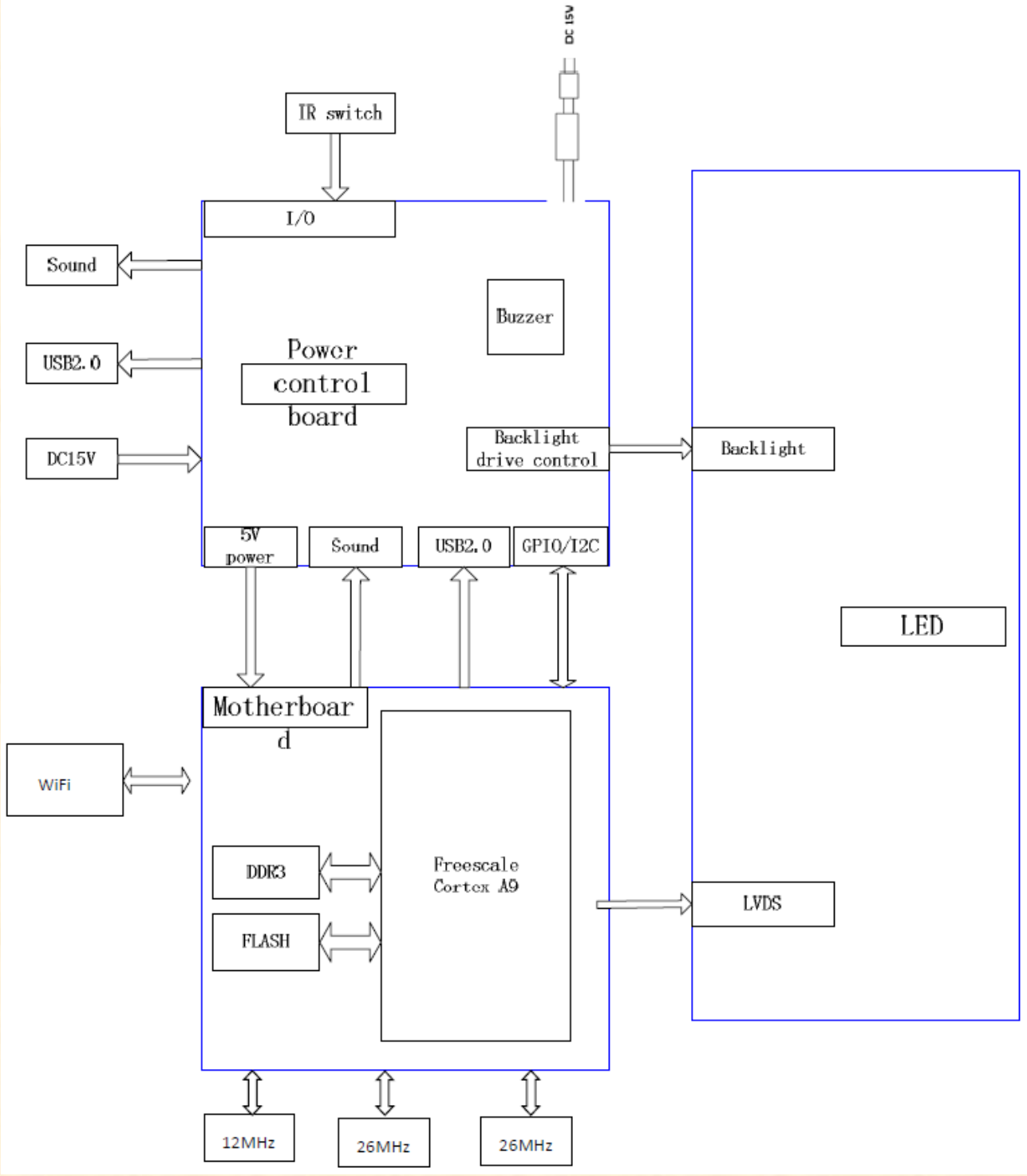
Indicates that the shipping package should be vertically upward during transportation

Indicates that the shipping package is protected from rain

Indicates that the transport package cannot be rolled during handling

It indicates that the maximum number of layers of the same shipping package can be stacked is 5 layers

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.

<table>
<tr><td colspan="3">Guidance and manufacture’s declaration – electromagnetic emission</td></tr>
<tr><td colspan="3">The YPB-2100 is intended for use in the electromagnetic environment specified below. The customer of the user of the YPB-2100 should assure that it is used in such an environment.</td></tr>
<tr><td>Emission test</td><td>Compliance</td><td>Electromagnetic environment – guidance</td></tr>
<tr><td>RF emissions
CISPR 11</td><td>Group 1</td><td>The YPB-2100 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.</td></tr>
<tr><td>RF emission
CISPR 11</td><td>Class B</td><td rowspan="3">The YPB-2100 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.</td></tr>
<tr><td>Harmonic emissions
IEC 61000-3-2</td><td>Class A</td></tr>
<tr><td>Voltage fluctuations/ flicker emissions
IEC 61000-3-3</td><td>Complies</td></tr>
</table>

Guidance and manufacture's declaration – electromagnetic immunity			
The YPB-2100 is intended for use in the electromagnetic environment specified below. The customer or the user of YPB-2100 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	±8 kV contact ±15 kV air	±8 kV contact ±15 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 is intended for use in the electromagnetic environment specified below. The customer or the user of the YPB-2100 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 is used exceeds the applicable RF compliance level above, the YPB-2100 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. 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.

The YPB-2100 is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the YPB-2100 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the YPB-2100 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.