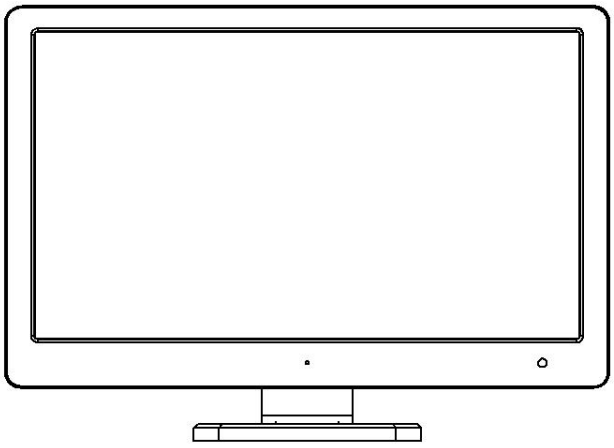
LCD CHART MONITOR

CM-1900P/CM-1900C

USER MANUAL

CE



Please read the user instruction carefully before use.

This device is manufactured according to GB9706.1, Medical Device Electric Ssafety Common Standard, and it must be reliablely grounded. To endure safe usage of the device, avoid any harm to the operator of the device and others or cause any damage to other devices, user must pay attention to the warning signs on the device and the user maunal, and read the documents come along with the device carefully.

ISO 9001/13458 Certificate: Ningbo Ming Sing Optical R&D CO., Ltd product design and development, production process and service are certified by ISO 9001/13485. IEC standard also applies to this instruction.

Before using this device, safety precautions and operation procedures must be thoroughly understood. Please keep this instruction and if there is any problem with the operation and the device, please contact Ningbo Ming Sing Optical R&D CO., Ltd or its authorized suboffice or distributors.

This instruction is also a training handbook. To guarantee the best performance of the new machine, please read carefully this instruction and operate strictly as this manual instructed. Please keep this manual for future reference when communicating with other users. If any copies is needed or has any concerns about this device, please contact the company or authorized distributors.

The information contained in this manual is confirmed correct when published. There will be no futhur notification if there is any changes in the product spec. Ningbo Ming Sing Optical R&D CO., Ltd reserves the right to make changes to the product described in this manual and make no futhur notification. The devices already sold will not subject to such changes.

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File NO.: Q/MS-J511A.12-2019
Rev. NO.: A/0 Date: March 6, 2019

Contents

1. Introduction

Product name: Chart display
Product model: CM1900P, CM1900C, VX22
Intended use: The product has been designed to measure visual acuity. It consists of a chart display unit and a radio remote control.
Contraindication: None

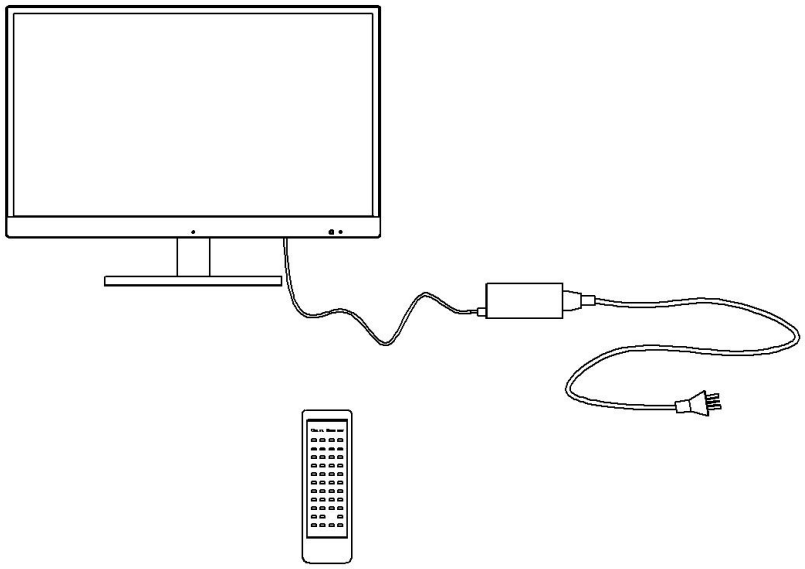


FIG. 1

1.1 Product features and application scope

a. Classification by device shock protection type: type 1 device
b. Classification by device shock protection degree: No application part
c. Classification by device liquid proof level: common device
d. Application part of the device: none
e. Device power supply type: single-phase, grid power supply: 100-240V ~ ; 50/60 Hz
f. Input power: 75VA
g. None AP or APG device
h. Operation mode: continuous operation
i. Non-permanent installation

1.2 Product Parameter

Device dimension: 565mm(L) ×350mm(W) ×62mm(H)
Screen size: 23 inch
Net weight: ≈6.0kg

Power adapter: GSM60A12-P1J, input: 100-240V ~ 50/60Hz

Polarizer: frame: 169mm(L)×43mm(W), lens: 42mm(L)×30mm(W)

Red/green filter: frame: 169mm(L)×43mm(W), lens: 42mm(L)×30mm(W)

Storage and transportation environment:

Temperature: -40℃-+50℃

Humidity: ≤80%

Air pressure: 700hPa-1060hPa(transportation), 500hPa-1060hPa(storage)

Working environment:

Temperature: -10℃-+50℃

Humidity: ≤80%

Air pressure: 760hPa-1060hPa

Power supply:

a. Voltage: 100-240V ~ , 50/60Hz

b. Input power: 75VA

Software operating environment

Software version: V2

System hardware platform(minimum configuration)

- Processor dominant frequency: 1GHz
- System memory: 2GB
- Storage memory: 16GB

Software environment: Ubuntu v14

Internet: no need to connect

Safety software: no need safety software

Data interface: Bluetooth Specification V4.0BLE (communication protocol)/no storage formet (storage format)

User access control: bluetooth matching encryption(user identify)/common user(user type)/use of video display(authority limit)

Software nameing scheme:

Software name consists of 3 parts: A, B and C.

A: main version number, represents major software upgrade. Initial value is V1. When there is major upgrade, it will increase each time, eg., V1, V2, V3, V4.....

B: subversion number, represens minor upgrades, initial value is 0, and will inrease by 1 every time there is minor upgrade of the software.

C: corrective revision number, represents corrections of the software. Initial digits 000000. It will be the last 5 digits of the date when the software is corrected. Eg, if the software is changed/corrected on Oct 8, 2012, the corrective revision number will be 21008.

1.3 Main performance index

1.3.1 Chart types

The chart display can show different types of charts, including: E, C, animal, 123, ABC, polarized charts, red/green charts, radiation astigmatism, color blind chart etc.

1.3.2 Chart format

1.3.2.1 Charts visiual test range

Visiual test results will be displayed in decimals, including 14 types including 0.1, 0.12, 0.15, 0.2, 0.25, 0.3, 0.4, 0.5, 0.6, 0.8, 1.0, 1.2, 1.5, 2.0 etc.

1.3.2.2 Number of charts

Lines represents results about 0.2 must contain no less than 3 charts.

1.3.3 Chart specification

1.3.3.1 E chart

1.3.3.1.1 Shape of E chart

E chart single letter overall shape is a square that can be devided into 3 equal parts, and each line and the gaps between 2 lines must be 1/5 of the length of the square side. As shown in below picture:

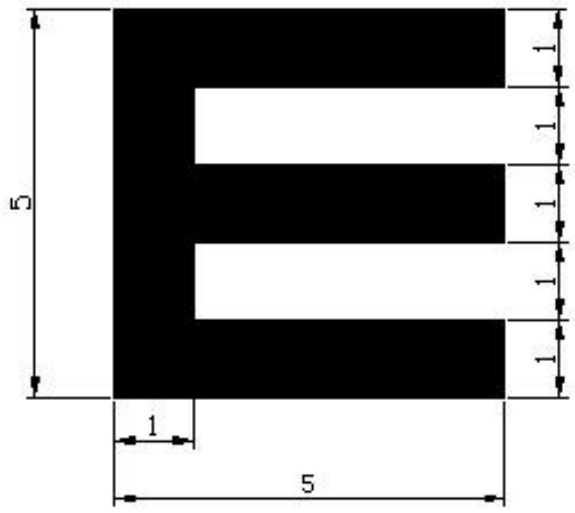


Fig 2. E chart

1.3.3.1.2 Scale and dimension of E chart

When test at 5m, the scale and dimension of E chart requirements is shown in below table:

Table 1. E chart scale and dimension at 5m

NO.	Visual acuity / Decimal （V）	Ratio （visual angle α(′))
1	0.1	$10^{1.0}$=10.000′
2	0.12	$10^{0.9}$=7.943′
3	0.15	$10^{0.8}$=6.310′
4	0.2	$10^{0.7}$=5.012′
5	0.25	$10^{0.6}$=3.981′
6	0.3	$10^{0.5}$=3.162′
7	0.4	$10^{0.4}$=2.512′

8	0.5	$10^{0.3}$=1.995′
9	0.6	$10^{0.2}$ =1.585′
10	0.8	$10^{0.1}$=1.259′
11	1	10^{0}=1.000′
12	1.2	$10^{-0.1}$=0.794′
13	1.5	$10^{-0.2}$=0.631′
14	2.0	$10^{-0.3}$=0.501′

1.3.3.2 C chart, 123 chart and animal chart

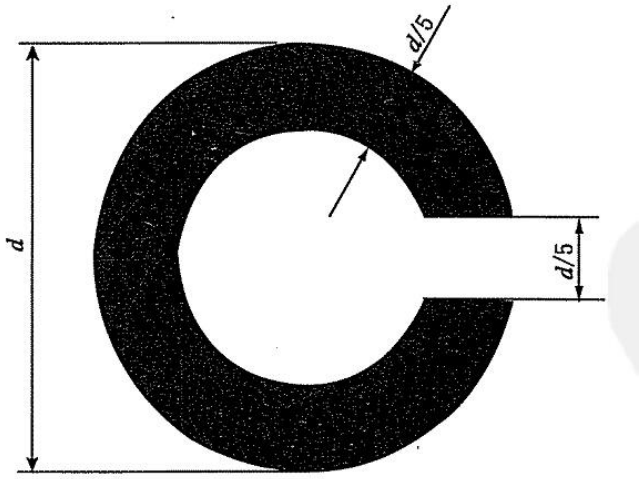


Fig 3. Chart

C chart adopts Landolt ring. The width of the black ring and the gap both are 1/5 of the ring's outer diameter, as shown in picture 3 above.

1.3.3.2.1 C chart scale and dimension

Scale and dimension for C chart at 5m test distance is shown in below tables.

Table 2 Scale and dimension for C chart at 5m

NO.	Visual acuity / Decimal （V）	Ratio （visual angle α(′)）
1	0.1	$10^{1.0}$=10.000′
2	0.12	$10^{0.9}$=7.943′
3	0.15	$10^{0.8}$=6.310′
4	0.2	$10^{0.7}$=5.012′
5	0.25	$10^{0.6}$=3.981′
6	0.3	$10^{0.5}$=3.162′
7	0.4	$10^{0.4}$=2.512′

8	0.5	$10^{0.3}$=1.995′
9	0.6	$10^{0.2}$ =1.585′
10	0.8	$10^{0.1}$=1.259′
11	1	10^{0}=1.000′
12	1.2	$10^{-0.1}$=0.794′
13	1.5	$10^{-0.2}$=0.631′
14	2.0	$10^{-0.3}$=0.501′

1.3.3.3 Animal chart, 123 chart and ABC chart

1.3.3.3.1 Animal chart

1.3.3.3.2 123 Chart

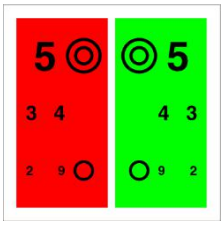
1.3.3.3.3 ABC chart

Chart specification: animal chart, ABC chart and 123 chart, chart maximun size (length) and scale is similiar to E chart. At 5m, chart for 0.1 indication value biggest size is 72.72mm (equal to the E chart size for 0.1 visiula acuity), e.g:

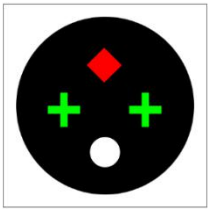
1.3.3.4 polarization charts and red/green charts(each with special test glasses)

Binocular balance on polarized red/green background: test of binocular balance

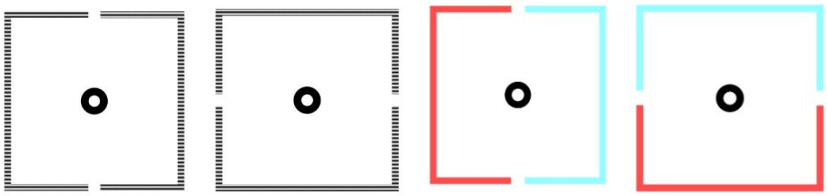
Red/green balance: test of sphere with red and green chart



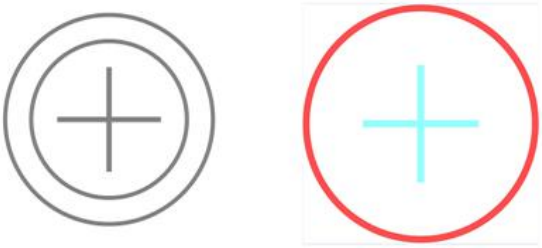
Worth chart: test of binocular simultaneous vision, binocular fusion and euphoropsia



Aniseiconia: test of strabismus and Binocular aniseikonia



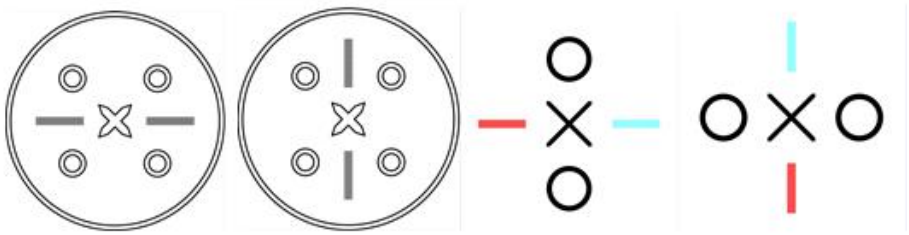
Shober: test for recessive strabismus



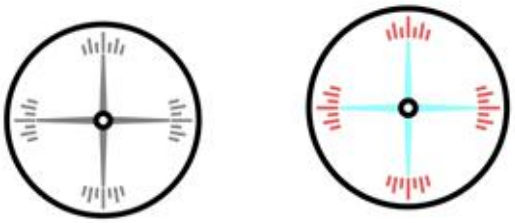
MKH 01 Cross(polarized and red/green): test for recessive strabismus

Phoria(polarized/ red/green): test for recessive strabismus

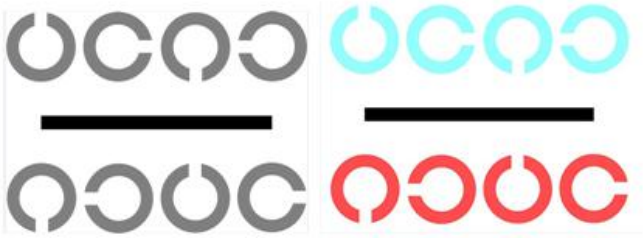
Polarized/ Red/green: test for Rotational esotropia



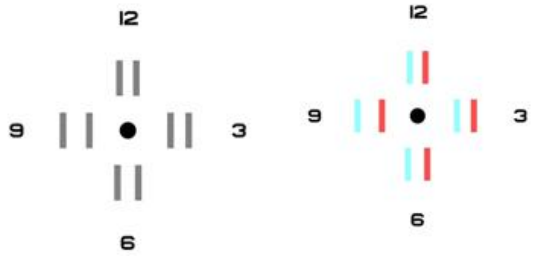
Polarized and red/green MKH 03 Double indicator:test for binocular balance



Polarized and red/green binocular balance test



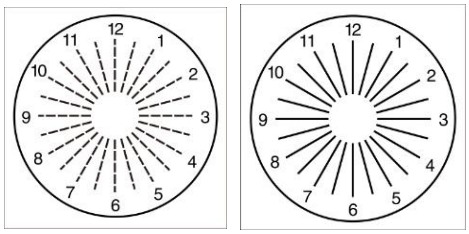
Stereoscopy (polarized and red/green): test for stereoscopic vision



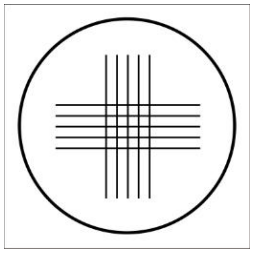
1.3.3.5 Radiation astigmatism chart

Clock chart: charts with dotting line and solid line, functions are the same, to test astigmatism

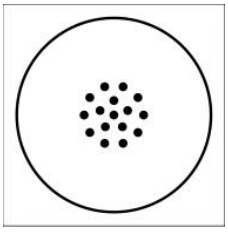
axis and level



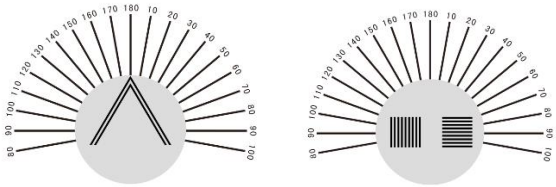
Jackon cross: test for sphere(cooperate with cylinder)



Dot chart: test for astigmatism axis and degree



Astigmatism clock

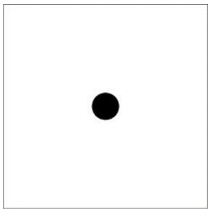


1.3.3.6 Color blind chart

Charts for color anomalopia

1.3.3.7 Dot chart

Test for heterophoria(with martensitic rod lens)



1.3.4 Charts image

The image of charts displayed on the chart display screen shall be in thick ink, uniform, no bright dot, with clear line and no ink dot on the background,

1.3.5 Brightness

The test area of the chart display screen brightness should be around 80-320cd/m^2

1.3.6 Chart display performance

1.3.6.1 Remote control

Chart display operations are realized through remote control. Each function is marked on the remote control panel.

With in the receiving distance of the chart display signal receiver(within 8m), each button on the remote control is working well, and the function will switch rapid and no misfunction.

1.3.7 The chart display is qualified according to terms in GB9706.1 standard.

1.3.8 The chart display environment test applies to GB/T14710-2009 clamatic environment group 2 and me mechanical environment test group 2 requirement.

1.3.9 Apperance

There should e no defects on the plastic cover of the remote control and chate display. The mark, logo, letter and number printed on the surface should be clear.

1.3.10 Chart display electromagnetic compatibility meets YY0505-2012 requirement

2. Safety

2.1 Symbols

The symbols for safety warning are defined as below:

⚠ **Warning**	Warning: meaning a potential danger. If not corrected, will casue deathorbad injury.
⚠ **Note**	Note: meaning a potential danger, if not corrected, may cause minor injury or loss of property.

Under certain cricumstances, even though a note situation may also cause death or heavy injury. So please follow strictly the protection method warning.

2.2 Precautions before use

⚠ Warning

- Install on the flat table or wall arm. The device falling down may cause misfunction.

⚠ Note

- Before use the device, must understandard the unit safety precautions and operation specifications.
  Usage for unintended purpose will casue device failure or other adverse results.
- The device should not get wet in the rain, put in water or places with mist.
- Environment for storage of the device should not be dusty,hot, damp or with direct sun light.
- Do not move the unit to another place by one person, it may hurt your back or fall by accident
- Install the device on level table or smooth walls. If device slide down, it may broken.
- Do not use the device at places with water. Direct contact with water may cause device shock or misfunction.
- Please install and use the device in environmet meet below standard:
  a)temperature：+10℃ - +40℃
  b)humidity：≤80%
  c)pressure：760hPa - 1060hPa
  install site：clean room with limited lighting and no shacking or impact
- Use the plugs meeting the device voltage specifications. If voltage is low or high, device may not work, or it may cause fire.
- The device shall be with good grounding to avoid electric shock.
- Do not overload the socket, it may cause fire.
- Plug the plug completely into the socket. Inproper plugging may cause fire.
- Do not use the cable that is not for the device. It may cause fire.
- Do not put heavy things on the power cable. Broken cables may cause fire or electric shock.
- When installing the device, please follow following requirements(EMC):
  1. do not use this device with other electrical devices to avoid electromagnetic interference during device operation.
  2. do not usethis device with other devices in the same room, including but not limited to life support device and other devices that will influence the patient's life or treatment or other devices that includes small current measurement.
  3. do not use with portable or mobile wireless redio frequencycommunication equipment, to avoid adverse influence on the device operation.
  4. do not use the cables and accessories that are not specified by our company, these will enhence the emission of electromagnetic wave and decrease the anti-electromagnetic interference capability of the device.
  If there is any electromagnetic interferenc between the device and other equipment, user should set up some shielding device or change the location of this device to reduce the interference.

2.3 Precautions during operating the device

⚠ Note

- before testing human eyes, should adjust the level of the patient eyes to make sure they look directly at the device. Missing of this step will influence the accuracy of the test results.
- If there is smoke or any other strage smells coming from this device during use, turn off the device and umplug immediately. Wait till there is no more smoke or smells and then contact us or our authorized distributors. Continue to use the device under this circumstance will cause fire or electric shock.
- Turn off the device when not using. If the device keep operating during a long time will influence the life of the device.
- Before test and operation of the device, please check carefully. If there is any abnormities, do not use the device. Keep using the device under this condition will influence the accuracy if the test results or cause other unexpected misfunction, wrong dignose or other harm.
- Only to use this device by qualified person or under the guaidance of such person.

2.4 Precautions after use

⚠ Note

- If not using the device for a long time, please turn off and unplug it. Fallouts may collect water in the environment and causing short circuit or fire.
- Clean the plug pins with dry clean cloth occassionly. Dust on the plug pin may collect wwater and cause short circuit or fire.
- Do not unplug the device violently. This may broke the metal wires and casue electric shork, short circuit or fire.

2.5 Device check and maintain

⚠ Warning

- Any repair or maintainence shall be conducted by the person trained by Ming Sing Optical R&D CO.,Ltd and can operate the device correctly and has experience with it.
- Removal of the safety screw may cause the device fall off from the support arm and cause severe harm.
- Do not open the cover and try to repair any inner parts. The repair service must be conducted by trained personnel of MSOC or its authorized distributor.
- The calibration or adjustment of the device must be done by MSOC technicians ot other authorized person.
- The operation of thechart display must follow the user manual. Failure to operate the device in the correct method may endanger patient safety or cause device misfunction.

⚠ Note

- Do not use solvent or strong cleaning agent on any part of the device. It may damage the device.
- Do not use organic solvent, such as paint thinner to clean the device. It may damage the device surface.

- Do not put the chart display into any liquid. It will break the device.
- Do not touch the optical parts. It may leave finger print or grease on the lens to influence the device performance.

Note: there might be some pixels disappear on the screen or have some red, blue or green pixels. This does not mean the LCD penal is broken. It is caused during the production of the panel.

2.6 Device dispose

⚠ **Note**

- Disposal of the device and parts should follow the local laws or restrictions.
- Disposal of the device can be done by specified industrial waste dispoal contractors.
- Recyling and disposal of the packing material should follow local laws and restrictions.

3. Equipment parts

1 Chart display
2 Base (optional)
3 Wall mount kit
4 Power transformer
5 Power cord
6 User manualExternal USB and AUDIO ports
7 Red/green frame
8 Polarized frame
9 Radio remote control

4. Device Installation

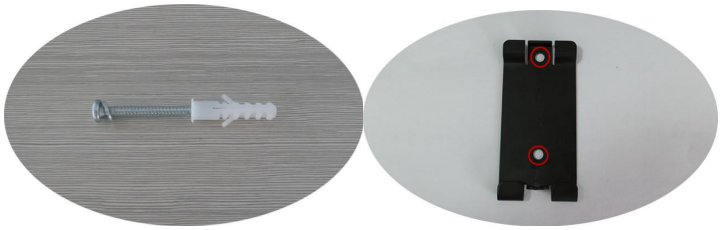
4.1 Intall of device support

Optional installment: table support and wall mount.

Standard installment is wall mount. Procedures are as follow:

A. Install the wall mount kit for the device on specified position as shown in below picture and fix it with 4 M4*12 pan head cross screws.

B. Drill holes for the setscrews at the position where the device will be isntalled. Then fix the wall mount kit for the wall on the position in the direction shown in below picture.



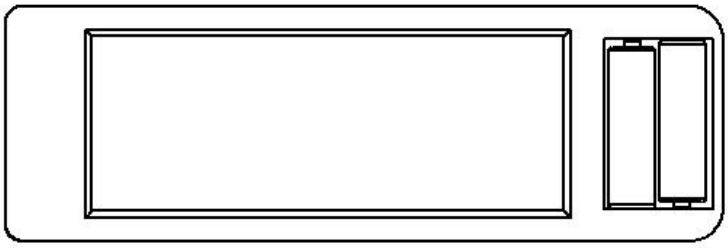
C. Install the chart display on to the wall with the wall mount kit. Then use screws to fix it to prevent it falling down, direction as shwon in below picture.

4.2 Remote control batteries

As shown in below picture.

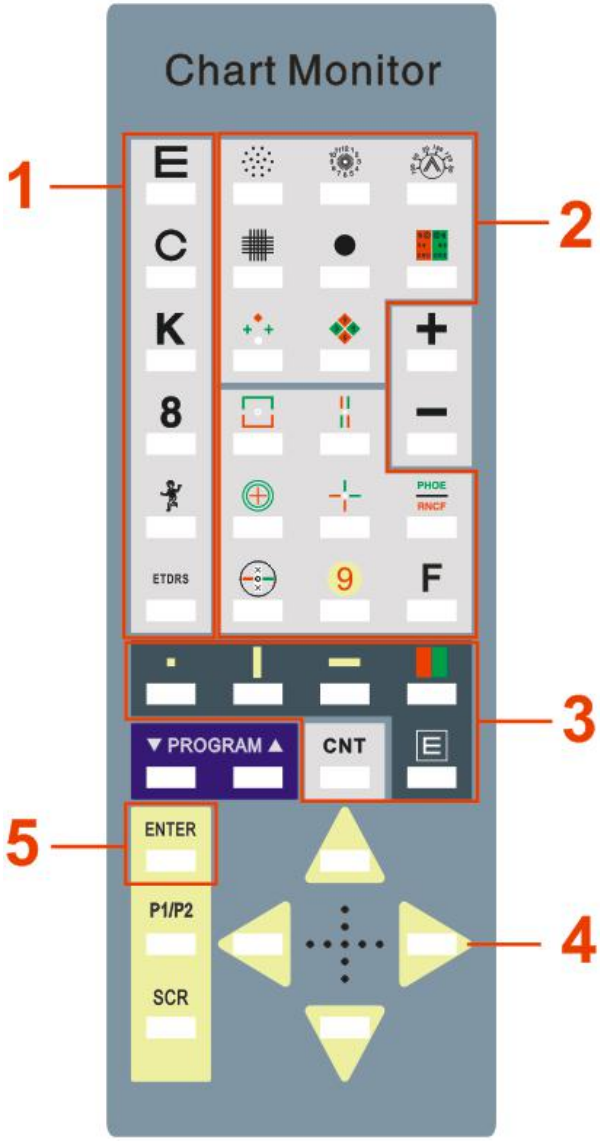
The remote uses 2 batteries, #5 battery and voltage 1.5V. The using distance limit of the remote is 8 meters.

After put the batteries into the remote control, remember to close the cover so that the batteries will not fall down.



5. Operation of the device

5.1 Remote control panel



Area 1. Chart choose

Area 2. Test choose

Area 3. Shielding type choose

Area 4. Operational key

Area 5. Setting (general type)

5.2 Basic operation

A: staring: plug in and press the press the powe rswitch.

B: stopping: press the power stiwch to stop the device.

C: test choose: refer the the remote control picture in the user manual, press the button for the test needed. (if there is ohter function controlled by the key, then keep pressing it till it gets to the function needed)

D: switch of charts: press the E, C, K, 8, buttons on the remote control, the chart display will switch accordingly from E chart, C chart, ABC chart,

123 Chart to children test. These 5 charts can also be switched with  , button on the remote control. Press  together with  or  button, the size of the chart can be changed.Press  or  button can choose more different charts. Other charts operation is similiar to E chart.

H: shileding: press the  ,  ,  button to choose single letter shiled, single line shilde or single row shield. Under shilding mode, can choose shileding area by pressing the 4 direction buttons,. Press the  ,  ,  buttons again to cancel shiedling.

I: Red/green background: oress the  button to show red/green background, press it again to cancel.

J: Color inverse: press  button, the color of the background color and chart color will be exchanged. Press it again the color will exchange again.

K: Contrast: press 

button to get into the contrast adjust interface.

L: ETDRS： press the ETDRS button to get into the ETDRSinterfac. Press this button to switch charts. Under ETDRS mode, press  button for shielding of sigle line.

M: Color blind test：press button 

to enter color blind test. Press this button or up and down button to switch different charts.

N: Stereo ests: press the  button on the remote control to enter stereo test, and press the same button to chage charts.

O: Astigmatism test: press the button to get into astigmatism test. Every time press the left and right button, the indicator on the chart will move forward or backward 1°. Keep pressing on the left or right button the indicator will keep moving. Every time press on the up or down button, the indicator will move forward or backward 45 degrees. Press the button again to check the measurement result. Under this mode, press the left/right/up/down button will not work.

P: Screen saver: when press the SCR button on the remote control or no any operation within 15 minutes, the device will go into screen saver mode, and will be re-activated when there is any operation or press any other button on the remote except for SCR.

6. Self-diagnostic and maintenance

6.1 Trouble shooting

When there is any problems during using the device, please power off and re-start it. If there is any other problem, please contact our after sales service department.

6.2 Cleaning and sterilizing

1） Clean the chart display in a clean environment. Use soft clean cloth to clean the cover.(note: do not use any corrosive solvent to avoid damaging the cover)

2） Sterillize

After use the device, sterilize the remote control: use clean soft cloth with water or soluble detergent to remove the dirty things, then use 75% medical alchol to clean it. Do it at least once every day.

6.3 Disposal

Disposal of the device or accessories or other parts shall folllow the local laws or restrictions regarding similiar products or parts. Improper disposal of lithium battery may cause pollution to the environment.

Dispoal or recyling of the packing material should also follow the local laws or restrictions.

7. Use limit and other declaration

7.1 Use limit

If use and matain the device as per instructed, the use limit starting from the first time usage is 8 years.

7.2 Disclaimer

The manufacture will be responsibe for product satety, reliability and performance meeting below requirement:

(1) The device is installed according to the isntruction

(2) The device is used and maintained according to the instruction

The manufacture will hold no liability to any problems caused by un-permited changes of the device, and the problem caused by such change will not be covered by product warranty.

7.3 Manufacture date

Please refer to product label.

8. EMC

For this equipment, method for EMC shall be specially taken and install and use the device according to the EMC information in this manual.

Special precautions shall be taken relating to EMC for this equipment, and it shall

be installed and used according to the EMC information stated in this manual.

Portable and mobile communication equipments might influence the performance of this equipment.

Must use the cables and accessories come with the device, cabe information is shown as below:

Name	Model	Length
Power cable	/	2.1 m
Power transformer	GSM60A12-P1J	0.9m

Except for the cable (transducer) that is sold as inner components, use the unspecified accessories, cables or transducer will increase emmision or lower the interference-resistance of the device.

The machine shall not be used nearby or stack on other equipment. If it has to, user should always pay attention to the performance of the device under certain settings under such condition.

The basic performance is normal performance.

Name	Description
Normal working	During the testing process the device can work normally

Instruction and manufacturer statement——EMC **The device is intended to be used under the electromagnetic environment specified below. The buyer should make sure the electromagnetic environment for using the machine should be kept as specified below.**		
Emission test	**Compliance**	**Electromagnetic environment – guidance**
RF emissions GB4824	Group 1	The device uses 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 emissions GB 4824	Class A	The device is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purpose.
Harmonic emissions GB 17625.1	Not applicable	
Voltage fluctuations / flicker GB 17625.2emissions	Not applicable	

Instruction and manufacturer statement——EMC The device is intended to be used under the electromagnetic environment specified below. The buyer should make sure the electromagnetic environment for using the machine should be kept as specified below.

Immunity test	IEC60601 Test level	Coincidentdet level	electromagnetic environment——instruction
ESD GB/T 17626.2	±6kV contact discharge ±8kV air discharge	±6kV contact ±8kV air	The ground should be wood, concrete ortile. If it is covered with synthetic material, the relative humidity shall be at least 30%.
EFT GB/T 17626.4	±2Kv for power cord ±1kVfor input/output cable cord	±2kVfor power cord Not applicable	Grid power should have the quality typically used in a commercial or hospital environment.
Surge GB/T 17626.5	±1kV wire to wire ±2kV wire to ground	±1kV wire to wire ±2kV wire to ground	Grid power should have the quality typically used in a commercial or hospital environment.
Voltage sag, short interruption and voltage change on power input line GB/T 17626.11	< 5% UT， last for 0.5 cycle(on UT, > 95% sag) 40% UT，ast for 5 cycles (on UT, 60% sag) 70% UT， last for 25 cycles, (on UT, 30% sag) < 5% UT，ast for 5s (on UT, > 95% sag)	< 5% UT， last for 0.5 cycle(on UT, > 95% sag) 40% UT， ast for 5 cycles (on UT, 60% sag) 70% UT， last for 25 cycles, (on UT, 30% sag) < 5% UT， ast for 5s (on UT, > 95% sag)	Grid power should have the quality typically used in a commercial or hospital environment. If the user need to use the device when electricity is out, it is recommanded to use UPS or batteries.
PFMF（50/60Hz） GB/T 17626.8	3 A/m	3 A/m	Power frequency magnetic fields should have the quality of what the power frequency magnetic fields in the commercial or hospital would typically have.
Note：Ut means theAC network voltage before apply the test voltage			

Instruction and manufacturer statement——EMC The device is intended to be used under the electromagnetic environment specified below. The buyer should make sure the electromagnetic environment for using the machine should be kept as specified below.			
Immunity test	**Test level IEC 60601**	**Compliance level**	**Electromagnetic environment – guidance**

Conduced RF GB/T 17626.6 Radiated RF GB/T 17626.3	3 V 150 kHz to 80 MHz 3 V/m 80 MHz to 2,5 GHz	3 V 3 V/m	Portable and mobile RF communications equipment should be used no closer to any part of the KR/RM-9800, including clables, 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 manufacturer and d is the recommended separation distance in meters (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 solutions. Electromagnetic propagation is affected by absorption and reflection form 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 cannot be predicted theoretically with accuracy. To assrss 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 KR/RM-9800 is used exceeds the applicable RF compliance level above, the KR/RM-9800 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating
the KR/RM-9800.

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

Recommanded distance between the device and portable or mobile frequence emmision communication devices.

The device is intended to be used in electromagnetic environments where the interference resistance is controlled.

Buyer or user can keep the minimum distance between the device and the portable or mobile commnumcation

equipment to avoid electromagnetic interference base on the equipment's max rated power according to below recommandation			
Transmitter max rated power(W) W	isolation distance according to difference frenquency of the transmitter (m)		
	150kHz - 80MHz $d = 1.2\sqrt{(P)}$	80MHz - 800MHz $d = 1.2\sqrt{(P)}$	800MHz - 2.5GHz $d = 2.3\sqrt{(P)}$
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 the max rated power value is not listed in above form, user can use the distence (unit m), and use the correct equation according to the emmision frequency to calculate; P is the max rated power, unit W. Note: 1. For the frequency 80MHz and 800MHz, choose the equation for the higher frequencies. 2. this instruction may not apply for all situatyions. Propagation Coupling might be influenced by the absorbe and reflection of buildings, objects and human bodies.			

After sales service,If there is any problem with the device during usage and the problem can not be solves after communication with the distributor, please fill in below information and send to MSOC distributor:

1. Product modle and name: CM-1900P, CM1900C, VX22
2. Product serial number(provided on the product label)
3. Description: detailed problem description of the problem