PX1HE series service manual

contents

1. Important Safety Information

CAUTION

Electrocution hazard –
Do not open

The housing must not be opened to avoid the hazard of electrocution. The device does not contain any parts the user can maintain autonomously. Repairs must only be carried out by authorized service centers.

1.1 Precautions

BEFORE SERVICING THE Laser Cinema, READ THE SAFETY PRECAUTIONS IN THIS MANUAL.USE ONLY MANUFACTURER SPECIFIED REPLACEMENT PARTS WHEN SERVICING.USE OF NON-AUTHORIZED PARTS WILL VOID THE MANUFACTURE'S WARRANTY
The service procedures recommended by Hisense and described in this Service Guide are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.
It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment and pose risk of personal injury. It is also important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Service should only be performed by an experienced electronics techician trained in the proper Laser Cinema safety and service methods and procedures.

1.2 Warning

1.2.1

Use of non-manufacturer's recommended parts may create shock, fire, or other hazards. Under no circumstances should the original design be modified or altered without written permission from RCA. Hisense eassumes no liability, express or implied, arising out of any unauthorized modification of design. Service tech assumes all liability.
All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, be sure to use anti-static table mats and properly use a grounding wrist stra. Keep components and tools also at this same potential.
IMPORTANT:

Always disconnect the power cord from AC outlet before replacing parts or modules.

1.2.2

To prevent electrical shock, use only a properly grounded 3 prong outlet or extension cord.

1.2.3

Safety regulations require that after a repair the set must be returned in its original condition. In addition, prior to closing set, check that:
-Note:
>All wire harnesses and flex cables are properly routed and secured with factory tape and/or mounted cable clamps.
> All cables and connectors are properly insulated and do not have any bare wires/lead exposed

1.2.4

(1) Do not supply a voltage higher than that specified to this product. This may damage the product and may cause a fire.
(2) Do not use this product:
> High humidity areas
> In an area where any water could enter or splash into the unit. High humidity and water could damage the product and cause fire.
(3) If a foreign substance (such as water, metal, or liquid) gets inside the panel module, immediately turn off the power. Continuing to use the product may cause fire or electric shock.
(4) If the product emits smoke, and abnormal smell, or makes an abnormal sound, immediately turn off the power. Continuing to use the product, it may cause fire or electric shock.
(5) Do not pull out or insert the power cable from/to an outlet with wet hands. It may cause electric shock.
(6) Do not damage or modify the power cable. It may cause fire or electric shock.
(7) If the power cable is damaged, or if the connector is loose, do not use the product: otherwise, this can lead to fire or electric shock.
(8) If the power connector or the connector of the power cable becomes dirty or dusty, wipe it with a dry cloth. Otherwise, this can lead to fire.
(9) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over

1.3 Notes

The work procedures shown with the Note indication are important for ensuring the safety of the product and the servicing work. Be sure to follow these

instructions.

• Before starting the work, secure a sufficient working space.

• At all times other than when adjusting and checking the product, be sure to turn OFF the POWER Button and disconnect the power cable from the power source during servicing.

• To prevent electric shock and breakage of PC board, start the servicing work at least 30 seconds after the main power has been turned off. Especially when installing and removing the power board, start servicing at least 2 minutes after the main power has been turned off.

• While the main power is on, do not touch any parts or circuits other than the ones specified. If any connection other than the one specified is made between the measuring equipment and the high voltage power supply block, it can result in electric shock or may trip the main circuit breaker

• Be sure to handle the circuit board by holding the large parts as the heat sink or transformer. Failure to observe this precaution may result in the occurrence of an abnormality in the soldered areas.

• Do not stack the circuit boards. Failure to observe this precaution may result in problems resulting from scratches on the parts, the deformation of parts, and short-circuits due to residual electric charge.

• Perform a safety check when servicing is completed. Verify that the peripherals of the serviced points have not undergone any deterioration during servicing. Also verify that the screws, parts and cables removed for servicing purposes have all been returned to their proper locations in accordance with the original setup.

The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

The exclamation point within an equilateral triangle is intended to alert

2. Unit and External Ports

NO.	Port	number.
1	HDMI	2*HDMI2.1, 1*HDMI2.0
2	USB	2 (1×USB3.0)
3	Audio Output	1
4	Ethernet (RJ-45)	1
5	Service Port(mini jack)	1

3. List of circuit boards

NO.	Part	NO.	Part
1	Display board (including software)	8	DMD 板
2	Main Board (including software)	9	Indicator lamp Panel Assembly
3	Power Board	10	Terminal adapter board
4	Key board	11	USB board
5	Right Eye Protection Board	12	IR Assembly
6	Left Eye Protection Board	13	WIFI Board

4. Power board PIN list

XP904 is the power board to the main board connection line
XP903 is the power board to the display board connection line
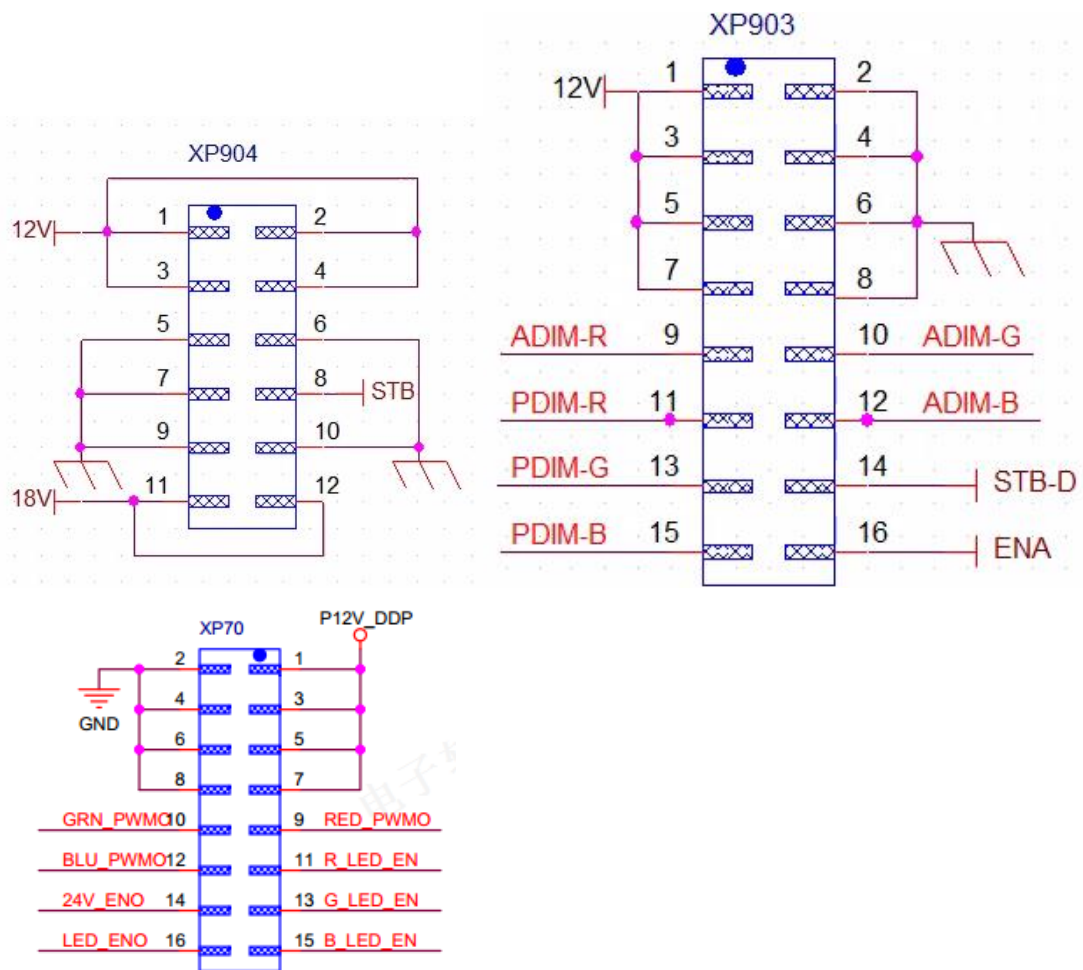XP70 is the power terminal on the display board.
XP903:
(1) Pin 1, 3, 5, and 7 are the 12V power supply pins for the display board
(2) Pins 9, 10, and 12 are the R, G, and B analog dimming pins (current adjustment pins) that the display board outputs to the power supply board, and the maximum is 5V.
(3) Pins 11, 13, and 15 are the R, G, and B digital dimming pins that the display board outputs to the power supply board, and are square waves with a duty cycle.

5. Factory/Service OSD Menu and Adjustment

5.1 How to enter the Factory Menu

With user's RC
(1) Power Laser Cinema on
(2) Press button on the RC then call up "Menu" option.
(3) Move and "ok "button on RC to select **settings--picture-advanced settings-contrast**
(4) On the **contrast**, input figure 1->9->6->9 in sequence on RC.
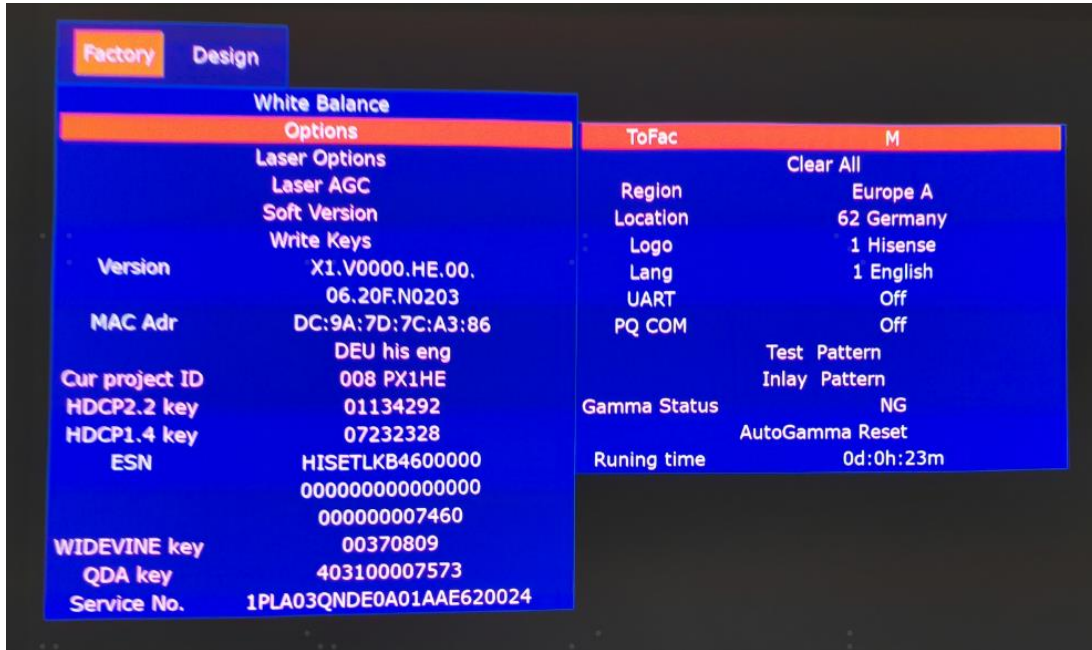Note: It is important to remember that the hand fingers can't shield the RC emitter diode.

(5) Call up a "**M"** on the left-top of Laser Cinema, then press button again, the Factory menu appear then

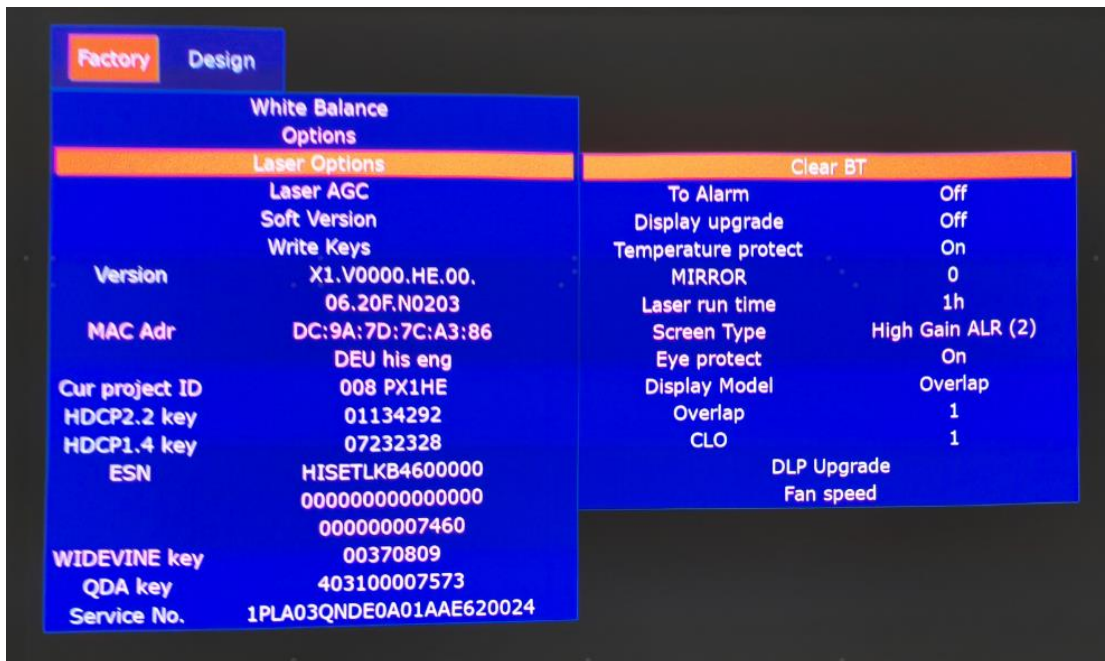(6) DC power off and DC power on the Laser Cinema, which can exit Factory OSD.

5.2 Factory OSD Menu

Factory OSD menu list: if you want to learn more about Laser Cinema, you'd better read it but would not adjust the value please. The Factory menu may be have difference for diverse market and customer.

5.2.1   Options

5.2.2 Laser Options

5.2.3 Soft Version

5.2.4 Write keys

Note:

The Factory menu may be have difference for diverse marketand customer, above Factory menu only for reference.

The factory menu data varies according to different sources. Incase changing the factory data by error, you can choose to "Clear all", by which you can resume the default value.

5.2.5 clean the EEPROM

(1) Select the item "**Options**"--"**Clear all**" in Factory mode

(2) Press button to clear the EEPROM data
(3) Laser Cinema restarts automatically

6. Software Upgrade Method

Main software upgrade directly with USB

6.1 Laser Cinema in user mode

The main software can be upgraded with USB disk.

6.2 Laser Cinema in factory mode

(1) If Laser Cinema is in Factory mode, only have difference from chapter 4.1.1 b. as following. others are same.

(2) Laser Cinema is in factory mode, only AC power off LASER CINEMA and insert the USB disk, next AC power on, LASER CINEMA can identify automatically to update, till call up "Loading data" interface, update process bar is 1%.

Once choose another LASER CINEMA mode, must AC power off and power on the LASER CINEMA to reboot.
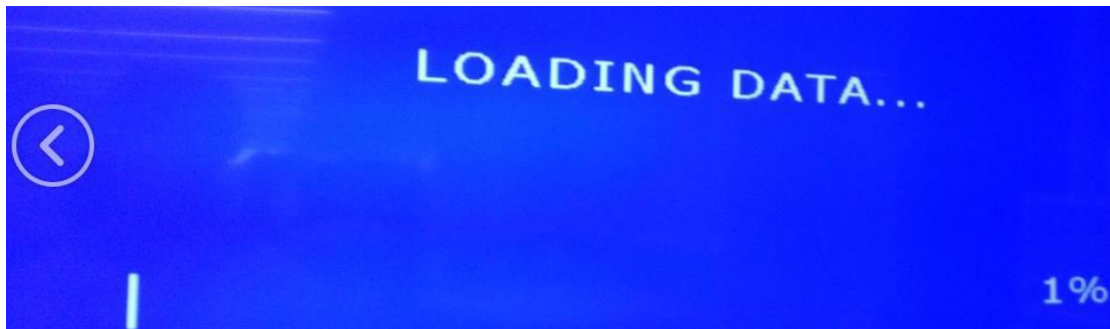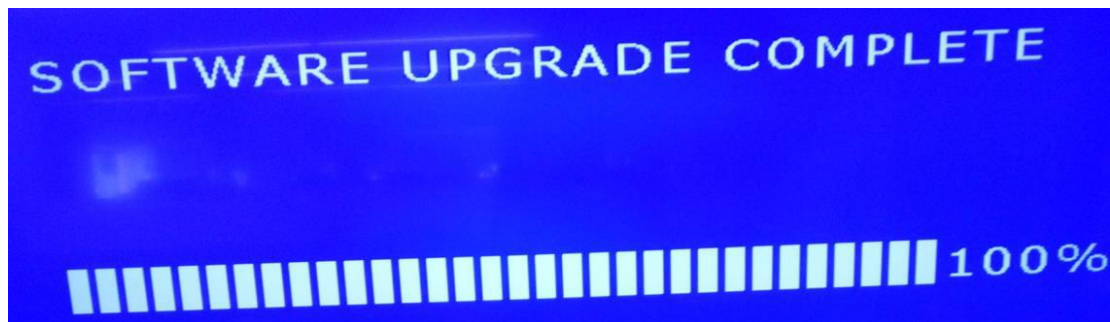
Firgure-1: Loading data

Firgure-2: Checking software

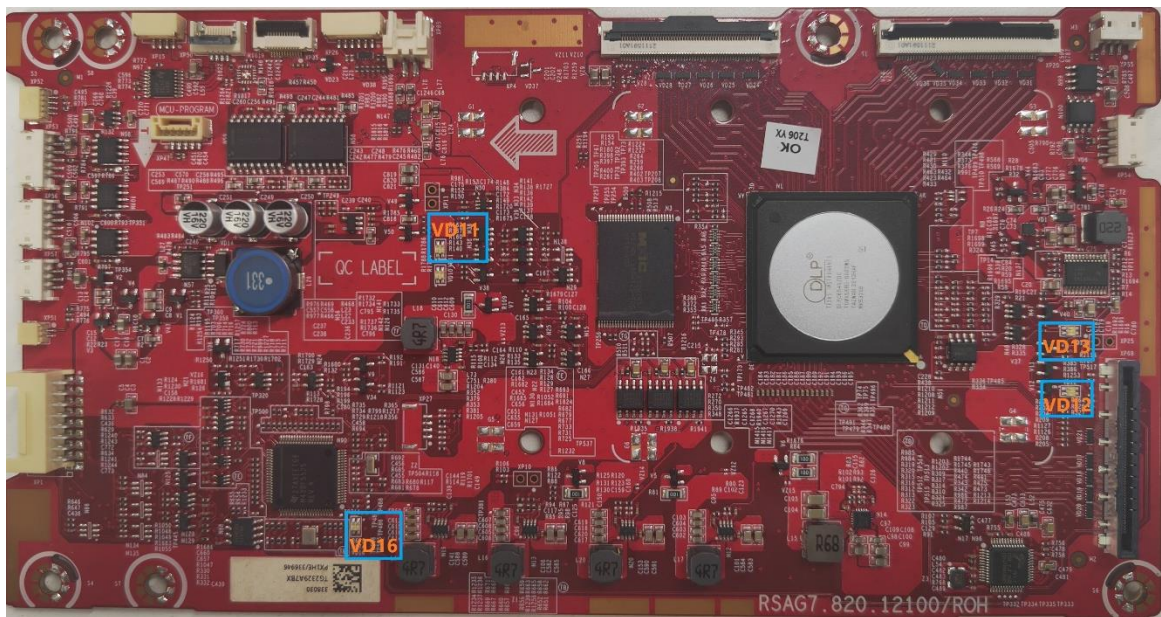Firgure-3: Software upgrade complete, LASER CINEMA automatically reboot.

7. Troubleshooting

7.1 Warning indicator light

Light	Failure principle	Fault determination
Flash 1	The NTC temperature exceeds the protection temperature	(1) If there is a shield in the air outlet / inlet (the distance between the left and right sides of the main engine is 20CM) or the ambient temperature is too high (not higher than 35°), --- remove the shield / reduce the ambient temperature (2) NTC failure/poor plug-in --- shutdown cooling (25 degrees), the measurement value is about 10K, then NTC has no problem, such as the resistance value is too large or too small (obvious open circuit or short circuit), NTC is bad, replace NTC resistance.
Flash 2	The fan speed is slow or stops spinning	(1) A foreign object jams the fan, causing the fan speed to be abnormal or stop rotating --- cleaning (2) The fan is broken ---replace the fan (3) Poor fan transmission a. Fan directly connected to the display board --- replace the display board b. Poor replacement of the display board/fan adapter board --- optical engine fan
Flash 3	DLP system failure	(1) The FFC between the display board and the DMD board is poorly plugged/ failure--- reinserted/replaced FFC (2) DMD part is not installed in place/DMD failure/DMD board failure--- reassemble DMD/replace DMD/replace DMD board (3) The display board failure--- replace the display board
Flash 4	Communication failure from the display board to the TV board	(1) Check whether there is a problem with the connection cable from the display board to the TV board--- reinsert/replace the cable (2) The display board failure ---replace the display board (3) The mainboard failure--- Replace the mainboard (4) If there are other boards (such as FRC, geometric correction, etc.) between the mainboard and the display board, all intermediate links may cause this problem and should be investigated

Flash 5	The foreign object detection function is triggered	(1) There is a foreign object that causes the detection function to trigger (non-faulty) --- remove the foreign object, and enter the factory menu for foreign object detection calibration (2) The failure of the foreign object detection sensor causes the detection function to be triggered by mistake--- replace the foreign object detection board, and enter the factory menu for foreign object detection calibration
Flash 6	Color wheel failure	(1) The failure of the display board leads to abnormal color wheel feedback - replace the display board (2) The color wheel itself is poor - replace the optical engine
Flash 7	Eye protection sensor/foreign object detection sensor is not connected	Check whether the eye protection plate/foreign body detection plate is poorly plugged and re-inserted

7.2 Warning display board light

1. VD11(DLP power up)
a.   Normal: red LED is on
b.   Abnormal: If red LED is off or the blue LED is on, it means the Display board failure
2. VD12(V-by-one status LED)
a.   Normal: Red LED and blue LED is off.
b.   Abnormal: If red LED blue LED is light on. It means the display board failure, or the cable failure, or the main board failure.
3. VD16(MCU status LED)
a.   Normal: blue LED is flash
b.   Abnormal: If the blue LED is always on or off, it means the Display board failure

4. VD13(DLPC6540 status LED)

a. Normal: blue LED is flash or the red LED is always on.

b. Abnormal: If the blue LED is always on or light off, it means the Display board failure. If the red LED is not on, it means DLPC6540 software is not good. (Due to the lack of software upgrade tools, it can only be solved by replacing the display board)

7.3 Special operating procedure

7.3.1.EYE PROTECTION- Open by default, user can close

a. Function:

When a person approaches, a prompt box will pop up (countdown 5S). If the human is far away within 5 seconds, the prompt box will disappear and the light machine will not be turned off, otherwise the light machine will be turned off, and the light machine will be turned on automatically when the human body is far away;

b. Screen prompt:

In order to protect your eyes, do not look into the lens. This projector is shutting down in 5 seconds

c. The path for turning off the eye protection function:

Settings->system->console settings->Eye Protection

d. Fault determination:

If the Eye protection board failure, the eye protection function is not effective

If the Eye protection board poor connection, the unit not hit, indicator flash 7 times

7.3.2. Power Indicator

Function: When turn on the Laser Cinema, the Power Indicator can be lighted. When the Laser Cinema is error, the Power Indicator flash to report the error.

7.3.3 Automatic dust removal-users cannot close

a. Function:

The machine will automatically trigger the automatic dust removal function every 500 hours of operation, and the fan of the whole machine will run at high speed for 3 minutes. There is a prompt at the bottom of the screen during dust removal.

b. Is it normal to watch the dust removal process→yes

c. Does the subtitle disappear during the dust removal process → not disappear, keeps prompting

d. What happens when the dust removal ends → the subtitle prompt disappears directly after the dust removal ends

7.3.4 Temperature reminder

a. Function:

When the ambient temperature reaches 36, the screen will remind overheat protection, when the ambient temperature reaches 45, the machine will

automatically shut down. (The ambient temperature sensor is at the rear air inlet)

b.   Screen prompt:

When power on again, it will prompt "The previous shutdown was due to the high temperature of the Laser Cinema, and it was automatically turned off for protection"

c.   Fault determination:

If there is a warning of overheating, first check if there are any obstructions around the machine, which may cause poor heat dissipation. If so, remove obstructions.

8. Cleaning and Maintenance

(1) Keep dry, avoid long periods of inactivity.

(2) When using the HDMI interface to connect or disconnect multimedia devices, be sure to do it after "turn off the LASER CINEMA".

(3) Regular cleaning

Host: Use air blower to clean the dust, not touch or wipe with your hands. For oil stains and fingerprints, wipe carefully with a microfiber cleaning cloth to avoid damage to the optical coating.

Screen: Clean the screen with a brush or microfiber cleaning cloth. If there are dirt, fingerprints, etc. on the screen, you can try to wipe it with clean water with a dust-free cloth first, and if it can't be wiped off, you can try to wipe it gently with a dust-free cloth dipped in alcohol.