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Passive 3D Cinema System
Model No: FD-S20

User Manual

Attention：Please review the User Manual carefully before installation.

Service Hotline：400-010-1817

Contents

1. System Introduction

FREEDEO passive 3D cinema system FD-S20 is a polarized 3D system for cinema application, which is especially designed for single digital projector. This system can be easily installed on digital projectors or on the projector brackets. Under the control of TMS, 2D to 3D switching can be automatically operated. In cooperation with FREEDEO 3D polarized glasses, the system brings clear, bright and fantastic 3D image to the audience.

● Easy install:

The system can be installed right in front of digital cinema projector by simply using the bracket delivered along with the system itself.

● Simple connection

The entire system is simply connected by two connection cables with the digital cinema projector and motorized bracket.

● 2D-3D switching

The polarizer automatically identifies 2D/3D signals. It automatically moves to the front of the lens while playing 3D images, and automatically moves to the standby position when playing 2D images or system is idle. This system is suitable for TMS.

● Easy maintain:

The polarizer can be cleaned and maintained in an easy and fast manner. In addition, the polarized glasses can be directly replaced if there are any damages of the polarized glass that affect projection quality.

2. Key Features

● Electrical features

Power supply: none
Sync Input: 3D interface (15pin)
Power consumption: ≤2.5W

● Optical features

Light efficiency: 16%±1%
Contrast: > 100:1
Crosstalk: Less than 2%
Response time: Less than 150us
Frame rate: 24fps, 48fps, and 60fps

3. Cinema Matching Requirements

- Polarized glasses: FREEDEO polarized 3D glasses or Equivalent
- Silver screen gain: ≥2.4

4. Digital Cinema Projector Setting

- Dark time: 450us
- Delay times: 0us

5. System Components

Each passive 3D system contains following parts:

- Polarizer ● Manual bracket ● Sync cable
- Power converter (optional)
- Power cord (optional with power converter)
- DB37M/9F synchronization cable (optional with power converter)

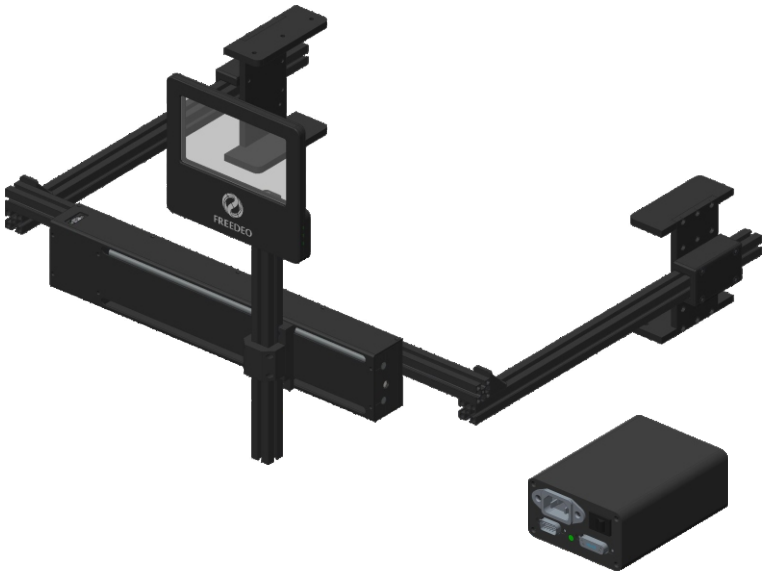


Figure 5 System Components

When installing the system, handle the equipment with care to avoid damaging the digital cinema projector lens or the polarizer.

5.1 Polarizer

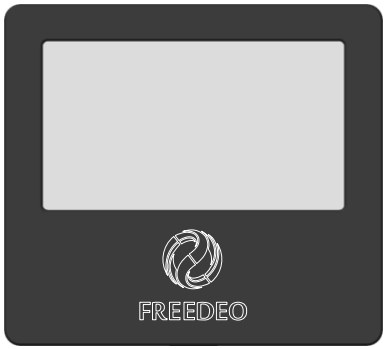


Figure 5-1-1 Polarizer

The outline dimension of polarizer is approximately 234*211*25mm, and its weight is about 1.3KG. The polarizer is a major optical component of FD-S20 system, be sure to handle it with care when installing.

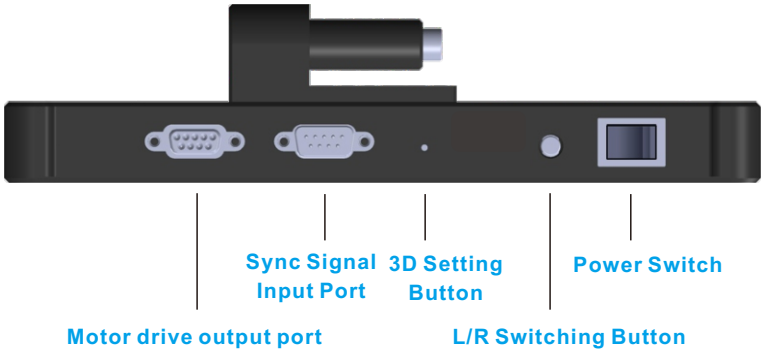


Figure 5-1-2 Polarizer Interface

Power switch : Turn on the power switch of the polarizer for electricity supply.

L/R switching button: In case the audiences feel the depth of field is inverted inside 3D image objects; for example which makes the background seem to be in the front and front objects are at the back, this is because the light phase of polarizer and 3D glass is inverted. Then we can press the L/R switch to toggle the left/right eye signal for correction.

Sync signal input port: For receiving 3D signal from digital cinema projector. Connect 15-pin end of the DB9F/15M sync cable to the 3D interface sync signal output port on digital projector, while connect 9-pin end to sync signal input port of the polarizer

Motor drive output port: For driving the motor. Connect one end of the DB9M/9F motor signal cable to the motor drive output port on the polarizer, and connect the other end to the motor drive input port on the motorized bracket.

Power(Power LED): Green Illuminating when the System is power ON, if not, please check whether the sync cable is connected properly and the projector is power on.

SYNC(Sync signal LED): Green illuminating when 3D signal is detected, if not, please check whether the 3D sync cable is connected properly and the projector is set properly

L/R(L/R switching signal LED):
Illuminating when L/R Polarity Signal is detected.

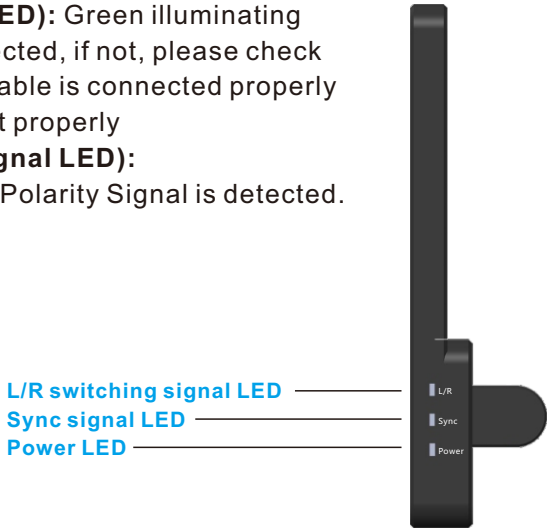


Figure 5-1-3 Indication LED on the Polarizer

5.2 Motorized Bracket

Figure 5-2 Motorized Bracket

●The motorized bracket is a passive 3D system apparatus for automatic switching between 3D/2D playing.

●Installed on the projector cabinet, the motorized bracket connects to the polarizer through the DB9M/9F motor signal cable. When the digital cinema projector is playing 3D movie, the polarizer automatically moves to the front of the lens to polarize light paths. When the digital cinema projector is playing 2D movie, the polarizer automatically moves away from the front of the lens.

●when installing the motorized bracket, be sure to handle with care to avoid damaging the digital cinema projector lens.

●The motorized bracket works with the aluminum extruded section to adjust the position of the polarizer.

5.3 Cabinet Mount Components

Fix the cabinet mount components to projector cabinet to fasten and adjust the motorized bracket.

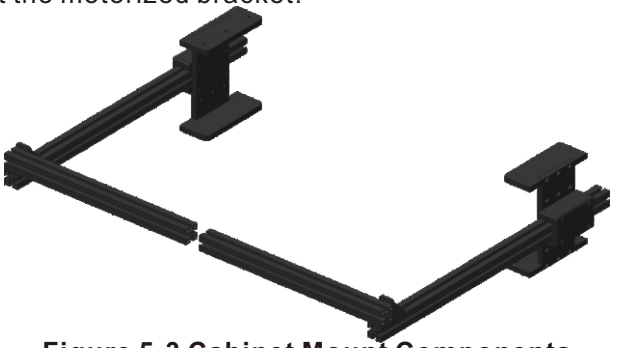


Figure 5-3 Cabinet Mount Components

6. System Installation

6.1 Mount the aluminum section (30*30*300mm) onto the motorized bracket with screws (M6*16mm), as shown in **Figure 6-1-1.**

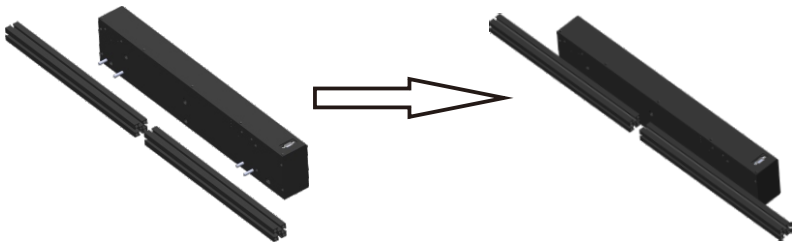


Figure 6-1-1 Motorized Bracket

Then mount the clamping block on the motorized bracket with screws (M4*16mm), as showed in **Figure 6-1-2.**

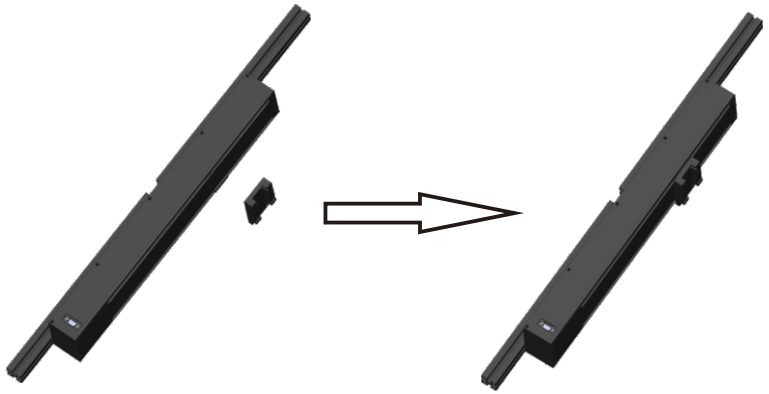


Figure 6-1-2 Mounting the Clamping Block

6.2 Fix the polarizer onto the aluminum square tube (30*30*300mm) with screws (M6*25mm), as shown in **Figure 6-2.**

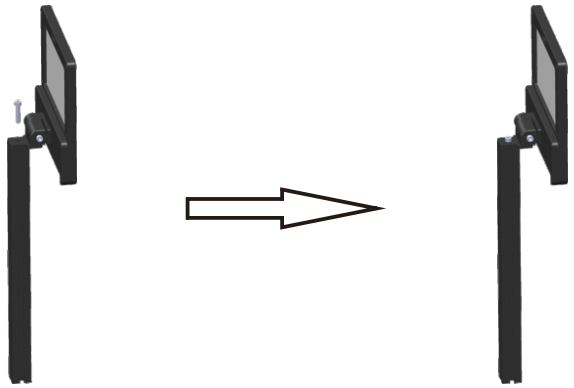


Figure 6-2 Installing the Polarizer

6.3 Connect DB9F/15M sync cable and DB9M/9f motor signal cable to the assembled polarizer(Regarding cable connection, please refer manual #6.6).Then mount the polarizer onto motorized bracket with fixing blocks and screws（M4*16 mm）, as shown in **Figure 6-3.**

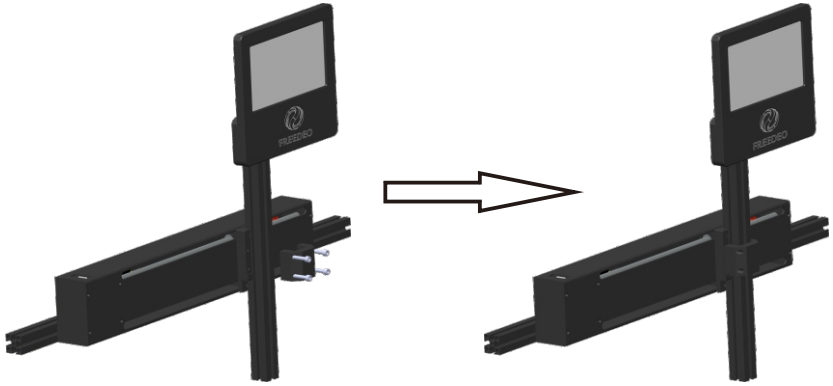


Figure 6-3 Fixing the Polarizer onto Motorized Bracket

6.4 Fix the cabinet mount components to the projector cabinet with screws (M6*45mm), as shown in **Figure 6-4.**

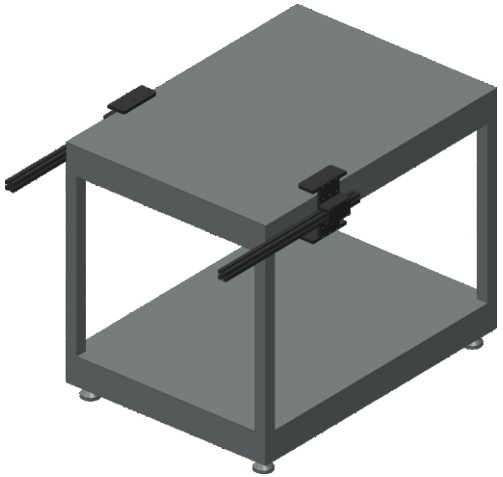


Figure 6-4 Fixing the Cabinet Mount Components

6.5 Fix the installed motorized bracket and polarizer onto the cabinet mount components with triangle blocks and screws (M6*16mm), as shown in **Figure 6-5-1.**

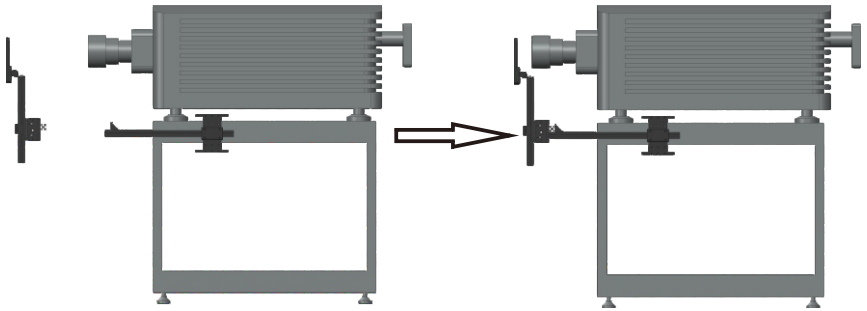


Figure 6-5-1 Fixing Motorized Bracket and Polarizer onto Cabinet Mount Components

When installing motorized bracket and polarizer, pay attention to the distance between polarizer and the lens of projector to avoid collision, as shown in **Figure 6-5-2.**

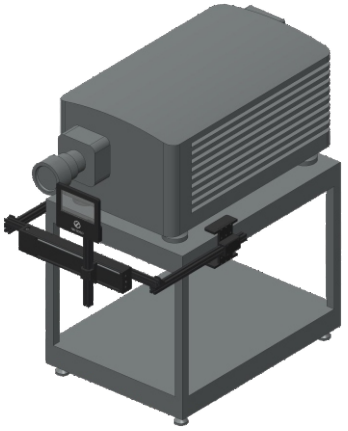


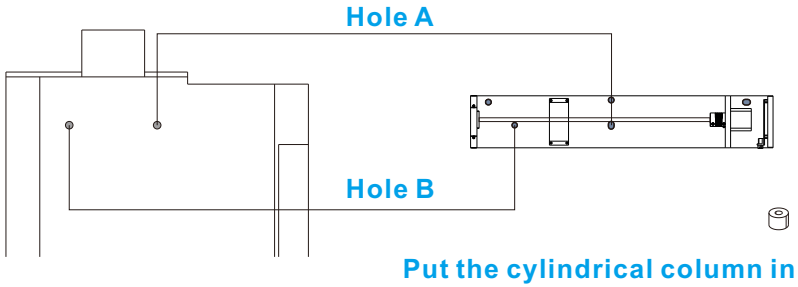
Figure 6-5-2 Adjusting the Distance between Motorized Bracket and the Lens

For projector with longer lens, install motorized bracket in this way as below, as shown in **Figure 6-5-3.**

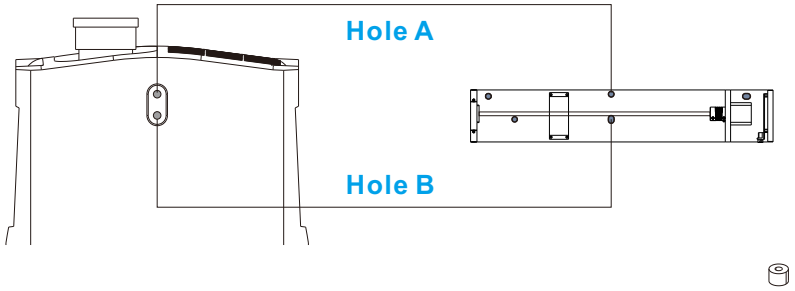
Figure 6-5-3 Installation Method for Projector with Longer Lens

Holes on the back of motorized bracket is for Barco S series, C series, Cx series, and B series digital projectors installation (fix with M10 * 55mm screws).

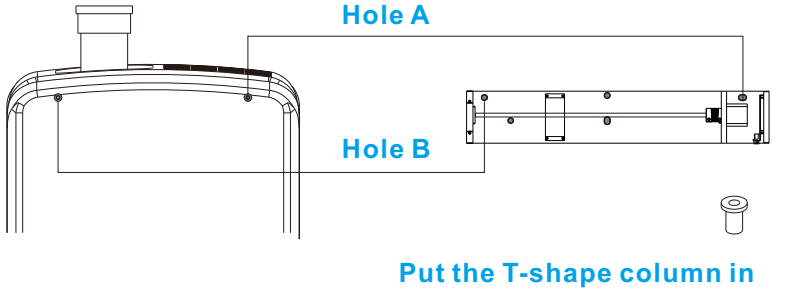
Position of holes for **Barco S** series digital projector installation:



Position of holes for **Barco C** series digital projector installation:



Position of holes for **Barco B** series digital projector installation:



6.6 System Cable Connection

Connect the synchronization cable: Connect the 15-pin end of the DB9F/15M sync cable to the 3D interface sync signal output port on the digital cinema projector, and connect the 9-pin end to the sync signal input port on the polarizer.

Connect the motor signal cable: Connect one end of the DB9M/9F motor signal cable to the motor drive output port on the polarizer, and connect the other end to the motor drive input port on the motorized bracket, as shown in **Figure 6-6-1.**

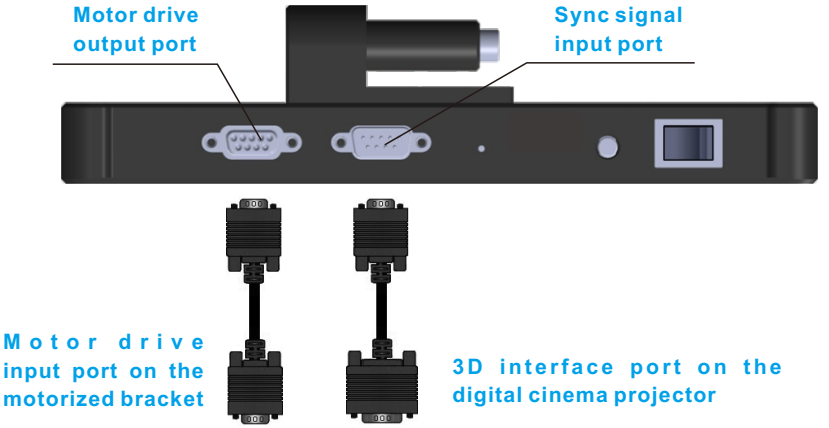


Figure 6-6-1 Cable connections of the Passive 3D System

Alternative power connection when 3D Interface is not available from projector: You can connect to the passive 3D system through connecting to GPIO port on digital cinema projector with signal converter, as shown in **Figure 6-6-2.**

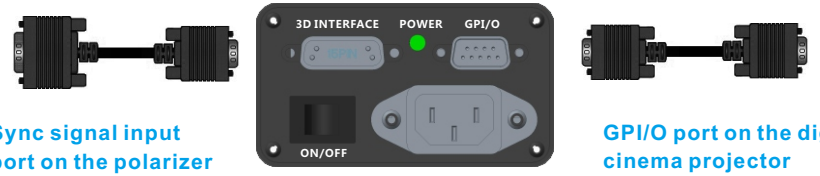


Figure 6-6-2 Alternative power connection when 3D Interface is not available from projector (with power converter and GPIO control signal)

6.7 Adjusting the 3D Operating Position of the Polarizer

After the installation is completed, adjust the 3D operating position of the polarizer.

●Turn off the power switch on the polarizer.

●Manually move the polarizer to the right position in front of lens (so that the light path projected out of the digital cinema projector from the lens can be completely reflected on the polarizer and falls in its center).

●Hold the setting button, and turn on the power switch. Do not release the setting button until the power LED is on and the sync signal LED and L/R switching LED starts flashing.

●After the above setting is completed, the polarizer automatically moves back to the standby position and then moves to the designated 3D operating position. Restart the system to complete the setting operation.

To confirm whether the installation positions are appropriate, perform the following check:

●During 3D movie playback, the light path projected out of the digital cinema projector just falls within the polarizer glass frame.

●During 2D movie playback, the passive 3D system does not block the light path projected out of the digital cinema projector.

●The motorized polarizer stays apart from the digital cinema projector by moving leftward when transit from 3D to 2D mode.

7. Optical Alignment

● Turn on the digital cinema projector and play 3D images, the polarizer automatically moves to the front of the lens.

● Load the cross calibration pattern of digital cinema projector, and slightly adjust the top, bottom, left, and right positions of the polarizer, so that the projected light path coincides with the cross calibration pattern on the projection screen.

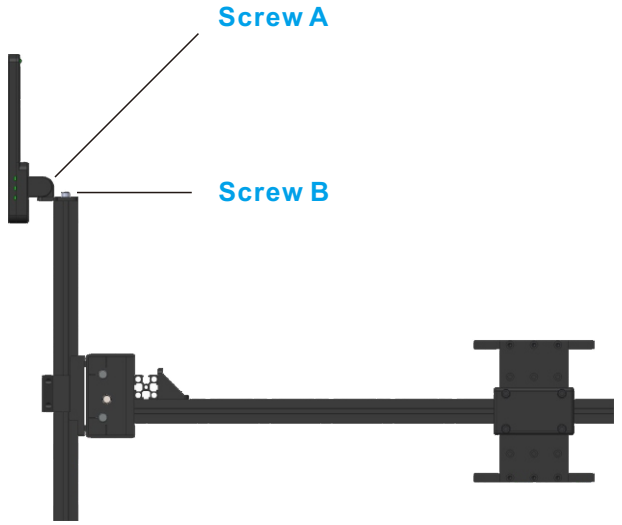


Figure 7-1 Adjusting the Calibration Pattern

● Loosen screw A to turn the polarizer to adjust the top and bottom positions of the cross calibration pattern.

● Loosen screw B to turn the polarizer to adjust the left and right positions of the cross calibration pattern.

8. Notes

8.1.Installation

●There is a level meter on one side of the polarizer for which is the incident plane. It should be placed opposite to the lens of the projector.

●The light spot of the projected image on the polarizer should be about 5 to 10 mm away from the inner edge of the polarizer frame.

● Pull the protective film off the polarizer once the installation completes.

8.2.Routine Maintenance

● Keep the surface of the polarizer clean, and wipe it with absolute alcoholic wiping paper. Prevent the alcohol from flowing into the interior of the polarizer.

● Operating environment: temperature 0-50°C; relative humidity <60%.

● Do not scratch or wipe the surface of the polarizer with any hard object.

● Do not wash the polarized glasses with water. Clean the polarized glasses with absolute alcohol if necessary.

● Place the polarizer back into the corresponding protective case if it is left idle for a long period.

8.3.Transportation

●Do not throw or toss the passive 3D system. Keep it away from fierce vibration.

●The polarizer is fragile and must be separately placed. Do not place any heavy object on it to avoid damages.

8.4.Safety

● Do not knock or scratch the surface of the polarizer with any sharp or hard object; otherwise, the polarizer will be damaged.

● Keep the polarizer away from water and humid places.

● Do not excessively bend the plugs or electric cables, or place any heavy object on it to avoid damages.

8.5.Tips

● Power off the system before making any cable connection changes.

● Hold the plugs tightly when removing them.

● Power off the system and remove the connection cables before moving or cleaning the 3D system.

● Do not touch the plugs with wet hands.