VOLFONI®
CREATIVE 3D TECHNOLOGY

SMART**CRYSTAL**™ CINEMA HORIZONTAL
User Guide

Projector side

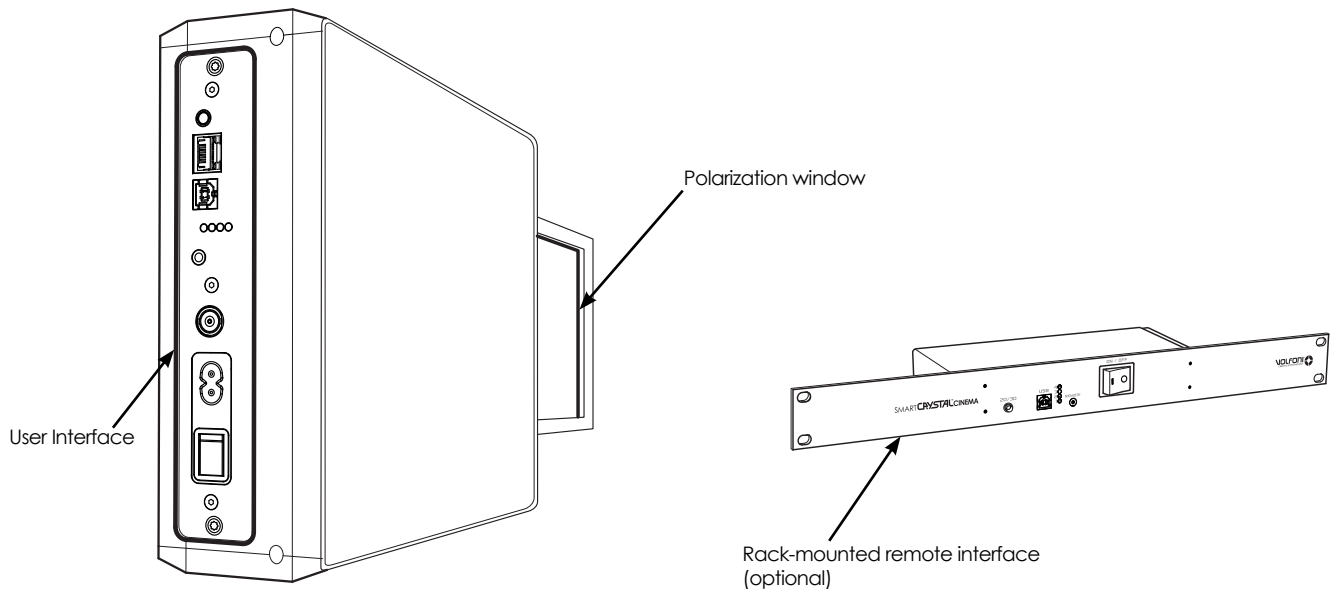SMART**CRYSTAL**CINEMA

*model* **VPSP-05000**

## SUMMARY

# 1. PRODUCT OVERVIEW

The SmartCrystal™ Cinema Horizontal is Volfoni's latest innovation in passive 3D technology. The SmartCrystal™ Cinema polarization window is placed directly in front of a 3D cinema projector lens, thereby generating stereoscopic 3D images on suitable screens when viewed with passive 3D glasses.

This passive polarization system is perfect for any movie theater with DCI-compliant DLP projectors, and permits a quick installation in any projection booth with its optimal support brackets.

The SmartCrystal™ Cinema panel is comprised of a multi-layer stack of liquid crystal elements based on Volfoni's proprietary "Surface-Switching" technology. This enables high frame rates of up to 240Hz to be achieved, creating crisp and bright 3D images.
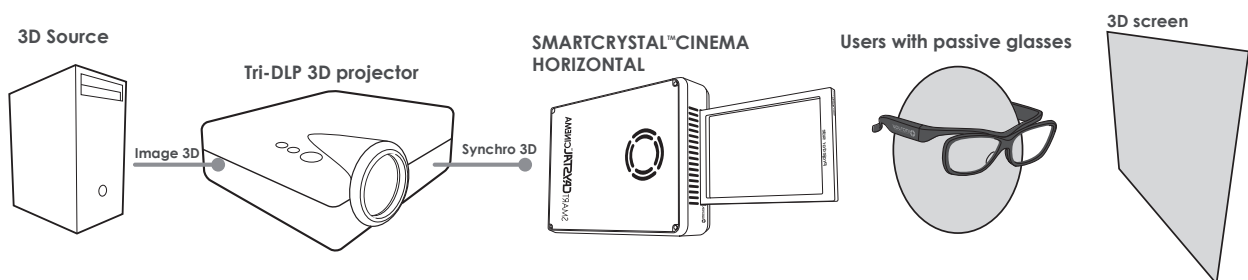
The SmartCrystal™ Cinema Horizontal can be connected directly to any suitable 3D synchronization source and operates with cinema projectors up to 7kW.



Polarization window

User Interface

Rack-mounted remote interface
(optional)

# 2. REQUIREMENTS

To use the SmartCrystal™ Cinema Horizontal unit, the following is required:
- 3D content
- 3D cinema projector
- Polarization preserving silver screen
- Passive circular-polarized 3D glasses



Most types of 3D cinema projectors are compatible with the SmartCrystal™ Cinema Horizontal system.

DLP (Digital Light Processing) projectors are especially efficient for 3D projection. The system is easy to set-up with a DCI-compliant DLP projector and works with projector lamps up to 7KW.

LCD™ (Liquid Crystal Display) and LCoS™ (Liquid Crystal on Silicon) projection technologies, such as JVC's D-ILA™ and Sony's SXRD™, generate a polarized light beam that may not be compatible with SmartCrystal™ Cinema Horizontal's active polarization system. Please consult Volfoni for additional information.

## Polarization-preserving silver screen
In order to enjoy the best quality 3D images, a polarization-preserving silver screen designed for 3D projection is required. If your screen was not manufactured specifically for 3D use, you might experience uncomfortable and blurry 3D images with a high level of cross-talk.
The SmartCrystal™ Cinema is designed for projection with screen sizes up to 20 meters (66 feet) wide, with a 2.4 screen gain.

## Passive polarized 3D glasses
The SmartCrystal™ Cinema Horizontal is compatible with most commonly used passive 3D glasses (circular-polarized only).

**Please contact Volfoni (contact@volfoni.com) should you be interested in our line of passive 3D glasses**

# 3. SMARTCRYSTAL™ CINEMA HORIZONTAL FEATURES

### 3.1 - General specifications

- Aluminum mechanical-housing material
- Surface-Switching Technology™ for crisp and bright 3D images
- Upgradable software for optimal 3D performance
- Meets all standards for electronics approved by CE
- Approved by Hollywood Studios
- 3-year warranty
- For use with lightweight circular-polarized passive 3D glasses
- Passive 3D glasses as well as clip-on 3D glasses are available from Volfoni. Please contact us for more details.

### 3.2 - Technical specifications

- Maximum power of projector: 7 kW
- Maximum switching speed: 192/240Hz
- Optical light efficiency: > 18% (with Volfoni Premium 3D glasses)
- Power supply: 110V/240V 50/60Hz
- Operating temperature: +10°C to +50°C (50°F to 122°F)
- Storage temperature: -5°C to+50°C (23°F to 122°F)
- Polarization window dimension: 171 x 116mm (6.7 x 4.5 in)
- Product dimensions (L x W x H): 302 x 228 x 75mm (11.8 x 8.9 x 2.9 in)
- Weight: 6kg (13.2lbs)

### 3.3 - Electrical specifications

- V= 240 / 110 V AC
- F = 50 / 60 Hz
- P = 35 W
- The unit has a built-in surge protector
- The system is supplied with two different power cables, a European model and an American model.
- This equipment should be electrically grounded.
- The electrical circuit will detect any voltage spikes generated in the system and the system will be shut-down should this occur. Thereafter, it will be necessary to re-start the system once the fault has been rectified.
- In case of malfunction, one of the LED indicators on the control board will light up and the system will be shut-down. Then, the fault should be rectified before re-starting the system.
- To rectify any indicated faults, please contact your dealer, installer stating the model number shown in the silver label of the product.
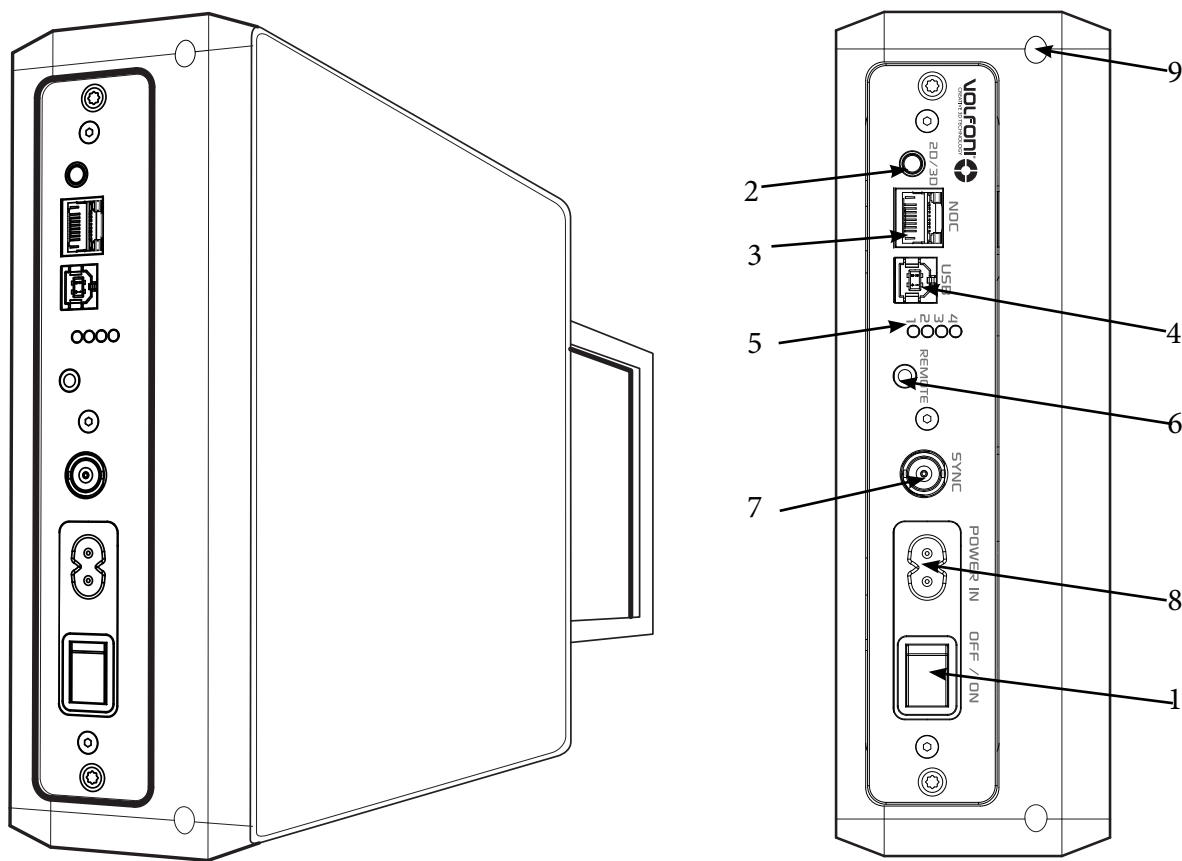
### 3.4 - Projector settings

To use the SmartCrystal™ Cinema Horizontal, the 3D projector should be set as below:
- Dark Time : 1200 µs
- Delay : 0

# 4. USING THE SMARTCRYSTAL™ CINEMA HORIZONTAL

## 4.1 - User interface description



## 4.2 - Using the user interface

### 1. ON / OFF switch
Put this button on position ON to power the SmartCrystal™ Cinema Horizontal and begin operating the system. Put in position OFF when you want to stop using the 3D system.

### 2. 2D / 3D mode
There is one button that moves the polarization window of the SmartCrystal™ Cinema Horizontal left and right. When the system is powered, press this button and the polarization window will emerge from its encasement (3D mode). Press this same button when you want to stop using the SmartCrystal™ Cinema, and the polarization window will go back inside its encasement (2D mode).
This button blinks in green when the polarization window is moving. Typically when you open or close the polarization window of the SmartCrystal™ Cinema Horizontal.
This button is green continuously when the 3D system is open and the polarization window is out of the encasement.
This button is not illuminated when the polarization window is in 2D mode.

**Security system: The polarization window will stay in 3D mode if the 3D sync is still detected. This is a security measure to prevent the closing of the 3D system during a 3D projection.**

*When not using the SmartCrystal™ Cinema, put the system in 2D mode to protect the polarization window from dust and damage, and thereby increase product longevity.*

### 3. Network connection – RJ45 plug
The NOC connector allows the system to be connected to a central network in order to retrieve information and perform remote operations on the SmartCrystal™ Cinema Horizontal (eg, monitoring, remote control, etc).
There are two different modes of use for the SmartCrystal™ Cinema :
- Manual mode: the user interface and the rack interface of the SmartCrystal™ Cinema directly control the operation of the 3D system.
- NOC mode: information and operations are automatically sent from the server via the central network.

### 4. Software update – USB port
Please referer page 10 of this user manuel (part 8).

**5. LED check**
There are 4 different LED lights that indicate the following information:

LED number 1: **State of Fan**
This LED is blue when the fan is running and red when there is a problem with the ventilation system.

LED number 2: **State of Motor**
This LED is blue when the Motor is running and red when there is a problem with the system.

LED number 3: **State of SYNC**
This "SYNC" LED operates as follows:
- Once the system is powered (but not synchronized), the SYNC LED will illuminate in red. The system starts as soon as it is connected to a power source.
- Once the SmartCrystal™ Cinema receives the signal synchronization, the SYNC LED will illuminate in blue as follows :
        o Blue continuous light: signal for 2D synchronization (less than 96Hz)
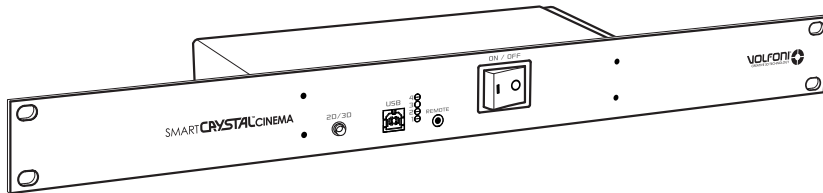        o Blue blinking light: signal for 3D synchronization (greater than 96Hz)

LED number 4: **Power supply**
This LED is blue when the system is properly powered and off when the system is not powered.


**6. Rack interface description**
The 3.5' jack connector is used for external control for automation.
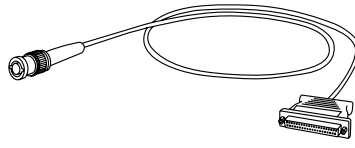Remote plug – 3.5' jack



This rack-mountable accessory allows the use of the SmartCrystal™ Cinema Horizontal when it is installed in a non-accessible area. In this case a network crossover cable is needed to connect the SmartCrystal™ Cinema and the mountable rack.
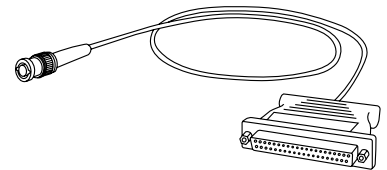

**7. BNC connector**
The BNC connector allows the user to synchronize the SmartCrystal™ Cinema Horizontal together with the cinema projector. Three cables are supplied with the SmartCrystal™ Cinema Horizontal:
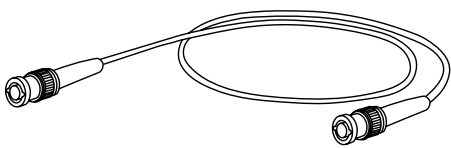


BNC/BNC cable (2 meters long)        BNC/GPIO 15 cable (2 meters long)        BNC/GPIO 37 cable (2 meters long)


**8. Connect the power cable to SmartCrsytal™ Cinema.**
Power IN

**9. Snap hook**
To increase safety, please use the snap hook when fixing the SmartCrystal™ Cinema Horizontal.
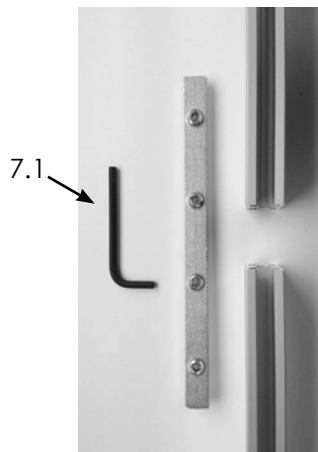
# 5. SMARTCRYSTAL™ CINEMA HORIZONTAL FASTENING

Before installing the polarizator window in front of the projector lens, make sure you have all the needed tools and the instruction manual. This wall fixing part is provided with all the screws and wall anchors you might need.
Follow the instructions to fasten this kit.
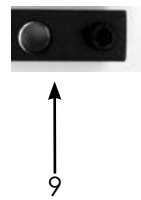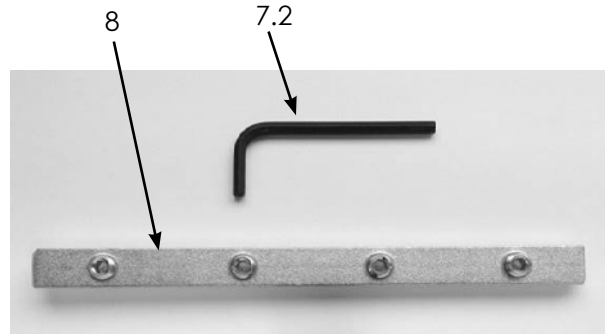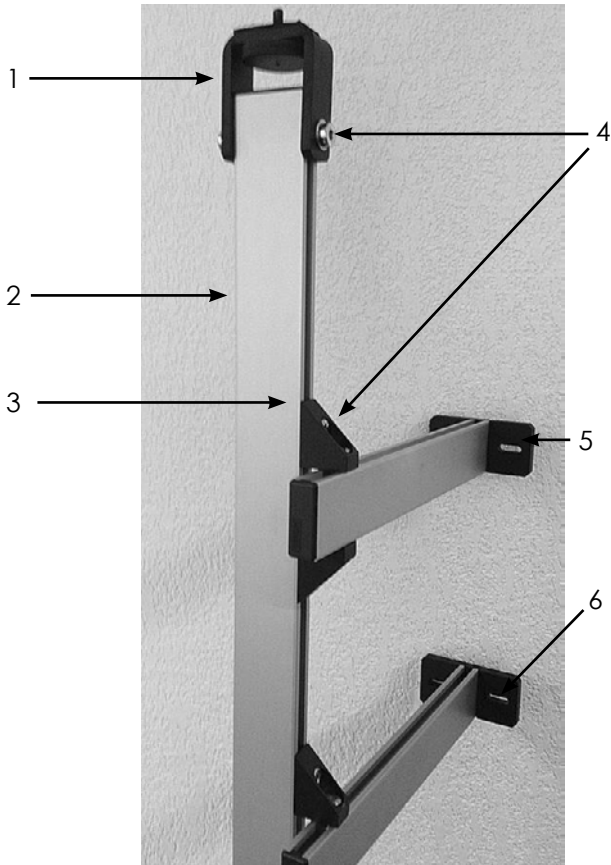


| Parts | Quantity | Description | Parts | Quantity | Description |
|---|---|---|---|---|---|
| 1 | x 1 | Polarizer fixation | 7.1 | x 1 | Key (small size) |
| 2 | x 7 | Metallic bar | 7.2 | x 1 | Key |
| 3 | x 4 | Fixation bar | 8 | x 6 | Assembly part |
| 4 | x 10 | Screws for product fixation | 9 | x 1 | Security system |
| 5 | x 2 | Mounting plate | 10 | x 4 | Cover |
| 6 | x 2 | Screws for mounting plate | | | |

## STEP 1

**STEP 2**
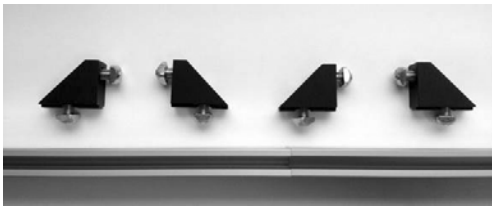


Mounting direction : the sharp parts of the triangles are always in contact with the vertical metallic bar.



7.2

**STEP 3**



**STEP 4**

**STEP 5**



You can tilt the piece #1 at more or less 15 degree

## 6. INSTALLATION

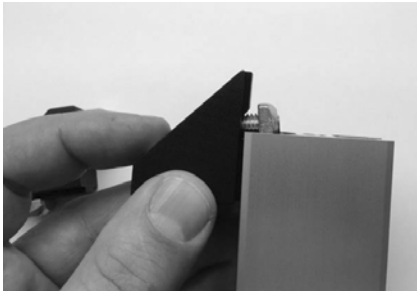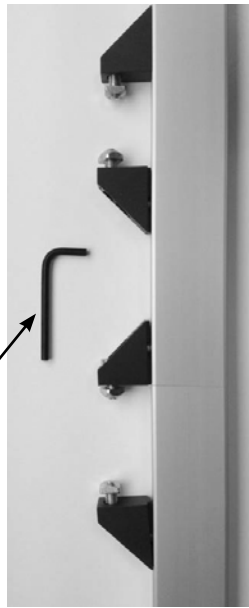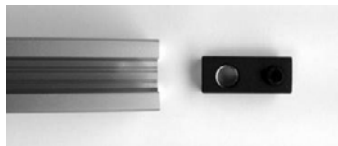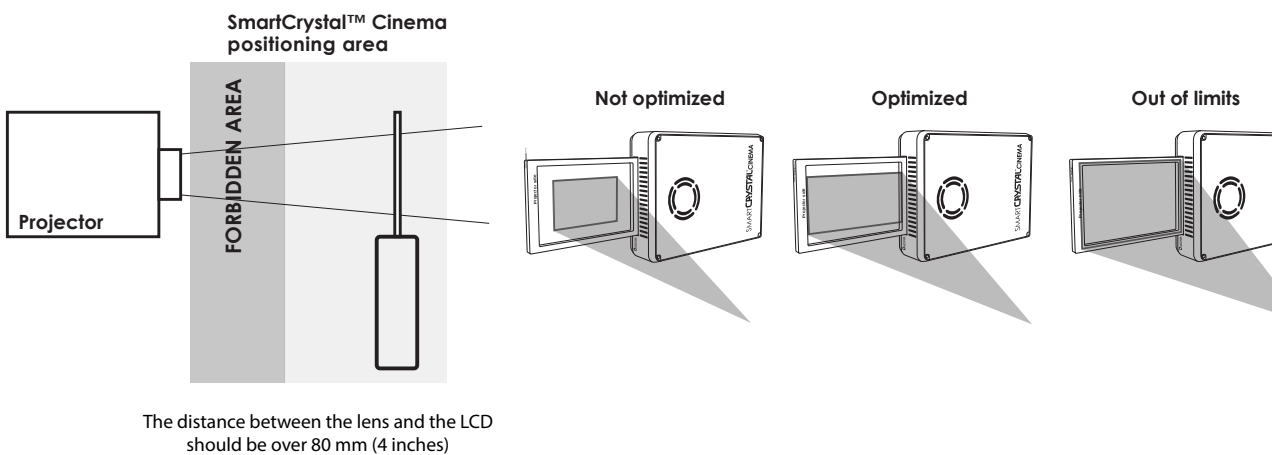The SmartCrystal™ Cinema Horizontal should be placed directly in front of the lens of the projector at a distance such that the image from the projector covers as much as possible the entire area of the polarization window in order to minimize thermal heating effects.
Ensure that the side of the SmartCrystal™ Cinema marked "PROJECTOR SIDE" is facing towards the projector.
The SmartCrystal™ Cinema polarization module must be placed at least 80mm (4 inches) away from the projector lens.



SmartCrystal™ Cinema positioning area

FORBIDDEN AREA

Projector

Not optimized

Optimized

Out of limits

The distance between the lens and the LCD should be over 80 mm (4 inches)

⚠ Monitor the distance between the projector and the SmartCrystal™ Cinema as it is very important to preserve the LCD. The projected image must cover the LCD area as much as possible, to avoid heating only a small part of the LCD.

You can set the SmartCrystal™ polarization panel at a slight incline to avoid scattering light reflection onto the projector lens and to reduce potential ghosting.

# 7. TROUBLESHOOTING

| PROBLEM | SOLUTION |
|---|---|
| The system does not work. | Verify that the Power LED is illuminated when working. If it is OFF, this indicates that there is a problem with the power-supply of the system.<br>Check that the SmartCrystal™ Cinema Horizontal electronic module is correctly mounted in the bracket.<br>Check that the power supply is connected and that the system is in the power ON state.<br>Should the error persists, please contact your technical support. |
| SYNC LED does not illuminate. | Ensure the sync cable is connected to the SmartCrystal™ Cinema Horizontal Polarizer Module. |
| Red continuous light.<br>(Sync LED) | The system is powered but there is no synchronization signal. Ensure the 3D mode is selected in the setup of your 3D source. |
| The LED flashes correctly but no 3D images are shown.<br>(Sync LED) | Ensure the SmartCrystal™ Cinema Horizontal is facing the right way (i.e the side marked PROJECTOR SIDE should be facing the projector).<br>Check that the projection screen is 3D-compliant (silver screen with gain 2,4), content is 3D, and the projector is running in 3D mode. |
| The LED for "state motor" illuminates in red. | In such case, please contact directly your technical support.<br>Do not touch the electronics of the SmartCrystal™ Cinema Horizontal. |
| The LED for "state fan" lights in red. | In such case, please contact directly your technical support<br>Do not touch the electronics of the SmartCrystal™ Cinema Horizontal. |

# 8. SOFTWARE UPDATE

A software is available on Volfoni website to update your product.
How to use the software update:

- Go to Volfoni website (www.volfoni.com)
- Choose the menu SERVICES/SUPPORT
- Then DOWNLOAD
- Download the software VOLFONI LOADER
- Connect your computer to SmartCrystal™ Cinema Horizontal with the cable USB-A /USB-B (cable supplied by Volfoni)
- Power your SmartCrystal™ Cinema Horizontal
- Verify that the software recognizes your system
- Once the SmartCrystal™ Cinema Horizontal is connected, press CHECK FOR UPDATE
-  Load the latest version if it's not already in your SmartCrystal™ Cinema Horizontal

## 9. IMPORTANT SAFETY RECOMMENDATIONS

Protect all parts of the 3D system from direct sunlight, heat or water.

• Extreme conditions may alter the product's performance.

• Do not modify the electrical or mechanical components of your 3D system.

• Do not apply force to the window of the polarization modulator.

• Do not touch the polarization window.

• Avoid vibrations and shock.

• Use a clean soft cloth when cleaning the polarization modulator to avoid scratching.

• Always transport the SmartCrystal™ Cinema Horizontal system with the window of the SmartCrystal™ Cinema Horizontal Polarizer Module returned into the bracket encasement to avoid scratching the LCD or the frame.

• In case of problems with the cooling ventilation system, turn off the projector, and contact your technical support.

• In case of damage to the SmartCrystal™ Cinema Horizontal where the skin is exposed to liquid crystal material, we recommend that you immediately wash the area with soap and water.

• In case of eye exposure to liquid crystal material, please seek medical advice immediately.

• Please note that passive 3D glasses must not be used as sunglasses.

## 10. WARRANTY

The SmartCrystal™ Cinema Horizontal is protected under warranty to the original purchaser for three (3) years according to local legislation. Equipment (modules and cables) should be returned in their original packaging along with the original proof of purchase. Equipment that is broken or scratched is not covered.The SmartCrystal™ Cinema may become damaged if it is placed in front of the projector-lens such that the image from the projector does not cover as much as possible the entire area of the polarization-window (see section 6 "Installation"). Damage caused by placing the SmartCrystal™ Cinema too close to the projection lens is not covered by warranty. Volfoni does not guarantee uninterrupted or error-free operation of the product.

## 11. FURTHER INFORMATION

NOTICE:
The Volfoni Group reserves the right to make changes in the hardware, packaging or other documentation without prior written notice.
SmartCrystal™ Cinema is a trademark of the Volfoni Group.
All trademarks are the property of their respective companies.
www.volfoni.com

## 12. REGULATORY STANDARDS

**European Union - Disposal information :**
This symbol means that according to local laws and regulations your product should be disposed of separately from household waste. When this product reaches the end of its life, take it to a collection point designated by local authorities. Some collection points accept product for free. The separate collection and recycling of your product at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.
- This Class B digital apparatus complies with Canadian ICES-003.