

User's Guide – ESG601 Glasses

The EStar America ESG601 DLP Link 3D Glasses allow you to experience 3D HDTV in unparalleled quality, with full resolution and color. All you need to be fully immersed in 3D HDTV content is a 3D-Ready computer or other 3D-Ready source, one of several DLP Link enabled projectors or televisions, and a pair of ESG601 glasses.

The ESG601 shutter glasses synchronize to the display using DLP Link, a synchronization method that improves brightness and eliminates the need for a separate emitter. The glasses are designed for ease of use and simple maintenance, are rechargeable through USB, have a folding design for compact storage, and have a clean-up-ready exterior safe for use with sanitizing wipes.

Features

- DLP Link sync includes support for new 144 Hz Triple Flash technology
- Lightweight design for a comfortable fit
- Batteries provide up to 60 hours of use per charge
- Large sensor window for a long viewing range
- Compatible with most 3D DLP projection systems and extensively tested with all Optoma Technology DLP Link projectors



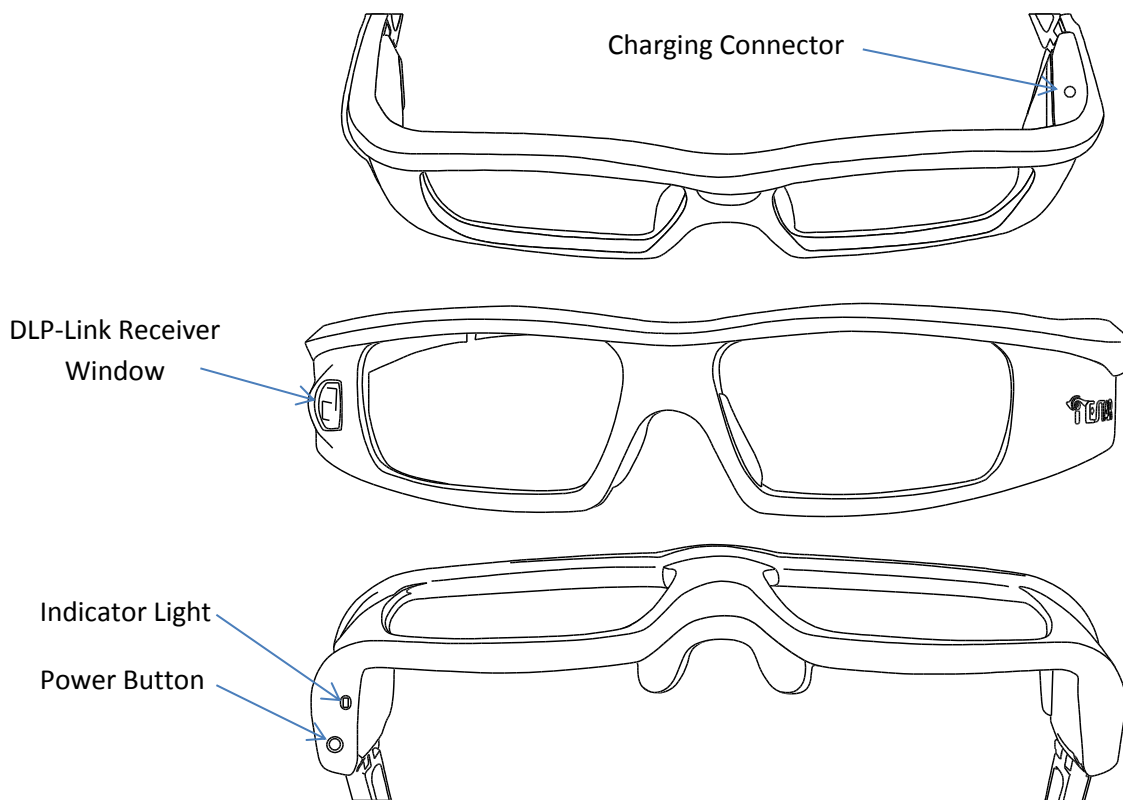
The ESA ESG601 DLP-Link 3D Glasses.

ESG601 3D Glasses Manual

The ESG601 LCD Shutter Glasses function with the BC100 3D Emitter and your 3D-Ready TV to provide the ultimate in 3D stereoscopic viewing. This document describes the features, connection, setup, and operation of the ESG601 LCD Shutter Glasses.

Features

- DLP-Link signal for 3D glasses performance that is better than infra-red based systems
- 96, 100, 120, and 144 Hz “triple flash” capable for today’s and future 3D TVs and Projectors
- High contrast ratio, high uniformity and fast response time for excellent 3D experience
- Rechargeable battery provides up to 60 hours 3D viewing per charge



Using the ESG601 3D Glasses

Battery Charging

To charge the ESG601, use the included USB-Power cable with the custom connector. The custom connector of the cable attaches to the DC connector on the top of the left earpiece of the glasses (see photo to the right). The red LED will turn on while the battery is being charged. When the battery is fully charged, the red LED will turn off. The other end of the cable may be



be attached to any USB A-type port, such as a port on a USB hub, a computer, or the back of a TV. If attached to a computer, the ESG601 will use the computer only to receive power; the glasses will not appear as a device visible to Windows, Mac or other operating systems. The USB cable may also be attached to a USB charger or a phone charger with an identical connector. The ESG601 battery is designed to operate up to 60 hours on a full charge, and can be recharged completely in less than two hours.

Power Button and LED Indicator Function

The inside left earpiece of the frames contains both the Power button and the red/blue LED Indicator Light.



Power On and Battery Charge Indicator

Press the On/Off button.

When the indicator light gives two blue flashes and the lenses blink twice from dark to clear, the glasses are turned on.

(It is possible that the battery in the glasses becomes so empty that nothing happens when you go to turn the glasses on. If this happens, charge the glasses. It may take a few minutes of charging for the battery voltage to return to a point where the glasses will turn on at all.)

Manual Power Off

To turn the glasses off, press and hold the On/Off button for more than three seconds; the indicator light will flash blue three times and the glasses will turn off..

Auto Power Off

The glasses will shut down automatically after 5 minutes with no signal. After 6 seconds with no signal, the indicator light will blink blue every 3 seconds until finally powering off.

Using the Glasses

Make sure your projector is sending a DLP Link signal. When you look at the screen with the glasses, images should now be in 3D. Enjoy!

(If you do not see 3D, see Charging the Glasses or Putting the Projector in DLP-Link mode.)

Putting the Projector in DLP Link Mode

Most projectors have a menu that can be accessed from the buttons or remote. In the menu, if “3D” and “DLP Link” options exist they should both be on. A 3D source must be present, such as a 3D Blu-ray movie playing in 3D. DLP Link is a visible light signal normally blocked by the lenses that may be visible with the glasses off as a blue cast in normally completely black areas. Step-by-step for putting the projector in DLP link mode:

1. Make sure you have a projector that is 3D and supports the DLP-Link protocol. There may be a DLP-Link logo on the projector, or you may have to consult your projector’s documentation.
2. Get a 3D image on the screen. The easiest way to do this is to change to attached a 3D Blu-Ray disc player with HDMI, play a 3D Movie, and verify that you see the double-image on the screen that is characteristic of all 3D movie theater screens and TVs when you are watching 3D without the required glasses.
3. Verify that the projector is sending the DLP-Link signal. The easiest way to do this is to turn on the glasses and check if they are working. Otherwise, you will need to check the manual that came with your projector to make sure DLP-Link is on. DLP-Link can be showing as “On” in the menu and not be active if you’ve hacked the previous step by using a PC or other device that may be sending 3D but not using a DLP Link supported frequency or resolution. After you’ve used DLP-Link for a while, it is visible with glasses off (but not with glasses on)

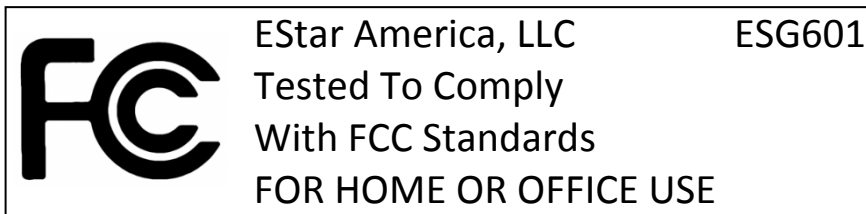
as a bluish cast on black areas. The Wikipedia entry on “DLP Link” has a good set of reference for more information.

Detailed Technical Specifications

ESG601 Glasses

Model Name / Part No	EStar America ESG601 DLP Link 3D Glasses
Operating Frequencies	96/100/120/144Hz (48/50/60/72Hz per eye)
Technology	DLP Link is a registered trademark of Texas Instruments
Transmittance	36% (typ)
Left/Right chroma difference	Gx=0.05, Gy=0.05
Dynamic crosstalk	0.2% static
Response time	Tr=0.2ms, Tf=1.3ms (at room temperature)
Viewing angle	80 degrees max
Standby current	<10uA
Continuous working time	>60h
Battery	Lithium Polymer
Battery Capacity	3.7V / 80 mAh
Charging time	2 h
Charging current	100 mA (max)
Charging voltage	DC5V (4.25V – 6.5V)
Optical receiver range	>12 meters with a 2000 lumen 3D projector
Environmental compliance	RoHS compliant, Lead-free, WEEE compliant
Primary frame materials	Black injected PC, ABS, and nylon
Nosepiece	Rubber
Operating Temperature	0°C - 40°C
Accessories	Cleaning Cloth, Nose Piece, USB Charging cable
Dimensions	170 x 168 x 40 (mm)
Weight	39g
Battery	Rechargeable Lithium Polymer - Up to 15 Hours use
Range	Up to 100m (Dependent on environment)
Storage Conditions	≤90% Humidity
Display Requirements	Projector / Display must have a “3D Sync” connector (VESA DIN3)

REGULATOR NOTICES



FCC COMPLIANCE

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) TH IS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIREED OPERATION.

CAUTION: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

WARNING - SAFETY INFORMATION & PRECAUTIONS

FOR INDOOR USE ONLY. NOT FOR USE AS SUNGLASSES.

THE 3D SYSTEM CONTAINS ELECTRONIC DEVICES AND THE FOLLOWING PRECAUTIONS SHOULD BE FOLLOWED:

- Do not wear 3D glasses for any other activity except viewing 3D pictures. These glasses will degrade visual perception in normal situations and are only intended for 3D use. Do not attempt to use as sunglasses.
- Handle the lenses carefully, especially when cleaning; too much force can easily damage the glass. Do not drop any unit or flex the glasses. When cleaning, do not soak, immerse, or over wet the glasses; these are electronic devices, and moisture can damage or impair their function.
- Do not use chemicals containing alcohol, solvents or surfactants or chemicals such as wax, benzene, thinner, lubricant or cleaners. These may result in discoloration or cracks on the product surface and cause the indication labels to peel from the product surface. Use only fluids and products designed for screen cleaning and use them in accordance with the manufacturer's recommendations.

IMPORTANT - REVIEW THE FOLLOWING WARNINGS REGARDING THE EFFECTS OF 3D VIEWING PRIOR TO ENGAGING IN 3D VIEWING AND ENSURE YOU UNDERSTAND THE PRECAUTIONS AND POTENTIAL IMPACTS THAT 3D VIEWING CAN HAVE ON YOU AND/OR YOUR CHILDREN.

- Parental supervision is required especially when children or teenagers view 3D images. You may wish to consult a physician before allowing young children to view 3D.
- 3D TV'S and other 3D display devices use high speed flashes of light to generate a 3D effect. The light flash effect may produce seizures or epileptic seizures in certain individuals in addition to the following -
 - Some light patterns may cause viewers to experience an epileptic seizure or stroke upon exposure to certain flashing images or light patterns contained in certain 3D television pictures or 3D video games. You should consult a physician before viewing 3D material if you or any of your relatives has a history of epilepsy or strokes.
 - "Photosensitive epileptic seizures" (reaction to flashes of light) can be caused by an undiagnosed condition even when family members have no history of epilepsy.
 - If you experience any of the following symptoms immediately stop watching 3D pictures and consult physician or other medical specialist: altered vision; lightheadedness; dizziness; involuntary movement such as eye or muscle twitching; confusion; nausea; loss of awareness of your surroundings; convulsions; muscle cramps; and/or disorientation. Parents should monitor and discuss with their children the above

symptoms. Children and teenagers may be more susceptible than adults to experiencing these symptoms.

- Do not watch 3D picture when you feel incoherent, sleepy, tired or sick. Avoid watching 3D pictures for long periods of time. Take regular breaks, especially during long periods of 3D viewing.
- Watching TV while wearing 3D glasses for an extended period of time may cause headache, fatigue or dizziness. Remove the glasses and stop watching TV immediately if you experience this.
- Some 3D pictures may startle viewers. Due to the immersive nature of 3D viewing some scenes may cause viewers to reach out or react suddenly, to avoid these possibly dangerous reactions the pregnant, young children, elderly, epileptic and those suffering from serious physical conditions are advised to avoid watching 3D pictures.
- You should not watch 3D pictures if you are under the influence of alcohol, suffer from sleep deprivation or are in poor physical condition.
- 3D viewing is designed to be immersive. 3D glasses are designed to be worn only in a safe environment. If you are startled or misconstrue the 3D image as real, you may move in surprise, contact a nearby object or person and break nearby objects or injure yourself or others.
- Do not use the 3D glasses for any purpose other than the purpose it was designed for. Wearing the 3D glasses for any other purpose (as general spectacles, sunglasses, protective goggles, etc.) may physically harm you or weaken your eyesight
- Some lights, such as compact florescent, florescent, and LED lighting systems, may flicker at rates that are not perceivable to the naked eye but perceivable when wearing 3D glasses. Some lights that are particularly bright may also appear to flicker when observed with 3D glasses. DO NOT look directly into bright lights whether or not you are wearing 3D glasses. If you observe lights that flicker while wearing 3D glasses, discontinue use of the glasses immediately and turn off or move the lights so that there is no visible flicker while watching 3D.

WARNING – FIRE AND INJURY

DO NOT puncture, pierce, damage, destroy, or modify the battery contained in the glasses. Puncturing the battery may result in combustion or a fire, which could lead to severe burns and injury. DO NOT expose the battery to hot or cold temperature extremes. If there are any signs of damage to the battery, discontinue use of the glasses immediately.