

3DTV Corp FAQ (5-2011)

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INTRO—Will 3D Hurt My Kids Eyes and Why Does It Give Me a Headache?

Viewing stereoscopic images for long periods from close to the screen, especially if done infrequently, poses a modest stress on your neurophysiology but it's nothing to worry about. Sitting further away from the screen, taking off the glasses for a minute or switching to 2D briefly will reduce visual fatigue. The more frequently you watch the easier it will get. As with everything, the older you are the more likely this will be an issue. There is no solid evidence 3D viewing has ever hurt anyone and it's a good preventative for kids against problems with their 3D vision later in life, as well as a compelling medium to enhance education.

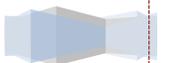
GLASSES MUST BE FREE OF FINGERPRINTS!! ONE PRINT IN THE VIEWING AREA CAN RUIN THE 3D AND PRODUCE HEADACHES!!

In my 38 years in the 3D field I have often seen it said that 3D viewing is potentially harmful, especially for children. Those who know perceptual physiology will likely take the opposite view-- that it is highly therapeutic. There are several hundred million sufferers from amblyopia ("lazy eye"), and maybe several hundred million others, who do not see 3D well who do not have obvious amblyopia. One treatment that is commonly appropriate, which has been widely used for over 100 years, is to have them view 3D with glasses beginning as early in life as possible. If you wait longer than early childhood it is too late. The growth of 3D is actually a giant therapeutic program since it will permit billions to see 3D from childhood onward, and I'm sure this has never crossed the minds of those who write about the "damage" from 3D viewing! Everyone should be required to watch 3D movies as children to prevent amblyopia or other stereovision defects, since amblyopia is really a blanket term for a variety of oculomotor and brain stereo processing problems, most of which probably go undiagnosed. It is estimated that three percent of children under six have some form of amblyopia (or more accurately strabismus), and this probably greatly underestimates the incidence of stereovision problems, most of which I would expect to be much more subtle and only revealed by careful testing.

For proof of even transient problems from e.g., accommodation/convergence breakdown, one needs controlled blind (i.e., those who gather data don't know controls from



experimental subjects) statistically valid studies that go on for say weeks or months. Control groups should be subject to such protocols as watching 2D TV or films for the same time in exactly same conditions. There was lots of noise about damage 15 years ago when HMD's and Virtual Reality appeared, and studies that purported to show persistent neurological problems, but it



all faded away and nobody gives a thought to it today, even though millions of HMD's are in use by consumers every day (e.g., you can get them for your iPod for \$100). And, these isolated studies mean nothing. You have to look at the whole context of human visual system use and how common it is to have people report eye problems, headaches etc. after viewing 2D TV, films or videogames for the same period of time in the same contexts. The visual system like all others is evolved for flexibility. I recall the experiments done occasionally for over 100 years, where people wear special glasses for days or weeks that reverse the right and left eyes, or turn the world upside down. After a day or two the brain adapts, things start to look normal, and one can walk around without problems! And, when they finally take them off, they are again totally disoriented for a few hours or days, but then everything is ok. Riding in a car is likely a far greater stress than any kind of film viewing, and tens of millions get car sick (or on bus, train, airplane) every day. And then there are the amusement park rides and motion seat theaters that routinely make a large percentage of the patrons a bit ill.

Watching 3D is almost certainly good exercise for our visual system and if it bothers you just take off the glasses for a few minutes or a few days. Regarding children, they are the most adaptable—it's the seniors who will have a harder time, but I'm 70 and quite sensitive to bad 3D (as I told Jeffrey Katzenberg after watching an eyestraining clip of Monsters and Aliens at 3DX two years ago—the final film however was corrected), and I watch these films from the front half of the theater (the best way to produce eyestrain) and feel no problems at all. Also, the recent 3D films/videos are very conservative in their use of horizontal parallax, and careful about avoiding binocular asymmetries and out of the screen shots—a dramatic contrast to previous 3D film practice! And the broadcasters are doing the same--just look at the 3D specs of Europe's BskyB satellite network, which, like theaters are supposed to do, limit the H parallax to 3% of the screen width (and prohibit 2D conversions without special permission).

I am sure few of those who talk about this issue stop to think that millions of people every week for the last 20 years or so have looked at 3D movies and games on their TV's and PC's with shutter glasses and other 3D viewing systems, and that most of these (unlike the very well done current 3D films) have very bad stereo errors or huge parallax. In addition, there were hundreds of millions who saw the often very poorly shot and projected films from the 50's to the present. Every day for the last 50 years maybe a million people see such films at special venues where they are often part of rides where the seats are violently jerked around--an experience that makes many people sick even when the films are 2D! Even IMAX and Disney 3D theaters for decades have had notices in the lobby warning people to stop watching if they become ill (a frequent occurrence due to bad 3D!) and warning cardiac patients and the pregnant to avoid them. And it seems there has rarely been an issue in 50 years. No lawsuits, nobody falling down on the sidewalk outside the theaters, no reports of neurological damage.

It is also considered necessary to include warnings with all 3DTV sets and shutter glasses to discontinue use if a person feels bad, and partly this is due to the rare condition of

photogenic epilepsy. The public is generally unaware that such warnings have been routine with 2D games, videos and TV sets for decades. In this regard I recall reading of children with this condition repeatedly inducing seizures by looking at a light or the sun coming thru the trees while waving their fingers in front of their eyes. For many years I have sold shutter glasses to optometrists who have wired them to battery powered sync generators so that persons with amblyopia and other conditions can wear them for hours a day while walking around observing the world with extreme 30hz flicker!

For most people, 3D in cinemas and broadcasts is much too conservative—not one out of the screen shot in the entire program. In addition there is little or no zooming, hyper, hypo or macro stereo and not even good closeups, nor any microscopic, ultramicroscopic, infrared or nightvision shots—all fascinating in 3D. To be frank, almost all the 3D being done now is rather bland and uninspired. The plus is that this minimizes “eyestrain”—the minus that it’s dull. Ideally people should be able to adjust the horizontal parallax etc. to suit themselves. To some extent this would be easy to do just by having a user control in the TV, DVD player or Set Top Box remote. This lack of user control and the largely uninspired and conservative stereoscopy helps to explain the indifference or antagonism of some, such as famous film critic Roger Ebert. Ebert does not like 3D much—even the genuine kind (i.e., excluding Thor, Pirhana, Clash of the Titans, The Last Airbender, Alice in Wonderland and all the other fake 3D films shot in 2D and converted to “3D” in postproduction), and he is not alone. However, it never seems to cross the mind of the anti-3D crowd that it is likely that their stereo vision is defective (the alternative is a psychological problem). Maybe, like most people, they watch with fingerprints on their glasses which reduces the 3D and produces eyestrain ! Many people with apparently normal vision have problems perceiving depth (as some do with color, movement etc.) but very little work has been done to quantitate this.

1. How does the 3DTV Corp Universal Emitter hook up to your 3D ready TV, projector, Game or computer?

Notes on 3D Ready DLP TV’s from Mitsubishi and Samsung.

THE FIRST THING TO KNOW IS THAT THE USER MANUALS FOR THE 3D READY TV’S, 3D BLURAY PLAYERS AND PROJECTORS SAY ALMOST NOTHING REGARDING THEIR USE FOR 3D.

Regarding ALL the 3D Ready DLP TV's from Samsung and Mitsubishi and the older plasma's from Samsung, you MUST play the 3D files or 3D DVD on a pc with a video player that converts them to the 3D checkerboard format OR on a 3D BluRay DVD player that does this. They will NOT work with direct input from a standalone DVD player of the field sequential format of standard 3D DVDs at 60hz.

SOME SAMSUNG MODELS SUCH AS THE 450 SERIES PLASMAS AND 750 DLP'S MUST HAVE INPUT IN 3D FORMAT FROM A PC AT 1024X768 AT 60HZ IN CHECKERBOARD FORMAT ONLY—CHECK YOUR

MANUAL BEFORE YOU BUY A 3D KIT !!

Afaik ALL recent 3D BluRay DVD players have a checkerboard choice in the output menu. For any player that does NOT you will have to buy the Mitsubishi 3DA-1 adapter box (\$95) and put it between your player and the TV (Mitsubishi or Samsung 3D Ready DLP TV or Samsung 3D Ready Plasma). In ALL cases with these types of TV's to see broadcast or cable TV 3D programs you will need the 3DA-1. The 3DA-1 also drives Mitsubishi's (ie Samsung's) expensive (and notoriously fragile) wireless glasses. However the 3DTV Corp emitter and glasses will get you into 3D for less than half the price of those, so unless you want to burn money we suggest you buy the 3DA1 for \$95 and our emitter plus glasses. In comparison, it can cost you ca. \$400 for either 4 Mits glasses or 4 DLP Link glasses while our kit of 4 glasses and emitter is \$195. You can add as many extra Model X glasses from 3DTV Corp as you want for about \$40 each while any of the other kinds cost more. However if you insist on spending \$380 for the Mitsubishi starter kit with 2 glasses we can sell you our Model SA3, N, CS or E Samsung/Mitsubishi compatible glasses for about \$65 each. See below and our article "Connecting Your 3D Ready DLP TV" and our page for updates.

The various boxes now available from VIP,MOOME, Optoma, Viewsonics, Lumagen and others will let you play 3D content from PS3, Cable, XBOX, and BluRay directly into most 3D capable displays without a pc and all have or soon will have plugs for our Gen2 emitter.

NOTE ON 3D BLURAY PLAYERS

The Sony 570 3DBR player and some other early 2010 models do NOT give checkerboard out . The Mitsubishi 3DA-1 box will convert output from any 3D BluRay player (or Set Top Box, PS3, XBOX etc) into checkerboard for either Mitsubishi or Samsung 3D Ready DLP TV's or Samsung Plasma 3D TV's (but for Sams you will then also need the Gefen HDMI Detective Plus because Sams does NOT make an adapter for their DLP TV's—see our article on "Connecting your 3D ready DLP TV). This can be quite a chore though our instructions are thorough.

3DBluRayplayers will NOT put out 120hz field sequential 3D that all 3D Ready DLP projectors made prior to 2011 need nor afaik as of March 2011, the line alternate(interlace) for legacy polarized monitors such as the Hyundai and Zalman or for any of the newest 2011 passive glasses 3DTV's from LG, Vizio (currently only the 65 inch model—their smaller ones using active glasses of which our Model U are the only 3rd party choice), though presumably this will change soon.

So you must play 3D BluRay from a player through an adapter like the Optoma 3DXL, Viewsonic , VIP etc., which all convert the side by side (or other frame packed format) 720p 60hz 3D format to 720p 120hz 3D format. Our low cost models of DLP Link Glasses will work for all 3D Ready DLP projectors or TV's (Mitsubishi being the only current DLP TV set maker) and of course all of them will work with our unique 8 protocol Gen2 adapter for IR glasses (Infrared synced glasses—i.e., almost all glasses sold by anyone, except the DLP Link and the RF models sold by Monster and 3DTV Corp, and the newest Samsung 2011 BlueTooth 3000 series glasses).

FOR PC 3DBluRay Playback.

In addition to the notes on playing back 3DBluRay on an internal PC BluRay drive below, with an HD capture card and a 2X or better external BluRay or 3DBluRay PC drive as source, it should also be possible to use Wimmer's software (see below) to capture and display 3DBR discs realtime in any output format supported by the software (i.e., nearly any 3D format). It should also be feasible to use this software and HD capture card such as the BlackMagic, to get 3D via your PC in any 3D format from a standard standalone home 3DBR player, subject to the limitations normally imposed by the playback restrictions on copyright protected BluRay discs.

To test your pc for 3D BluRay readiness you can download and run this advisor from cyberlink

http://www.cyberlink.com/prog/bd-support/diagnosis.do?affid=2581_853_555_24_0_ENU&utm_source=CLPR_ProductBanner&utm_medium=CLPR_ProductBanner_24_PDVDUpgrade&utm_campaign=CL_ProductNote on receiving 3D broadcasts on 3D Ready DLP TV's, 3D Ready Projectors, CP monitors and CRT's.

Nvidia, has a similar program which tests your pc for 3D readiness if you are one of the 80 million who have a relatively recent Nvidia card.

You can also use software playback on a pc or possibly a Mac as described below and the Arcsoft. Roxio, Corel or PowerDVD 3D players do give you a choice of checker, 120hz field sequential, line alternate etc.

Also 3DBluRay players, like nearly all previous BR and standard DVD players, can output the older format standard 3D DVD's in 60hz field sequential format and they can be viewed in 3D with the 3DTV Home 3D Theater on CRT's and the various 3D capable projectors and TV's (see below). I have so far verified this with the Samsung and Panasonic 3DBR players. This means that even if (like me) you have a whole room full of active and passive 3D capable displays you will not be able to view a 3D BluRay DVD unless you buy the Arcsoft or PowerDVD software for \$110 and play it on a pc with 3D BluRay player (e.g., the Liteon IHBS112), or a standard BluRay player with 2X or better speed, or spend at least \$2000 for one of the new 3DTV sets and another \$125 each for the manufacturers glasses which will work ONLY on that TV. But we have less expensive glasses in most cases.

REGARDING THE 3D READY DLP TV'S--IN MANY CASES YOU WILL NEED TO TURN ON THE HDMI 3 INPUT AND CONNECT IT TO THE PC or to change input to pc on the remote--i.e., the other inputs may not work in 3D mode (more info below in 3D DLP section and our article "CONNECTING YOUR 3D READY DLP TV").

WHEN YOU TURN ON THE 3D FUNCTION OF ANY TV WITH THE 3DTV CORP EMITTER CONNECTED, and you are using our Model X glasses in the RED LED mode of the Gen2 Emitter, THE REMOTE OF SOME MODELS OF MITSUBISHI DLP TV'S MAY FREEZE (NOT FUNCTION) DUE TO INTERFERENCE OF INFRARED USED BY THE EMITTER. IN THIS CASE, COVER THE EMITTER WITH YOUR HAND OR A CLOTH OR BOX UNTIL YOU ARE FINISHED ADJUSTING THE TV. YOU MAY ALSO ADJUST THE PICTURE BEFORE ENTERING 3D MODE OR YOU CAN CHOOSE THE 2D MODE OUTPUT OF YOUR SOFTWARE PLAYER ON YOUR PC OR YOUR BLURAY PLAYER BEFORE PUTTING ON THE GLASSES AND ENTERING 3D MODE. You can also exchange the glasses for one of our other models which operate in one of the other 7 Led color Modes of the Gen2 emitter which do NOT interfere with TV remotes.

ALSO NOTE THAT WITH ANY EMITTER/GLASSES THE OPERATION AND RANGE ARE AFFECTED BY AMBIENT LIGHT (SUNLIGHT, ROOM LIGHTS), OTHER INFRARED SOURCES (EG, WIRELESS HEADPHONES, ROOM HEATERS IN WINTER) AND THE ABSORPTION OF SIGNAL BY THE ROOM-- INCLUDING PEOPLE AND FURNITURE BUT OUR GEN2 EMITTER IS (UNLIKE THOSE OF OTHER MAKERS) SO POWERFUL IT NORMALLY HAS NO PROBLEMS. THE 3DTV MIDRANGE EMITTER (\$450) HAS A MUCH LARGER RANGE (CA. 80FT BY 60 FT). **When glasses emitters (or other devices such as your IR headphones, room lights etc.) interfere with the operation of your remotes, you can buy an IR remote amplifier such as the IR Blaster. PLEASE NOTE THAT SUCH ISSUES ARE NORMAL WITH ALL KINDS OF GLASSES, EMITTERS AND DISPLAYS AND ARE NOT UNIQUE TO 3DTV CORP PRODUCTS!! HOWEVER THE GEN2 EMITTER GIVES YOU THE BEST CHANCE TO AVOID SUCH ISSUES AS WELL AS TO CHOOSE FROM A WIDE VARIETY OF INFRARED SYNCED 3D GLASSES FROM US OR OTHER COMPANIES.**

DLP LINK GLASSES (also see page 34)



DLP Link glasses use a unique sync protocol developed and licensed by Texas Instruments and built into **3D Ready** DLP projectors and TV's (such TV's are currently made only by Mitsubishi and they are easily the best deal in 3DTV's due to large screen size and very low cost and all our glasses/emitters DLP Link or IR sync work with them). 3D Ready projectors are now all the rage, with dozens of models available and all requiring 120hz frame sequential 3D input and thus needing PC input or a \$300 box from Optoma, Viewsonic or Moome to deliver the 120hz 720p content from 3D BluRay, cable or PS3. Newer FHD (Full High Definition) HDMI 1.4 compliant DLP projectors which can directly take in 3D from any source are starting to appear in March 2011. Those who want to use any 3D projector with the freedom of glasses choice and the low cost made possible by the 3DTV Corp Gen2 Emitter can buy the HDMI 3D Glasses Adapter coming summer 2011 from 3DTV Corp.

AS NOTED BELOW, YOU CAN ALSO USE CERTAIN OLDER MODEL DLP PROJECTORS (i.e., NON 3D Ready and which do NOT work with DLP Link glasses) AT 60 OR 85HZ WITH A SMALL AMOUNT OF FLICKER USING 3DTV CORP GLASSES AND EMITTERS.

THERE IS NO WAY TO USE DLP LINK GLASSES WITH ANY OTHER TYPE OF 3D DISPLAY (EG CRT'S, OLEDs, Nvidia 3D Vision, LED 3DTV'S FROM SONY, PANASONIC, SAMSUNG, VIZIO ETC ETC). SOME VERSIONS OF THESE GLASSES, THAT HAVE e.g., BEEN SOLD BY OPTOMA, VIEWSONICS ETC ARE UNUSABLE BY NAÏVE PERSONS, CHILDREN OR LARGE GROUPS AS PRESSING ITS BUTTON TAKES YOU FROM 3D TO BOTH EYES SEEING RIGHT EYE ONLY, BOTH EYES SEEING LEFT EYE ONLY AND THEN BACK TO 3D –A FEATURE CALLED “DUAL VIEW”. IN ALL CASES THE 3D MUST BE INPUT WITH CORRECT POLARITY OR THE “INVERT 3D” CHOICE IS MADE IN THE MENU -- OTHERWISE YOU GET REVERSE 3D--IE, A PSEUDOSCOPIC IMAGE. ALTHOUGH XPAND SAYS THEIR DLP LINK SHOULD BE GOOD AT OVER 100 FT (30M) A RECENT TEST BY US OF THEIR LATEST DLP LINK GLASSES VS THE CHINESE ONES WITH THE SAME 3D ON TWO DIFFERENT PROJECTORS AT THE SAME TIME SHOWED A RANGE OF 18 FT VS OVER 80 FOR THE CHINESE ONES. HOWEVER IN ANOTHER TEST WITH DIFFERENT PROJECTOR AND GLASSES THEY WORKED OK—LIKE ALL GLASSES AND DISPLAYS THEY ARE CHANGING CONSTANTLY. THE REALD DLP LINK GLASSES ARE CURRENTLY OVER \$400. FOR THESE REASONS AND OTHERS LISTED BELOW, MANY PERSONS DO NOT REGARD DLP LINK GLASSES AS A GOOD CHOICE . However, if you have them you MAY be able to use them simultaneously with the 3DTV Corp glasses, with most DLP TV's and projectors, provided of course you have the 3DTV Corp Emitter and a VESA port somewhere in the system for Projectors—which do not currently have this port). (See also comments below on DLP Link Glasses).

Some people think that DLP Link glasses are the perfect solution and superior to Infrared (IR) glasses which need an Emitter and if they work for you great, but here are a few things to keep in mind.

1. DLP link glasses are commonly more expensive.
2. Most models are larger, heavier and less comfortable than many types of IR glasses and (like IR glasses) often have sync or tint problems. Here are a few recent comments from the net (there are countless others). “I returned them due to their overall heaviness and uncomfortable design for me personally.” “(DLP Link) glasses are ok but very heavy on the nose”. “The (DLP Links) are sturdier, but do have a synch problem with bright

content at close distances (<10' on mine)".

3. Some people find that DLP Link glasses may malfunction unless you turn off automatic picture brightness controls, sit further away, adjust brightness and contrast etc.
4. Unlike IR glasses/emitters which can often be used on other 3D displays, DLP Link do not have an emitter and can only be used with 3D Ready DLP TV's or Projectors.
5. Those with the button that lets people easily go into 2D mode are useless for naïve users or large groups.
6. Many people find they wash out or colorize blacks.
7. Currently they are not commonly available in a rechargeable version.

Rechargeable glasses (like our Model SA3, N and many others) are a cool idea but they can go down in the middle of the movie and it will take you about an hour to recharge them to the point where you can be sure of finishing the film. So, rechargeable glasses force you be vigilant about recharging all your glasses every time you use them or to buy extra pairs and keep them charged. With glasses that take a battery you can change them in about 20 seconds.

As noted above, to get 3D files/DVD from a **PC** into checkerboard format (used by all the 3D Ready DLP TV's (NOT projectors!) made from 2007 to present by Mitsubishi and from 2007 to 2009 by Samsung in DLP and Plasma format)--you need to play them with one of the software players (see below) that will put out the checkerboard format realtime.

For **GAMES** you can use a game driver such as that from TriDef or iZ3D or Nvidia 3D Vision (see below) which can give the checkerboard 3D output for 3D Ready DLP TV's or the old Samsung 3D Ready Plasmas (and other 3D formats for other types of 3D displays) directly into the TV's, projectors etc. For basic 3D playback on 120hz CRT (tube type) PC monitors and some PC ready CRT TV's, you can use the older 3D game driver and file playback software from X3D, I/O, 3DTV Corp etc, but all 3D game drivers and players on PC or Mac have many limitations on cards, drivers, windows versions etc. For your 3D ready DLP projector you will need the 3DTV Corp Manual Vesa DVI/HDMI adapter (which adapts our Gen2 Emitter and about 30 models of wireless glasses). For games at 120Hz on a PC without Nvidia 3D Vision System you may use the iZ3D 1.11 b2 driver that supports 120Hz output. In general you should be able to adjust the video card for the frequency desired. For all 3D on a pc you should have a minimum of the Geforce GTX 260 card (PCI Express slot and lots of space), Windows 7 (Vista MAY work) and a 500 watt power supply (the GTX needs 200 by itself). You should have the new (June 2010) release series of Nvidia driver <http://www.nvidia.com/object/win7-winvista-64bit-257.21-whql-driver.html>.

My experiments were done with the XBOX Arcade in mid 2010 and more recent versions of the XBOX may be different. If you have a Samsung 3D Ready DLP TV you will not be able to make it work with PS3 or XBOX etc. unless you buy the Mitsubishi 3D A1 format converter AND the Gefen HDMI tool OR the new Mits 3DC100S made especially to accommodate the old Samsung 3D Ready DLP and Plasma TV's (see below and our article on DLP's) and **some Samsung's, like the common Plasma 450 series, will ONLY work with PC input in 1024 or 1360x768 at 60hz or other PC only resolutions— see your manual!!**

Here is a comment from one of our Mitsubishi customers with a PS3 and the Avatar game : "I hooked up the emitter to my Mitsubishi WD-65C9 TV that I bought 6 months ago for \$999 delivered, turned on the TV and it's 3D function, started the PS3 with Avatar, changed the game display to 3D and full checkerboard, there you go, it's in 3D!!"

XBOX currently has no native support for 3D so only games like Avatar, Crysis etc which have native checkerboard or interlace out will work with the appropriate 3D display. PS3 (Sony Playstation 3) has 3D firmware updates and many 3D games. You must download and install the latest update from Sony's page either direct to your PS3 or via usb drive from download on a pc <http://us.playstation.com/support/systemupdates/ps3/index.htm>. Sony 3D games on the PS3 will not support checkerboard or 120hz frame sequential 3D output, but only frame packed formats for HDMI 1.4 compliant 3DTV's (and a few recent projectors). Of course, with the Moome EXTV3, VIP 3D Gamer (both 720P 60hz frame packed 3D input only) or Optoma, Viewsonic, Lumagen etc boxes you can convert the side by side output to 120hz field sequential and use our Gen2 emitter. The 3D Gamer device also is 720p in only and does NOT currently have a plug for our Gen2 so you will have to use DLP LINK glasses. These boxes are all over \$300.

However, for cheap 3D you go to "Displays" and then "3D Formats" and then select "Interlace" in the 3D output selection and then PS3 games will play in 60hz field sequential 3D on almost any older tube type CRT TV or on the various 60hz 3D capable DLP projectors with DLP Link glasses (or with our 3D Window PC-IR kit). In this case, you play the 60hz PS3 into the composite video in of all (afaik) 3D ready DLP projectors and watch the 120hz 3D with DLP Link's or with our Gen2 Emitter, DVI Sync Splitter (DSS) and glasses.

To view Avatar and these new PS3 games in 3D you only need the 3DTV Corp Home 3D Theater kit, wired or wireless, sold on our page. This method does NOT currently work on the XBOX and normal CRT TV's. XBOX seems to sum the two fields to create the output interlace when it detects a normal CRT. One can only choose progressive scan at 480 and 720, but if connected to a 1080 capable TV you can choose 1080i (i.e. interlace) so those with certain tube type HDTV's probably can get field sequential 60hz 3D with Avatar and of course 3D with CP glasses on the CP polarized TV's (but this does NOT work with my FHD

Zalman CP --i.e.,horizontal interlace--monitor). Cheap DVD players also have this progressive mode and so only brand name players can be reasonably likely to do field sequential 3D when playing back standard field sequential 3D DVD's. However you may be able to get back the field sequential 3D with XBOX or such DVD players by deinterlacing the video realtime with a suitable device.

There are problems getting PS3 and XBOX to play 3D on many models of Samsung 3D Ready DLP TV's even when you get checkerboard out (i.e., by having the Mits adapter or with a game such as Avatar with native checkerboard support), due to the fact that these are old game systems designed to work on TV sets in 2D. With Sony's own games it's necessary to buy the Mitsubishi 3DA1 box and and the Gefen HDMI-EDID adapter widget (to let the box recognize the Samsung's) OR the new 3DC100S kit. This converts the side by side 3D to checkerboard. See the comments below on 3D DLP with BluRay for more info. Here is one trick for getting the Sony PS3 to work with the Mitsubishi 3DA-1 adapter. Turn on the PS3 and put your finger on the I/O sensor for a few seconds until you hear the beep telling you it has reset to default.

Likewise for 3D games on the XBOX. Also, for those with legacy or incompatible 3D displays (e.g., dual polarized projectors, 120hz field sequential 3D Ready DLP projectors, Line Interlaced polarized monitors, CRT's etc.) it is possible to use a TV capture card (composite or HDMI) to convert the formats from any 3DBR player, XBOX or PS3 realtime using Wimmer's stereoscopic player with its live input function but you may need an HTPC (Home Theater PC). See the section here on HOW TO USE A PC TO GET LIVE HD3D BROADCASTS TO ANY DISPLAY WITHOUT A SPECIAL ADAPTER for relevant details.

Frame sequential 120Hz 3D output (i.e. Nvidia 3D Vision format for 3D ready DLP projectors or monitors) is NOT available on XBOX or PS3, nor is it supported by any 3D BluRay player or STB (Set Top Box—ie DirectTV, FIOS etc), nor is there support for any type of pc or Mac monitor unless they support HDMI1.4a input with HDTV resolution and, with the few recent exceptions noted below, NONE of the existing legacy (i.e., pre2010 or any non 3D ready) LCD type PC monitors, including laptops, can display 3D with LCD shutter glasses or any other means except anaglyph (not an output option for games or BluRay players but only with the Suto and Wimmer or a few other PC software players as noted below). It is possible that some of the new 2010 3D ready (or even a few not advertised as 3D ready) LCD and plasma TV's can display 3D from the PS3 or standard 3D field sequential DVD's at 50 or 60hz (about 50 titles widely available for last 10 years) with the same 3DTV Corp Home 3D Theater kit mentioned above.

For everyone who does not have a large 3D Ready TV, by far the cheapest option for 3D at home is to buy a one of the shutter glasses systems noted above from 3DTV Corp and use a CRT--nearly any one for PS3 but probably only an HDTV CRT with PC input that can display in interlace mode (some cannot) for XBOX (unless the deinterlacing trick works and my expts with the XBOX and Avatar have so far failed). Use of a DDC or DVI or HDMI emulator (e.g., the Gefen device or others) between the game and the monitor may work in some cases.

As noted above, **the nVidia 3D Vision®** 3D kit for PC's (or the stereo file players) will give frame sequential output to certain kinds of 120 Hz compatible displays such as 3D Ready DLP projectors, certain special small LCD monitors made for the 3D Vision system, AND in checkerboard format to the Mitusbishi and Samsung 3D Ready DLP TV's listed below <http://www.nvidia.com/object/3d-vision-requirements.html>. It will ALSO WORK on most older CRT type monitors. You can use 3DTV Corp glasses and emitters with this system when used in parallel to the nVidia emitter which you can cover up but must leave connected (and of course you can use the much less expensive 3DTV Corp Nvidia compatible glasses Models NV1,NV2 and E), subject to various requirements as noted in this faq. The ideal choice in terms of cost and convenience will be the 3DTV Corp Vesa VGA or DVI sync splitters (DSS-part of the 3D Window® PC-IR kit). NOTE -most or all of the other 3D software for pc's will **NOT** work with the new 3DTV's from Samsung, Sony, etc. However nVIDIA 3DTV Play is a new software product that allows you to connect NVIDIA GeForce desktops or laptops to the new 3DTV's since it will put out the high resolution in the top/bottom or side by side 3D format but it does NOT put out either checkerboard or 120hz FS format nor drive the nVidia emitter—i.e., it requires that you use glasses suitable for your own 3DTV. Suitable configuration of hardware and software may permit use of 3DTV Corp emitters and glasses with such systems when used with a PC.

3D BLURAY and 3D File Viewing on 3D READY DLP TV'S and 3D Compatible Frame Sequential 120hz panels and projectors

Most 3D Blu-Ray players such as the Panasonic DMP-BDT300 and 350 can be set to output the checkerboard (3D DLP) format as it is included in the HDMI 1.4a 3D specs but some older and even some newer models lack this ability so before you buy one be sure it has the checkerboard output option IF you have a DLP TV.

The Mitsubishi 3D-A1 converter box or the newer 3DC100S (which also works with the older Samsung DLP TV's) will let you play 3D content input as top/bottom, side by side or frame packed (top/bottom full resolution) from 3D BluRay or broadcasts or PS3 or (afaik) XBOX in the checkerboard format and it has a plug for the 3DTV Corp Universal or SS1 or LC Emitters.

As always, you can view the 3D with the 3DTV Corp emitter and glasses, or if you want to pay double or triple, with the notoriously fragile Mitsubishi/Samsung series 2100 or 2200 glasses that come with the Mits or Sams 3D starter kits (but you can use the 3DTV Corp compatibles such as Model SA3, N, CS or E for far less). This converter will NOT work with older 3D DVD's played on older DVD or BluRay players and ONLY outputs checkerboard from 3D BluRay DVDs. The new 2011 Samsung 3DTV's use BlueTooth glasses which are not

compatible with anything else.

TO PLAY 3D FILES (i.e., 3D VIDEO) AND DVD'S ON YOUR PC INTO ONE OF THE 3D Ready DLP TV'S (and of course on any other 3D Display supported by the players (-i.e. nearly any type of display including 2D in anaglyph mode for the Suto and Wimmer software 3d file players, but just a couple of 3D displays for the other players) YOU NEED ONE OF THE FOLLOWING SOFTWARE PLAYERS of which afaik only Roxio, WinDVD, Arcsoft and PowerDVD support 3D BluRay playback at the moment. Some say PowerDVD had problems, but of course this is true of every product on some PC systems. Arcsoft TMT5 has its very enthusiastic fans while Roxio CinePlayer is currently cheaper. NOTE WELL: nVidia 3D Vision or 3DTV Play players and some which hook into them (see nVidia for an uptodate list) will use the nVidia graphics card GPU for rendering and for ensuring glasses sync, but other players like Suto, Wimmer etc may only do software pageflipping and so may, depending on many variables, play files erratically, or the glasses may lose sync and/or reverse eyes.

Arcsoft's Total Media Theater Platinum Edition (ca. \$110 including the 3D plugin but of course check the net as all this changes by the day) supports 3D BluRay playback on a pc in checkerboard, interleave and page flipped stereo (i.e. 120hz field sequential 3D--Windows 7 only) on suitable Nvidia cards http://www.arcsoft.com/en-us/software_title.asp?ProductCode=TMT3P, BUT as of December 2010 you must buy the \$20 3D plugin and this plugin does NOT work with the free trial version. This means you have to pay \$110 to try it out. You can get some info here http://www.arcsoft.com/en-us/software_title.asp?ProductCode=SIM3D.

CyberLink's PowerDVD player comes in many forms and 3D ready and 3D BluRay versions are being changed rapidly so check their page carefully for the 3D support you need before you buy, but version 10 Mark 2 (ca. \$90) supports 3D BR playback on pc's in various 3D formats (i.e., interleave for CP monitors, 3D Ready HDTV's (i.e., probably in side by side 720p or frame packed full definition) with shutter glasses and page flipped (i.e., 120hz field sequential but ONLY under Windows 7-- they say but Vista might work) and you can get a free trial here http://www.cyberlink.com/products/powerdvd/overview_en_US.html?gclid=CNT6qLe_zqECFZVY2go_dkGlqMQ, but again it appears it's a cheat as it is not the Mark2 3D version so you have to pay \$110 to try it in 3D. While there you may find their long intro to 3D of use <http://www.cyberlink.com/stat/3d-support/enu/3d-whitepaper.pdf>.

Of course, unless you have files ripped from a 3D BluRay, you will ALSO NEED a 3D Compatible 2X or better 2D or a 3D Internal BluRay optical drive. The first to appear was the LiteOn iHBS112 12X Blu-Ray Writer Internal SATA Drive w/ 3D Playback. Other 12X Blu-Ray burners, the [Pioneer BDR-205BKS](#) and [Plextor PX-B940SA](#), are pricier and are said not to support 3D by which they may mean they don't playback at 2X or better). The LiteOn cannot burn BD-R LTH BluRay media but all other media should be ok. Of course you will need one of the expensive 3DBR authoring packages if you want to burn a true 3DBR DVD, but you can of course store 25gb of 3DHD files as a BR ROM without them. Numerous other 3D BR drives are appearing.

You can get a free evaluation copy (i.e., it plays 5 min max) of Wimmer's Stereoscopic Player at http://www.3dtv.at/Downloads/Index_en.aspx, or download a full copy for about \$50 but afaik it currently has NO 3D BluRay support and may never as this requires a pricey license for playback of protected content.

For a free trial of the TriDef Mediaplayer see <http://www.tridef.com/download/TriDef-3-D-Experience-4.0.2.html> or get the full version for \$50 here <http://www.ddd.com/cart/product.php?productid=3&cat=2&page=1>. However it requires you to rename your 3D files according to their own conventions <http://www.tridef.com/media/player/guides.html> and so is much less convenient than the other players. It also does not support side by side due, they say, to copyright of that format by realD, which is preposterous as side by side 3D has been around for at least 20 years.

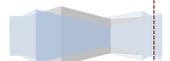
Get Suto's free StereoMoviePlayer at <http://stereo.jp.org/eng/stvply/index.html>. Suto does **NOT** support checkerboard output as the 3D DLP TV's have never gained a foothold in Asia in spite of still being made by Mitsubishi, but does support shutter glasses with our dongles on a pc, subject to the various limitations which exist also for Wimmer's StereoScopic Player in software pageflip mode with X3D glasses selected, or the older Nvidia stereodivers or iZ3D game drivers. Well-known DVD software entity Roxio has a 3D version of their file player <http://www.roxio.com/enu/company/3d/cineplayer.html>. They also have a home record/edit 3D BluRay solution -VideoLab 3D.

With the 3DTV Corp 3D Window® PC-IR kit you will be able to view most 3D content from a PC on any 3D Ready DLP Projector (ca. 300 models by end of 2011), or most older CRT monitor or the various other 120hz frame sequential 3D Ready displays or projectors (e.g., SONY SXRJ, JVC DLA series, Sharp 17000 series, or any other shutter glasses compatible LCOS or SXRJ projectors) with any of our models of compatible wireless glasses at a low cost (often less than half the alternatives and with multiple models of adult and kids glasses in our popular Family Paks).

Another excellent stereo file player with many advanced features is the DepthQ Player from Lightspeed Design and you can download a limited free demo here <http://www.depthq.com/dqlitedownload.html>. It costs \$395 and is basically a pro product. There is also a 3D file player in the classic I/O, X3D, ED, 3DTV Corp software that is widely available and still used (perhaps a million kits sold) but of course quite dated by now.

DIVX now has an updated player and media converter which make it easy to convert 3D files for playback on PS3, 3DBlu-Ray etc. but it does not yet have any specific 3D playback features [http://support.divx.com/faq/view/supportFAQen055/where to find user guides for divx](http://support.divx.com/faq/view/supportFAQen055/where%20to%20find%20user%20guides%20for%20divx). These players will let you play various types of 3D files or 3D DVD's subject to unlocking your pc for the DVD as normally required for copyrighted DVD's.

To recap, the 2010 and later releases of PowerDVD, WinDVD, Roxio and Arcsoft Total Media Theater will let you play 3D BluRay on a PC in checkerboard (and other) formats, subject to limitations on the type of video card, windows version etc. and Roxio and many others are following suit. Macs (i.e., Apple) and Linux have always been light years behind the PC/Windows in stereoscopic support, which is why you see almost no mention here or anywhere, but perhaps this will change in late 2011. **The various boxes now available from VIP, MOOME, Optoma, Viewsonics, Lumagen and others will let you play 3D content from PS3, Cable, XBOX, and BluRay directly into most 3D capable displays without a PC and all have or soon will have plugs (i.e.,the Stereo Vesa Port 3 pin MiniDin) for our Gen2, SS1, and LC emitters.**



COMPATIBILITY AND ALTERNATIVES TO THE NVIDIA® 3D VISION® AND 3DTV PLAY® SYSTEM

Here is some info for those who are using nVidia® software and/or hardware such as 3D Vision® and 3DTV Play. For lists of 3D displays cards, and driver versions compatible with nVidia® software see <http://www.nvidia.com/object/3dtv-play-requirements.html#3dtvs> and <http://www.nvidia.com/object/3dtv-play-requirements.html>

The nVidia® software running on a suitably equipped PC looks for the nVidia® Emitter which you plug into the USB port (unless its built into a laptop) and will not operate unless it is present so one of these workarounds can enable use of other types of glasses. It is possible to run an nVidia 3D Vision Emitter software emulator, readily available on the net (but not for the novice and always carrying the possibility of terminating some or all of your PC functions). This emulator tricks 3D Vision into thinking the nVidia emitter is plugged into the USB port. New nVidia updates try to disable these emulators but of course they are soon updated as well!

1. If using the Nvidia Emitter, you can use the 3DTV Corp Nvidia compatible glasses models N, NV1, NV2 or E as cheaper and more comfortable substitutes for the Nvidia glasses.
2. If your display is a DLP TV or 3D ready DLP projector you can use DLP Link glasses which do not require an emitter as an alternative to glasses with emitters (but of course you must have the Nvidia or our RF Emitter plugged into the PC USB port to unlock the 3D Vision Software.
3. If you think the nVidia emitter interferes with other glasses of any kind, cover it with several layers of thick black cloth or box. You will have to choose the 120hz in nVidia menu for the projectors and the checkerboard (for a 3D ready DLP TV) in the nVidia menu.
4. For a standard 3D Ready DLP projector or 120hz capable monitor, use the alternate HDMI/DVI/VGA port on your display or buy a 2 in 1 out DVI or HDMI switcher, run 3D Vision, cover the emitter, switch to the alternative 120hz frame sequential source (e.g. a 3D BluRay DVD player or 3D cable routed through an Optoma or Viewsonics or Moome or 3D Gamer side by side to 120hz Converter Box) with the 3DTV Corp Gen2 Universal Emitter plugged into the box, and use any of 30 models of glasses.
5. If you have a 2011 model FHD (Full High Definition –ie 1920x1080/eye) model 3D Ready DLP projector or Mitsubishi DLP TV, such as the 738 or 838 series or more recent models, which are HDMI 1.4a ready and can accept side by side FHD 3D Vision or 3D Play, 3D bluray , cable TV or PS3 or XBOX input, you won't need the Converter Box nor will you need it if you choose the checkerboard output for any 3D ready DLP TV from Mitsubishi or Samsung as they (unlike all 3D DLP Projectors) all have a 3D Sync Out jack in the back for our Gen2 emitter. If you have a Mitsubishi 3DA1 box or bought the Mits 3DC1000 Starter kit which has this box, you can plug the Gen2 emitter into it as an alternative to the 3D Sync Out jack on the back of your TV. Again, you have to cover the Nvidia emitter unless you are using our N, U, NV1, NV2 or E glasses. Again, you can get 3D Vision or 3D Play going and cover your emitter and/or switch to an alternative HDMI port (i.e. one with a 3D BluRay player etc. connected).
6. If you have the 3DTV Corp DSS (Digital Sync Splitter with the DVI/HDMI connectors), which

has the connector for our PC-IR Emitter, you can put it inline between the PC and the 120hz frame sequential 3D capable monitor or projector, cover the nVidia emitter and proceed as above. Depending on your hardware and software, you may want to or need to have a dual head Nvidia card with the 3D signal coming out both heads, one of which goes to one display (whether 3D ready or not—i.e., you can use a 2D display to setup and monitor the 3D), and the other to the display you want to view (only one of which will have the DSS inline. There are many potential issues with hardware and software here that you may encounter.

7. Buy our 3D Window PC-RF kit, download the 3D Vision/3D Play software from Nvidia's page, plug our Emitter into your PC's USB port and run the software as normal using the RF wireless glasses, or use any of the above means to connect a device with the Stereo VESA plug for our Gen2 Emitter which lets you use any of the more than 40 kinds of compatible glasses.

NVIDIA 3D VISION TESTS ON CONSUMER 3D READY DLP PROJECTORS

We present here some tests we did to determine compatibility of the nVidia 3D Vision software and Emitter/glasses with various other glasses/emitter types. NV or RF refers to having the Nvidia and/or RF Emitter plugged into the PC USB port while running Nvidia software which activates the NV or RF (i.e., our 3D Window® PC-RF kit) Emitter. LC refers to the 3DTV Corp Cinema glasses emitter inline from the PC video card to the projector. C1, C2, JVC and V refer to cinema protocol infrared glasses. NV working means nVidia original glasses and 3DTV Corp Model NV1, NV2 and N and U glasses work. RF ok means 3DTV Corp RF activated 3D Window® glasses work. DSS is the 3DTV Corp DVI Sync Stripper, which takes sync for the LC emitter from the DVI/HDMI cable from the PC to the Display. Washed out means that the colors and/or contrast are muted or washed out by white. Our Samsung mode glasses and SS1 emitter are not shown here, but they will interfere with the nVidia glasses/emitter in all cases where the LC emitter and glasses do.

NV Mode

1. NV & LC interfere so Nvidia and Cinema glasses are incompatible
2. RF & LC OK
3. Once unlocked by an NV or RF emitter, LC Emitter with DSS works but DLP as always is inactive

DLP Mode

1. LC + NV –LC OK but NV not and DLP not OR depending on various adjustments, NV washed out and LC & DLP not working
2. RF washed out, DLP not working, LC –C1, CK2 OK but JVC, V washed out
3. RF washed out but DLP slightly Greenish
4. NV washed out , DLP greenish & pseudo so hopeless unless using older Optoma DLP

Glasses or 3DTV Corp Model N or U with polarity reversal switch

Off Mode

1. LC & RF OK
2. RF alone OK
3. LC alone only if NV or RF connected first(can then unplug or cover), otherwise PC will only generate anaglyph images.

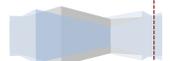
For a PC with a CRT (older tube type TV or PC monitor)

You can use one of the common (ca. 1 million sold by 3DTV Corp, I/O Displays, Razor, X3D, eDimensional etc) black triangular **AUTOMATIC DONGLES** connected between PC graphic card and monitor/TV. This dongle has a stereo (3D) VESA plug for the Universal Emitter (and also a mini stereo plug for wired 3d glasses which are also sold by 3DTV Corp). You also need software that turns on the 3D function of this dongle such as that from X3D, 3DTV Corp, iZ3D, TriDef, eDimensional, Suto, Neotek and exactly the correct setting of input and output format. Wimmer's or TriDef or Cyberlink or Arcsoft or Roxio file players and iZ3D and some versions of Nvidia game drivers support the checkerboard output which you need for 3D Ready DLP TV, now made only by Mitsubishi but as well as frame sequential 120hz 3D and line alternate etc but NOT generally for 50 or 60hz field sequential interlace output you will need for older CRT TV's. Most of these players and many TV's, DVD Players, STB's etc now convert 2D files to 3D realtime with variations of the methods described in my 1997 patent- (US 6,108,005, US RE 329,342 E)--a humble but groundbreaking effort that arguably is used without a license by all the current 2D to 3D conversion work.

If you do not have or want to use software that turns on the 3DTV/I/O/ED/X3D automatic analog dongle, you can use the **3DTV Corp 3D Window PC-IR kit with HDMI/DVI DSS (Digital Sync Splitter)** which works regardless of software (but you still have to have a way to play out the 3D in a field sequential format and you can use the above software 3d file players or the Nvidia 3D Vision/3D/3DTV Play software but that may take you into the intricacies of the Nvidia graphics card page flipping). OR you can use some of ATI's recent Pro Cards which like Nvidia's Quadro line have the Vesa stereo plug for our Gen2 Emitter, or most congenially of all just use Wimmer's or Suto's stereofile players with almost any format of 3D in and out which don't require anything else (but not so far able to accommodate 3D BluRay). AND you still must get from the DVI plug to VGA.

If you do not want to use a PC but only play 3D DVD's in field sequential (in RLRRL) format at 50 or 60hz (i.e., with a slight flicker) to an older tube type CRT TV then you just use almost any standard def or 2D or 3D bluray DVD player and the **3DTV HOME 3D THEATER** with wired or wireless glasses. Apparently some of the new boxes from VIP such as the VIP 3D Theater, 3D Displayer and 3D Gamer and other products will have the plug for our Gen2 emitter and output 60hz field sequential 3D but Gen2 some glasses may NOT work at low frequencies.

As noted, you can plug the 3DTV Corp Universal Emitter into any of the Nvidia Quadro Professional cards that have the VESA 3D plug. See the Quadro Wiki for a list. Some recent ATI cards also support this, as well as Optoma, VIP, Lumagen, Viewsonic, Moome EXT V3 and other 3D format conversion boxes.



DLP PROJECTORS

MANY OF THESE COMMENTS ON DLP PROJECTORS ALSO APPLY TO OLDER TYPE CRT MONITORS AND PROJECTORS! IN SOME AND PERHAPS ALL 3D READY MODELS, FIELD SEQUENTIAL 3D FROM A PC OR ALMOST ANY DVD PLAYER INCLUDING BLURAY PLAYERS WITH THE OLDER TYPE STANDARD DEFINITION FRAME SEQUENTIAL FILES OR DVD'S INTO THEIR COMPOSITE VIDEO INPUT IN NTSC, PAL OR SECAM 50 or 60hz FORMATS WILL BE DOUBLED IN FREQUENCY AND CAN VIEWED WITH DLP LINK or IR Sync SHUTTER GLASSES WITHOUT FLICKER.

NOTE WELL! If the RED LED light in the Center of our Gen2. LC or SS1 Emitters does not go on, or if you cannot see the 3D for any reason it is probably NOT the fault of our emitter/glasses and you will NOT be able to make any other glasses work on your TV either until you figure out how to turn on the 3D function in the software/projector/display! If the light IS on, it only tells you the Emitter has power---not that your setup is providing sync nor that it has correctly formatted 3D images! If you see two overlapping images full screen and the glasses appear to be working but no 3D, it is due to improperly formatted images—see your TV manual and our instructions and be sure you give your TV or projector EXACTLY the correct resolution and frequency and format(i.e., checkerboard for DLP TV's) that it needs IN 3D MODE (NOT the same as 2D Mode!).

Although we provide extensive instructions, these are due to the constantly changing equipment and lack of standards and have NOTHING to do with our 3D viewing kits which, once you have your system set up correctly for 3D, can be plugged in and working in **30 seconds!! RTFM!!! (Read The Fine Manuals—i.e., ours and that of your display and 3D source!!!).**

When setting up to play files from a PC or other device into non

HDMI 1.4a compliant projectors or other displays (virtually all made prior to summer 2010) it may be necessary to have software or hardware that helps the 3D source recognize the display. Such software to manage the EDID (Electronic Display ID) can be found on the net and installed by you in most displays or EDID spoofing hardware devices like the Gefen HDMI Detective Plus can be installed between the source and the display.

We check all our kits before sending them out so it is VERY unlikely they are faulty. Model X glasses are turned on by opening the temples and sometimes these need to be wiggled a bit to activate. Likewise after storage, the batteries will sometimes not make perfect contact unless you open the battery compartment (see included instructions) and remove and replace them. The VESA 3 pin stereo plugs used by many entities (i.e., projectors, video cards, DLP TV sets, conversion boxes) are somewhat flakey (i.e., the sync pin may fail to make contact) so you may need to jiggle the connector or unplug and replug regardless of whose equipment you have.

ANY consumer 3D Ready DLP projector (except the newer expensive FHD HDMI 1.4a compliant 2011 models) requires that you play the 3D file into it in 120hz frame sequential 3D format and this will require a DVD player, Playstation 3 (60 hz only for old CRT TV's) or other device and a format converter box unless you want to play at 60 or 85hz on some older consumer projectors. Otherwise you can use a PC with suitable software to get the 120hz 3D format as discussed above. Many older and current consumer DLP projectors will also display files in 3D at 60hz, in which case the 3DTV Home 3D Theater (above) would provide an inexpensive solution. If you want to view at 120hz then you will need to use DLP Link glasses or IR synced glasses with the Gen2, LC or SS1 Emitters with the Moome EXTV3 or VIP 3D Theater, 3D Displayer and 3D Gamer or Optoma 3DXL or Viewsonic and other format conversion boxes which convert the 720p 3D from PS3 to 120hz 720p for all 3D ready DLP projectors (none of them will display FHD 1080p –for that you need one of the new 2011 FHD models). OR you can use our 3D Window PR-IR kit or 3D Window PC-RF kit(with nVidia 3D Vision software). NO type of older LCD projectors or monitors or TV's - except the very newest 2010-2011 3D capable LCD TV's and a few 23 inch game monitors for the Nvidia 3D Vision system-- ever work in field sequential mode with shutter glasses.

As noted above, file players which can (with the correct Nvidia card and drivers and Windows version--i.e. the normal requirements for 3D on pc's) activate the older X3D, IO, ED, 3DTV Corp glasses black triangular gaming sync dongle include Wimmer's Stereoscopic Player, Suto's stereoplayer, iZ3D, TriDef and TriD and the game drivers from X3D and iZ3D and NVIDIA (old driver versions). In all cases our emitters will plug into the Vesa port in the black gaming dongle for use with our 3D IR synced glasses. Our new Digital versions of this

sequential 60 hz (composite video) or 120hz (DVI/HDMI/VGA) 3D input. If the black triangular gaming dongle (see previous section) does not work with your software, you can get our DSS--DVI/HDMI sync splitter, emitter and glasses, into which the LC cinema mode emitter plugs, or you could play the movies on a pc with one of the software players which activates the glasses (subject to many limits) such as Suto, Wimmer or the X3D movie player but, as noted above, all of them have certain limitations re your pc system. Some projectors may only put out frame sequential 3D via their VGA input (i.e., not via HDMI) and as noted, may or may not turn composite field sequential 3D video input into 120hz 3D. If you do not give them input from a pc you must use a ca. \$300 converter box from Optoma, Viewsonic, Moome,, VIP etc to convert 3D to the 120hz FS format they need. These boxes have the stereo VESA Port (3 pin MiniDin plug) for our Emitters.

In Feb 2011 new FHD (Full HiDef) HDMI 1.4a compliant projectors which take in 3D directly from blu-ray, 3d cable or PS3 started to appear. These do NOT require extra equipment except the glasses (dlp link or cinema glasses with our 3D Window® PC-IR kit and/or 3D Window® PC-RF kit if using a PC with nVidia 3D Vision® software).

DLA PROJECTORS FROM JVC

NON-DLP 3D DLA PROJECTORS FROM JVC IN THE X AND RS SERIES HAVE APPEARED IN 2011 AND THESE ALSO HAVE THE STEREO VESA PLUG FOR EMITTERS, BUT IT IS DEDICATED TO THE JVC EMITTER SO NO OTHER EMITTER WILL WORK. The rationale is that this ensures high quality glasses and image but in fact the JVC (XpanD) glasses are not only expensive but a bit heavy and uncomfortable and have a serious issue with reflection from lights in the rear of the room. Like all of XpanD glasses (unlike those from 3DTV Corp), they also have no version for children nor any way to adjust them to fit over glasses and they are expensive.

If you deliver content at 120hz from a PC or from a 3D format converter box (such as the Optoma 3D-XL, Viewsonics, Moome EXTV3, VIP, etc) you can use the Vesa stereo plug (port) on them for our emitters, so that you can use any of the 50 or so models of shutter glasses compatible with it. If you are providing content from a PC (or other device with 120hz frame sequential 3D output) then a much cheaper and more flexible alternative is to use the 3DTV Corp 3D Window® PC-IR kit with its Cinema protocol IR (infrared) emitter inline between the PC and the projector. The JVC emitter and glasses are the usual XpanD cinema type and so compatible with this kit and thus with several 3DTV Corp glasses such as U, E, C1, CK1, CK2, CL and CF1, CF2 and V. Likewise if you are delivering PC 3D content to the projector with the Nvidia 3D Vision software you can use the 3DTV Corp 3D Window PC-RF kit plugged into the PC USB port, and/or IR cinema mode Emitter and glasses as described here and in our brochures for those kits.

The JVC projectors all appear to have horizontal polarization and so the XpanD glasses made for it have this same orientation (and differ from all other XpanD glasses such as the 103's). Thus for optimum brightness you can use a silver polarization preserving screen with H polarized

shutter glasses. Our model V glasses have almost the same polarization so are the most nearly compatible with the JVC original glasses without using any polarizers. If you want to use any of our models of IR synced glasses (or even the RF glasses in our 3D Window PC-RF kit if using a PC with nVidia 3D Vision software) with a white or silver screen and have them all have maximum and/or equal brightness, there are very simple solutions to your problem (which afaik are not discussed anywhere but here!!).

With a WHITE (i.e., depolarizing) screen, the cheapest solution is to place a piece of depolarizing acrylic plastic in front of your projector lens—give it enough space so it won't melt. You will have to experiment as such plastic varies and you may even need two sheets, but it will work. You can buy it at art stores, plastic stores, on the net etc. Of course half the light will be lost with as normal with all shutter glasses and displays (and passive glasses as well). This completely depolarizes light so that all glasses will have equal brightness.

Alternatively, if you use a SILVER (i.e., polarization preserving) screen for optimal brightness, you can buy a piece of half wave retarder to put in front of the projector lens and rotate the LP angle to optimize the brightness for a particular kind of glasses OR you can put a piece of quarter wave retarder in front of the projector or the glasses lenses that converts LP (Linear Polarized light) to CP (Circular Polarized light) which will pass thru the lenses of any kind of glasses equally. That is, rotating a 1/4 wave plate to the proper angle in front of the glasses lenses or in front of the projection lens can convert the projectors native horizontal LP light into CP light, which gives the same (maximum) brightness for any direction of the LP that is present on all shutter glasses. Note that if any CP light enters the 1/4 wave plate from the other side it is converted to LP so if you are not getting the right results turn it back to front.

As noted, with a half wave plate, you can rotate the LP angle a max of 45 degrees in either direction before brightness will start to diminish. So, if the JVC LP is horizontal, LP coming from the lens can be rotated a max of 45 degrees (e.g., to match the 3DTV Corp or other glasses) and still have max brightness. However, if you use a ¼ wave plate you need to be aware that CP, unlike LP, has a right and left handed polarization, and this can complicate matters as there will typically be some color anomalies. You can buy small or large sheets of retarder many places and a pair of 2 inch squares of QWR or HWR for \$13 at <https://www.edmundoptics.com/cart/index.cfm?&itemAdded=27%2D050>. I have some in stock for \$20 per set but will only sell them along with an order for our products.

As noted, you could also optimize brightness for each pair of glasses individually by putting a piece of half wave retarder in front of each lens of the shutter glasses and rotating it to optimize the brightness for that monitor and those specific glasses. E.G., if you have some H polarized JVC glasses and want to use our cinema mode glasses such as CK,C1, CF, E, CL etc., and have similar brightness, you could use a piece of appropriately rotated half wave in front of each lens. OR in some situations, you can put a piece of quarter wave retarder in front of each lens of say our Model N glasses which have V polarization and that would change them from very dark to reasonably bright.



SXRD PROJECTORS FROM SONY

Do not confuse the above with the polarization issues with SONY 3DTV's and with the new 2011 Model \$9K SONY VPL-VW90ES SXRD Home Theater Projector. Though it appears their projector is not polarized, Sony wanted to use the same shutter glasses and emitter protocols as their 3DTV's. This forced them to provide coded R and L LP paste-on filters for using their standard Sony 3DTV shutter glasses with the projectors. On this topic, SONY did a very weird thing with their 3DTV sets—they made them so they put out LP (Linear Polarized) light at a particular angle, and so to maximize brightness (and incidentally eliminate any little room flicker remaining—a well-known technique), they took the front LP layer off their shutter glasses, leaving only the rear one (i.e., normally all shutter glasses have two layers of LP with the Liquid Crystal glass sandwich between). There is of course the well-known downside to the high on-axis cancellation (i.e., low ghosting) of LP's—tipping your head just 5 degrees in either direction produces severe bleedthrough of the right into the left image with bad ghosting and loss of 3D. No lying on your side when watching your \$4K Bravia 3DTV, and how to get grandma and the kids to remember this! Huge mistake by SONY, but maybe they liked the idea that 3rd party shutter glasses would have to have their LP at the same angle to be as bright. Of course one can use $\frac{1}{2}$ or $\frac{1}{4}$ wave plates (as just described) to remedy this, so one can use any kind of Sony compatible glasses instead of the Sony originals and still get about the same brightness. Like their TV's, the projectors have a proprietary emitter, so nobody can use the standard 3 pin miniDin Vesa stereo plug emitters—really utterly stupid and of course the same with the JVC projectors!

The astute will be reflecting on the fact that polarization must also be an issue with the other 3DTV's and 120hz LCD 3D monitors and 3D laptops now becoming common. You can deal with such problems by following exactly the same techniques with half and quarter wave plates discussed above, either by putting them on the lenses of your shutter glasses (provided of course they have the correct IR protocol), and you could put them on the monitor or TV as well, but the larger pieces of retarder are much more expensive. Finally, and most cheaply, you could also use a sheet or two of acrylic to depolarize the whole LCD screen, but of course again would lose half the light relative to glasses matched to the LP of the display (provided of course the display uses LP like the SONY TV's or the JVC projectors).

Back to DLP projectors! To reiterate, 3D BluRay players currently will NOT play a 3D BluRay DVD out in 120hz 3D on a 3D Ready DLP projector or any kind of 120hz frame sequential 3d display. Of course standard definition old Field Sequential 3D DVD's can be played into the composite video in and will be doubled to 120hz (even the high end 3 chip projectors from Digital Projection now have this feature). 3DBluRay will not putout field sequential 60 or 120hz 3D from 3DBR discs, but almost all DVD players of any kind can put out field sequential 3D viewable on most CRT's, and DLP projectors and most CRT TV's. 3D ready DLP projectors (or

any 120hz capable display) will work at 120hz with the 3DTV 3D Window PC-IR kit and some displays will work at 60, 85 or 100 hz with this kit or the 3DTV Home 3D Theater. As noted above, nearly any DVD player, BluRay or not can output 50 or 60hz field sequential 3D (you may need a special setting that turns on interlaced output in the player menu) and then our Home 3D Theater system for CRT's should work. Some of the tube type TV's mix the R and L fields, destroying the 3D, and it may be impossible to disable this function.

2. I have a DLP projector but it's NOT 3D ready--will it work?

As noted above, many of these projectors will work at 60hz or 85hz so, as with CRT's, there will be some flicker- but lowering room lights will largely eliminate this. You can find lists of such projectors on the net (note this list starts with the newer 120Hz projectors so you need to look below for the older ones) <http://www.3dmovielist.com/projectors.html> However since firmware and hardware may change without changing the model number, the only sure way is to try them! Also, as with more recent 120hz 3D ready projectors, field sequential 3D input may work in one port but not another (e.g., ok as composite video or VGA in but not as HDMI in etc.).

The 3DTV Home 3D Theater system will work on most (all?) 3D capable projectors with standard 50 or 60 hz 3D video input. If you input from a pc at 85 or 120hz (by adjusting the output of your video card manually, or automatically with the PC software 3D stereoplayers noted above, you will need the 3DTV 3D Window® PC-IR kit which works with any of our cinema mode glasses. However some glasses and/or emitters may NOT work at 60 or 85 hz even if you have a device that will put out 60hz or 85hz field sequential.

3. What models of Samsung or Mitsubishi DLP TV's are 3D Ready?

FOR MORE INFO PLEASE READ "CONNECTING YOUR 3D READY DLP TV" ON OUR PAGE!! NOTE THAT YOU CAN PROBABLY TELL IF YOUR TV IS WORKING IN 3D EVEN BEFORE YOU BUY 3D GLASSES!!

As noted, if you only input 3D in checkerboard format (which all these TV's require in 3D format) from a 3D BluRay player or from a PC with software that supports checkerboard, you will only need any of our kits with Gen2 or SS1 or LC Emitter OR our DLP Link glasses, BUT SOME Samsung DLP's and Older type Plasmas only take PC input. Some Mits like the 738 and 838 series are software updateable for 3D from Mits page, but all the others and the Sams will need the Mits 3DA1 box (ca \$95 and the Sams will also need the Gefen HDMI Detective Plus) to input 3D from cable, PS3, XBOX etc. Some very new model Mits are not in this list but they should

all be 3D ready for any 3D source and in all cases they have the 3D Sync Out for our Emitters and should also work with our DLP Link glasses without an emitter (but the newer ones require you to choose EITHER emitter OR DLP Link. For those with Samsung DLP TV's Mits has recently released a new 3D Starter kit the 3DC100S which has the code for most Sams DLP TV's so that you do not need the Gefen device <http://www.mitsubishi-tv.com/pdf/specsheet-3DC100S.pdf>. Currently (May 2011) it is only available as a \$400 kit directly from Mitsubishi but hopefully the adapter itself will soon be sold for a reasonable price alone. Both the Mits 3D starter kits and the 2010 Samsung 3D starter kit come with two pairs of the notoriously fragile Samsung 2100 or 2200 series glasses. Fortunately our Model SA3 glasses and SS1 emitter are compatible, much cheaper and more rugged.

Our Universal Gen2 Emitter or our LC Cinema Model Emitter and SS1 Samsung Mode Emitter and glasses are compatible with the following Samsung DLP monitors and with the Samsung 3D ready plasma's listed below. If you see the stereo plug (see photo in the article) on the back that says 3D Sync Out by it, then it will work PROVIDED you turn on the 3D function correctly and input checkerboard via a PC and/or the Mits/Gefen units AND the format is EXACTLY as specified in your TV manual, and these issues have NOTHING to do with our 3D kits but are exactly the same for ALL 3D kits from anyone.

To reiterate, to make Samsung 3D Ready DLPs and the older Samsung 3D Ready Plasmas work (except those needing PC input—SEE YOUR MANUAL!!) you will have to buy the Mitsubishi 3DA-1 adapter and the Gefen HDMI Detector Plus OR the 3DC100S kit. See the "Connecting 3D Ready DLP TV's" article on our page.

The 3DA1 KIT Plus Gefen Device Supports the Following Samsung 3D DLP HDTV Models:

HL-T5076S HL-T5087S HL-T5089S HL50A650 HL-T5676S HL-T5687S HL-T5689S
HL56A650 HL-T6176S HL-T6187S HL-T6189S HL61A650 HL61A750 HL67A750
HL72A650 HL-T7288W .

The 3DA1 KIT Does NOT Support the Following Samsung 3D DLP HDTV Models:

HL-T4675S HL-T5075S HL-T5675S

The 3DC100S kit appears to support ALL Samsung 3D Ready DLP Models BUT NO 3D Ready Plasma Models. NOTE –these are the pre 2010 Samsung Plasma and NOT the 2010 Samsung Plasmas which support our SA3 Infrared Synced shutter glasses with their internal emitters NOR the 2011 Model Samsung TV's that support ONLY their 3000 series Bluetooth shutter glasses and NO other glasses or emitters from anyone as of May 2011.

NOTE: some of the older MITS or Samsung TV's call the 3D feature "FX Gaming" etc., and require input into the TV's PC input or into HDMI 3 input port. If you are



using a PC for input DO NOT SCALE YOUR DESKTOP RESOLUTION. It must be either 1080p 60Hz unscaled image or (as in some Samsung Models) a 1768x992 60 Hz unscaled image. Some models will accept lower resolutions, but will put a black border around the picture. In the case of some Mitsubishi's and possibly also Samsung's which supported 3D input only from PC's, you will have to change the input name to PC within the TV Configuration Menu, even though you are inputting 3D from a BluRay player via HDMI. Then you activate the 3D output on your TV with the remote. Of course you must always have the checkerboard output from the 3D BluRay, PS3 or PC. For such models of Samsung TV's proceed as follows: TV source set to "HDMI 3/DVI" (or "HDMI 1/DVI" for 720p models). Press the 3D button on the TV remote and you should see 3D Game : ON-STD GLS . If this does not appear, press the button for a second or so. If a different message appears, then press the button again until the correct one appears. If pressing the 3D button cannot get the correct message to appear make sure your input is to the correct HDMI port. For complete details see "Connecting 3D Ready DLP TV's" on our page or in the manuals available in our store <http://www.3dmagic.com/pdf/CONNECTING%20YOUR%203D%20READY%20DLP%20TV%204-27-11.pdf>

In all cases with any display you can tell if the glasses are working even without 3D images on the screen by covering the IR receiver in the front of the glasses or blocking the Emitter. The image or the room should be brighter than when the 3-D sync is on.

NOTE WELL! If the RED light does not go on in the center of our Gen2 Universal Emitter or if you cannot see the 3D for any reason it is probably NOT the fault of our emitter/glasses and you will NOT be able to make any other glasses work on your TV either until you figure out how to turn on the 3D function in the software/projector and to give the TV EXACTLY the 3D format it need-see your manual—if you don't have one you can download it from the net !

We check all our kits before sending them out so it is VERY unlikely they are faulty. Some glasses like our Model X are turned on by opening the temples and sometimes these need to be wiggled a bit to activate. Likewise the batteries will sometimes not make perfect contact unless you open the battery compartment (see included instructions) and remove and replace them. Chargeable models need to be fully charged. The VESA 3 pin stereo plugs used by many entities (DLP TV's, nVidia Quadro cards etc) are somewhat flakey (i.e., the sync pin often fails to make contact) so you may need to jiggle the connector or unplug

and replug regardless of whose VESA equipment you have.

4. All our Emitters are compatible with the following Mitsubishi 3D Ready DLP TV's and any other device with the Standard Stereo VESA 3 Pin MiniDin 3D plug (see photo below).

NOTE: some of the older TV's call the 3D feature "FX Gaming".

C8~c10 Series: WD-60C8, WD-65C8, WD-73C8, WD-60C9, WD-65C9, WD-73C9 , WD-60C10, WD-65C10. WD-73C10 **638 Series:** WD-60638, WD-65638, WD-73638 **735 Series:** WD-60735, WD-65735, WD-73735 **736 Series:** WD-65736, WD-73736 **737 Series:** WD-60737, WD-65737, WD-73737, WD-82737 **837 Series:** WD-65837, WD-73837, WD-82837 **738 Series:** WD-60738, WD-65738, WD-73738, WD-82738 **833 Series:** WD-57833, WD-65833, WD-73833 **835 Series:** WD-65835, WD-73835 **838 Series:** WD-65838, WD-73838, WD-82838 **A90 Series:** L65-A90 **A91 Series:** L75-A91
AND MANY NEWER MODELS NOT LISTED HERE!

5. What about the older Samsung 3D Ready Plasma TV's?

Yes our emitter and glasses also work with Samsung PN42A450 and PN42B450 , PS42B450 in Australia, PS42B450 and PS42B451 in UK or PN50A450, PN50B450, PS50B450 in Australia, PS50B450 and PS50B451 in the UK. THESE MODELS ONLY TAKE PC INPUT IN 1024X768 OR (SOME MODELS) 1380X768 etc. so you will NOT need the Mitsubishi 3DA-1 and the Gefen Plus NOR the 3DC100S but ONLY a PC.

6. Are the 3DTV Corp Emitters and glasses compatible with newest (i.e., 2010/2011) Samsung/Sony/Panasonic etc 3D televisions?

Our Model U glasses are compatible with many brands while SA3 and CS are specific to Samsung 2010 Models with built in emitters, while our nVidia compatible models U, NV1, NV2 and E will work with any model of field sequential 3D Display when used with the nVidia 3D Vision system running on a PC with the nVidia emitter or any of our glasses and many others when our Gen2 emitter is used in place of or in

addition to the nVidia emitter as described in the nVidia section. The 2011 models of Samsung 3DTV's all seem to work only with their 3000 series Bluetooth glasses and their internal emitter.

7. Can I receive the 3D broadcasts and play PS3 (Playstation), Nintendo or XBOX games in 3D on my TV?

In theory all future consumer 3D devices should be HDMI 1.4a compliant which means they should support every common 3D format in and out. However so far 3D BluRay players and STB's (Set Top Boxes from cable/satellite companies) now available will NOT support 60 or 120 hz field sequential or the DLP TV checkerboard out and will not even give the option of display on such common 3D game and scientific monitors as those from Zalman, Miracube, iZ3D, Planar and others, and you even often need special hardware to use checkerboard 3D Ready DLP TV's (see our discussion above). If you can see 3D on your TV with some method then you may be able to see broadcasts or games with the same method subject to the limitations noted here. As noted above, PS3 now has full 3D support for HDMI 1.4 3DTV's while XBOX has only Avatar and some other 3rd party games that have native 3D support and only checkerboard (i.e., DLP TV's) or interlace (i.e. CP monitors such as those from Zalman, LG, Vizio etc) displays can be used, so for games like Black Ops which have only side by side or top/bottom (i.e., frame packed) output you must buy the Mitsubishi adapters to give Checker on DLP TV's or if you are using a 3D Ready DLP projector, you will need various boxes like the Moome EXTV3, VIP 3D Theater, 3D Displayer and 3D Gamer and other products have it or soon will, Optoma 3D-XL or Viewsonics VP3D1, to convert to frame packed to 120hz frame sequential. Nintendo Parallax handheld 3D game system has 3D without glasses, but only on its own small display and afaik has no out for 3D viewing. Note that the PC versions of these games may support 120hz or checkerboard or interlace while the game box versions may not.

To download the latest PS3 software that supports 3D go to <http://us.playstation.com/support/systemupdates/ps3/index.htm>
Avatar and other native 3D Games work on the PS3 and XBOX 360 WITHOUT any firmware upgrade.

Since it appears all the 3D BROADCASTS are available in side by side format(but even this varies) you can use a TV capture card on a PC along with Wimmer's (or maybe the DepthQ or other) Stereoscopic player in live capture mode with appropriate



output for your type of 3D display(e.g., checkerboard for 3D Ready DLP TV's, page flipped for PC CRT monitors or for 3D Ready DLP projectors, or interlaced for CP passive glasses monitors/TV's) to view them realtime. Since all STB's (set top boxes) will likely give out HDMI, YRB or standard NTSC or PAL composite video, this would allow nearly any capture card to be used IF 3D were output in all these formats (but it seems that DirectTV e.g., is NOT). Of course one could also use the built-in record feature that is an option on most STB's now or record with TIVO etc., or a PC and convert the files offline with various format converters and/or just play them with Wimmer, Suto, PowerDVD, DepthQ, TriDef, Arcsoft etc.(see above). There are of course numerous potential problems and a very recent PC with 3D BluRay capable drive with minimum GTX 260 or equivalent video card, 750 watt power supply, and Windows 7 will likely be essential.

HOW TO USE A PC TO GET LIVE HD3D BROADCASTS TO ANY DISPLAY WITHOUT A SPECIAL ADAPTER

I presume this technique will work with any of the input and output modes supported by Wimmer's StereoScopic Player (which has an option for realtime 3D format conversion via a pc with a TV input card), which includes almost every kind of possible 3D display and of course anaglyph mode on ANY display. It exploits the applications ability to use a Timeshift/Recording Buffer.

BRIEFLY: Live HD 3D Satellite TV as done by a Canadian Viewer: PC: DVBDream to DVblink Server to Media Center / Record BellExpressvu's 3DVu channel > use Stereoscopic player to play Media Center's recording/buffer-converted from Side by Side to Checkerboard to Samsung PN50A450 equipped with 3DTV Corp Midrange Emitter and glasses which can provide a perfect signal for over 100 people.

MORE INFO: First you get your subscription to DirecTV, COX, Verizon FIOS etc, or Cable with 3D Channels . Buy a copy of Peter Wimmer's StereoScopic Player for \$50 http://www.3dtv.at/Downloads/Index_en.aspx. Set MCE (Media Center Edition -Windows mce2005/Vista/7) to record, and then direct StereoScopic Player to playback the file/buffer recording (it has the brute force file reading i.e., the same as VLC/MPC (VLC = Video Lan Client

(software player) - it plays back all file types, corrupted, zero timestamps etc (brute force). MPC is Media Player Classic so no VLC URL Looping needed. Use a Genpix Skywalker DVB-S usb tuner card that tunes Dishnet/BellExpressVu satellite streams/TV direct through the pc bus (with a licensed subscription card & reader/cam reader). Media Center is a GUI for use with Big Screen TV's, electronic program guide, timeshift, super advanced recording/scheduling. TV, DVD, Blu-ray, Music, radio all accessed through a single windows interface. Perfect for remote/touchscreen navigation. Capture cards that should work ok include AVerTV CaptureHD H727 or DarkCrystal HD Capture ProC027. Set MCE to record the 3D stream through the program guide. Leave MCE recording in the background (renderless/no video displayed). Open Stereoscopic Player and navigate to Media Center's recording buffer > click open > pick corresponding source (Side By Side). There is a second or so time delay but you can just skip forward 1 second and its virtually RealTime.

Alternatively, there is a writeup on the net about using VLC with Stereoscopic Player and looping the video from your tv tuner atsc/ntsc/qam/dvbs through a URL address. This is a very extensive process . URL looping = using VLC and your TV tuner to loop the video through a URL exp. 127.0.0.1, and then have Stereoscopic Player grab the video from the URL = 127.x.x).

3D files can be recorded and played back as well. One person reports perfect smooth 3D playback via PowerDVD 10 Mark 2 on these two HTPC's (i.e., Home Theater PC's): HTPC1: Mobo: Intel x38 chipset (Asus),CPU: Quad core q6600. Mem: 8g ram, Video Card: HD 3870x2 (x2) ,Rom: LG HDDVD/BD rom reader/DVD burner . HTPC2: Mobo: MSI Intel p35, CPU: E6400, Mem: 2GB ram, Video : HD 4670, Rom: Samsung BD drive

Software decoding only on a fast pc while hardware 3D decoding is only supported on HD4800 & HD5700/HD5800 series ATI AMD GPU's and of course on various Nvidia cards as well.

It seems that any BD rom drive will playback 3D Blu-Ray as long as it can read the disc @ a 2x speed minimum.

Invaluable forums on home 3D at <http://www.avforum.com>

NOTE WELL--Direct TV says that you must connect their new box (or your slightly older box with firmware upgrade) directly via HDMI to your 3DTV and if their box decides your TV is not 3D Ready it will NOT put out a 3D signal. That's right!-- they do NOT give you a chance to view 3D on any display other than the following list from their page and probably neither they nor anyone else will do this. A few stalwarts such as VIP have begun making boxes to convert HDMI 1.4a 3D format for legacy (i.e., older) displays but as of May 2011 these are still pricey (e.g., \$400). Note

that with the special Mitsubishi 3D A1 converter box you can see 3D broadcasts on your 3D Ready Mitsubishi, and for owners of Samsung 3D Ready DLP TV's or plasmas you also need the Gefen box as noted below OR in either case the newer 3DC100S as noted above. And as noted there are boxes from various projector companies and others that will do the realtime conversion from STB or BluRay to other formats and you can usually arrange to use the 3DTV Corp emitter and glasses as most of them have plugs (i.e. the 3 pin MiniDin connector) for our emitters.

When enough companies, or even your local TV stations, start to broadcast 3D channels, we might be freed from this format tyranny (all supposedly done for our own good of course) and see them on our CRT's, 3D ready DLP projectors and Interlaced 3D Monitors or even in anaglyph format on any old display whatever, but don't hold your breath. However using a DDC, DVI or HDMI Emulator such as the Gefen can circumvent some of this format tyranny, as it spoofs the 3DTV's and fools the HDMI 1.4a device into thinking you have a real 3DTV.

Here's the Direct TV list of approved 3DTV's as of mid 2010- now of course getting very out of date:

Panasonic Models: TC-P50VT25 TC-P58VT25 TC-P54VT25 TC-P65VT25

**Samsung Models: LN46C750R2F PN58C8000YF UN46C8000XF
LN55C750R2F PN63C7000YF UN46C9000ZF
PN50C7000YF PN63C8000YF UN55C7000WF
PN50C8000YF UN40C7000WF UN55C8000XF
PN58C7000YF UN46C7000WF UN55C9000ZF**



Mitsubishi Models: All models require the 3DA-1 Adapter from Mitsubishi L65-A90 WD-60737 WD-65735 WD-65837 WD-73735 WD-73837 WD-82738 L75-A81 WD-60738 WD-65736 WD-65838 WD-73736 WD-73838 WD-82837 L75-A91 WD-60C8 WD-65737 WD-65C8 WD-73737 WD-73C8 WD-82838 WD-57833 WD-60C9 WD-65738 WD-65C9 WD-73738 WD-73C9 WD-60638 WD-60C10 WD-65833 WD-65C10 WD-73833 WD-73C10 WD-60735 WD-65638 WD-65835 WD-73638 WD-73835 WD-82737

Here is some additional info on some Sony Models:

**The following models require IR emitter model TMR-BR100
KDL-40HX800 KDL-46HX800 KDL-55HX800
XBR-52HX909 XBR-46HX909**

The following models do not require the IR emitter XBR-60LX900 XBR-52LX900

8. Where can I get some 3D videos?

You can get some free demo downloads for your pc from http://www.nvidia.com/object/3D_Vision_3D_Movies.html and many other sites such as http://www.3dtv.at/Movies/Index_en.aspx but note that they are in various formats such as side by side and top/bottom and you will have to configure your software 3D player for the correct input and (for DLP TV's) checkerboard output. Most of the movies are available in multiple resolutions. Choose the resolution suitable for your computer: 720p videos require a dual core processor, 1080p videos requires a quad core processor for smooth playback. You can buy older 3D DVD's at many places on the net including Amazon and Ebay and newer 3D BluRays are everywhere.

9. I see that DLP Link glasses work with DLP TV's and



Projectors—should I get those or Infrared Synced glasses and your Gen2, SS1 or LC Emitter? (also see pages 8-10)

As noted above, 3D Ready DLP TV's and Projectors systems have a built in emitter that can work with DLP Link glasses and 3DTV Corp has DLP Link Glasses of high quality at low cost.

PLEASE NOTE WELL!!!: if you have DLP Link type glasses you may be able to use them on your DLP TV or projector at the same time as our IR emitters and glasses. HOWEVER, with some kinds of displays and some kinds of DLP Link and IR Synced glasses some people find the performance of one or the other unsatisfactory and only experimentation can decide.

Four DLP Link glasses can cost over \$400 or as little as \$190 (3DTV Corp's DLP2) and you still need to give the projector 120hz input from a PC if you play BluRay because 3DBR players , PS3 and XBOX and also cable set top boxes (e.g., Direct TV) currently have no option for field sequential output (and may never). Also, some of the DLP Link glasses (e.g., older Optoma's) have a button that will put you into 2D and will be unsuitable for children or groups or even a large percentage of consumers. You may need to adjust or turn off DYNAMIC CONTRAST or automatic brightness as this can interfere with DLP Link and some displays just won't work at all from a normal viewing distance. Masking the receiver on the glasses with colored cellophane etc MIGHT help.

Our Universal Emitter and 4 glasses costs about \$175 for the TV's or about \$195 for the projectors and the image is essentially the same (though of course some will differ and this depends greatly on your exact TV model and its settings). Unlike the IR synced glasses with emitter, the DLP Link glasses can only be used with DLP displays and not with any other kind of display. The 3DTV Corp Universal Gen2 Emitter can be used with over 50 kinds of glasses (from 3DTV Corp and other companies-but not all types at one time) and with PC's that have an Nvidia Quadro card, or with one of the common game dongles (available from 3DTV Corp for \$20) or other 3D format converting devices that have the stereo Vesa plug, as noted above.

THE TEN DEADLY SINS OF DLP LINK GLASSES

(See also comments above).

Since DLP Link glasses work without an emitter, many people think they are the best choice for their TV or Projector (versus our IR synced glasses which use an Emitter). However here are a few things to consider. All these issues are mentioned by consumers in many blogs and forums and naturally the discussion is endless.

Coretronic (sold under name of Optoma, Viewsonic, Acer etc), XpanD and others make



modest priced glasses while realD's cost about 5 times as much.

1. POLARITY REVERSAL SWITCH. XpanD X102 glasses (and most others) have no right/left eye polarity reversal, so you have to do that with the projector. The Coretronic type (at least that available in 2010) can be reversed by holding the button down 2.5 sec. but if you just press it you go into the 2D mode. 3DTV Corp glasses/emitters which have polarity reversal and no 2D mode. However Models and features of these and all kinds of glasses, projectors and 3DTV's are changing rapidly.
2. SWITCH--2D MODE. The original Optoma DLP Link glasses have a strange feature called Dual View (a Texas Instrument idea, though it has existed in the patent lit for decades) that their glasses manual did not mention. When you press the button to turn it on you come up in 3D mode, but another press and you go to only left eye (in both eyes) then another for only right eye (in both eyes) and then back to 3D! This is a disaster in the consumer market and even for educational or professional use. XpanD X102 glasses have a spot on the right side temple with a capacitance switch (i.e., you just touch to activate) but if you are in a situation where they don't work (as happened to me with the Acer below) you can't tell if they are on.
3. COMFORT. Many people find both the XpanD and Coretronics uncomfortable for prolonged viewing due to weight and design but of course models change frequently and some newer ones are better. The two models sold by 3DTV Corp are light and comfortable and with easy operation and we have sold thousands and almost never get a return unless it does not work at all (a common situation with all DLP Links).
4. BRIGHTNESS/CONTRAST ISSUES. In 2010 I did a test at home with an Acer 3D Ready DLP Projector and discovered that with a small very bright image(ca. 1M diagonal) no DLP Link would work at all unless I got at least 20ft away and even then performance was erratic. I did not try masking the glasses receiver which might alleviate this. With a larger image they were happy at my normal viewing distance of 8ft. , but some people have to be unacceptably far away (e.g., the other side of their viewing room wall) to get the glasses working for a suitably bright image whereas IR synced glasses will almost always work unless you get very close.
5. TINT. I noticed a slight red tint with the Optoma and a slight green one with XpanD. Of course one can compensate for this with projector or DLP TV controls but it's annoying (and generally not necessary with IR glasses). More severe tints that cannot be corrected without a video processor or tweaking the pc card are common and vary wildly depending both on the glasses and, above all, the type of color wheel in your projector or DLP TV.
6. BATTERY CHANGING. Another problem is the difficulty of battery changing (relative to IR glasses which are easy and of course several kinds like our Model SA3, CK1, JP etc are rechargeable). XpanD 102's (like their original cinema glasses) required a special tool to change and you have to buy the expensive batteries in a carrier. It appears you can only get the batteries from XpanD in a 10pk which costs \$25 and even they did not have the tool on their page. I assume this has changed. Optoma requires the removal of two screws and then an IQ test to figure out how to change them the first time, since the

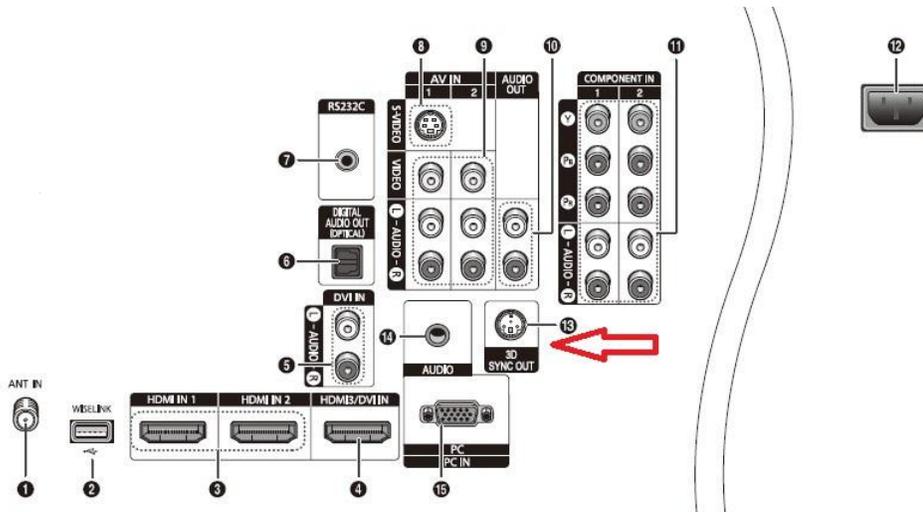
manual is quite opaque (but the Viewsonic manual is better). Again I expect this has now changed.

7. DLP ONLY. Another issue to consider is that, unlike many IR synced glasses now becoming available, DLP Links can only be used for 3D Ready DLP TV's (Mitsubishi or Samsung), or the recent 3D Ready DLP projectors (from many companies) and cannot be used with any other 3D display.
8. COST. They have been about twice the cost of IR glasses and though this has changed for some models, overall they are still more costly.
9. WASHED OUT BLACKS. Many users have complained about blacks being washed out or colored in DLP Link mode with some kinds of TV's or projectors.
10. NOT MITSUBISHI'S CHOICE. They originally referred people to XpanD/Coretronic for DLP Link glasses, but when Mitsubishi released the 3DA1 adapter (also sold as part of their 3DC1000 starter kit) for their DLP TV's , it included a Samsung Mode IR emitter and glasses, not DLP Link. I am sure they had a good reason for doing so. (3DTV now sells our own Samsung/Mitsubishi compatible glasses and emitters and all Samsung mode glasses are compatible with our SS1 Emitter—except of course for 2011 Samsung series 3000 BlueTooth glasses).

10. STEREO (3D) VESA PLUG ON DLP TV's FOR OUR GEN2, MIDRANGE and CINEMA, LC and SS1 EMITTERS

HERE IS A TYPICAL PLUG LAYOUT ON THE BACK OF THE 3D READY DLP TV'S LISTED ABOVE SHOWING THE STEREO VESA PLUG FOR OUR EMITTER (as noted above, this same plug is on the common black gaming dongle, used with PC's and Projectors, the Moome EXT3, VIP 3D Theater, 3D Displayer and 3D Gamer and other products have it or soon will including Viewsonics , Optoma XL-3D and other boxes, and other projectors, and on 3D capable Nvidia Quadro and ATI cards--see above and our Gen2 Emitter Manual and ads online for further details and a constantly changing list of compatible shutter glasses). However the plug on the JVC DLA series projectors is NOT a standard stereo VESA plug as it forces the emitter to handshake and so only the JVC emitter will work (but of course all our cinema mode glasses are compatible).





11. BUYING AND TROUBLESHOOTING WIRELESS SHUTTER GLASSES

ALL kinds of wireless glasses emitters from any company can interfere with the operation of remotes-- which also use infrared signals. So you may have to put your hand over the emitter when you want to use the remote. Infrared from lights, outdoors, wireless stereo headphones, Video Game accessories and heaters may also interfere with the remotes OR with the glasses operations of both IR synced and DLP Link glasses. Our Model X glasses mode in the Gen2 emitter and consequently all the compatible emitters made by I/O, Elsa, H3D, Razor etc., often interfere as does the nVidia 3D Vision emitter. As noted elsewhere here and in all our instructions, you can always change your glasses models for use with one of the other Gen2 Emitter protocols or use our LC cinema mode or SS1 Samsung mode emitters which do not seem to interfere with any remotes (afaik).

The **RANGE on our Gen2 Emitter** (ca. 40ft wide and deep for most kinds of glasses) is adequate for most people, but if you need to increase the range you may splice a length of 3 conductor wire into its cable or suspend it from the ceiling. If you want a large number of people (say 200), you can use our Midrange Emitter (\$450). For a huge crowd use our Cinema Emitter.

As noted above, for those using a PC, there is a setting in TriDef and DepthQ and in Wimmer's player and in PowerDVD version 10 for checkerboard format used by DLP TV's, but not in Suto's player. Some XBOX and PS3 games (e.g., Avatar) support checkerboard output, but this does not guarantee it will recognize and work with your

DLP TV. Not all 3D BluRay DVD players will output checkerboard and none so far output field sequential 120hz 3D needed by most 3D Ready DLP Projectors. Of course new HDMI compliant projectors are appearing which will take in frame packed (bluray) directly but they lack a stereo Vesa plug for our emitters so you would have to use our 3D Window PC-IR kit with its cinema mode emitter. If you have standard 3D DVD's in field sequential 50 or 60 hz 3D format and you want to play them on a DVD player (as opposed to a PC), you will have to convert them to top/bottom or side by side to play them on checkerboard thru one of the new Mitsubishi 3D A-1 converters (ca. \$100) into any of the 3D Ready DLP's from Mitsubishi or Samsung.

If the glasses do not work please remove the battery cover and check that the CR2032 batteries (that are used in all consumer glasses) have at least 3 Volts. Make sure you put them back with same polarity (+ towards face in Model X). For rechargeables make sure they are fully charged. All glasses of any type will automatically turn off when not in use. Model X glasses are turned on by opening the temples and sometime these need to be wiggled a bit to activate. Likewise the batteries will sometimes not make perfect contact unless you open the center battery compartment (see included instructions) and remove and replace them. If you leave your emitter plugged in and do not turn off the TV completely it may continue to transmit and run down the glasses batteries. In some cases you can manually turn off the glasses or you can put them in a drawer.

Reflections in the glasses. Some people complain that one or another model of glasses is unsatisfactory due to bothersome reflections, but on testing I find this is similar for all kinds of glasses and is only curable by eliminating the source of the reflected light to the sides or rear of the room or slightly adjusting viewer position or seating.

There is no perfect pair of glasses and every kind is a tradeoff of price, image quality, durability, comfort and style. Some of the nicest looking and most comfortable are very fragile as can be seen in the stores that sell 3DTV's where the glasses are typically not working or absent due to having been destroyed after a few days use and by the ads selling broken Samsung glasses (for parts) from the Mitsubishi 3D Starter Kits on eBay. Any glasses can be adjusted for comfort using the pads uniquely supplied in every 3DTV Corp kit. Another unique feature is the set of two temples sizes with the 3DTV Corp Model CS Fit All Bulletproof glasses. Many models of "Universal" glasses are appearing with the first ones being the 3DTV Corp Models U, N and E but as some have noted, if you are fussy there is no such thing as universal glasses since they cannot be made to give an optimal image on all displays, nor to work on every kind of display and also to have optimal comfort for all persons including kids and over glasses, durability, ease of operation and a low price. So most users will be better off with glasses tailored for their type of 3D display.



If the RED light does not go on in the center of our emitter (default color for Model X glasses but MUST be changed to another color for other Models) or if you cannot see the 3D for any reason it is probably NOT the fault of our emitter/glasses and you will NOT be able to make any other glasses work on your TV either! We check all our kits before sending them out so it is VERY unlikely they are faulty. We have had two failures in the field of over 1000 Emitters in a year and about one in 100 glasses may fail during the first weeks of operation so it is over 99% probable any issues are with your setup. The problem is that you need to figure out how to turn on the correct input to your TV and you must have the input in checkerboard (for DLP TV's) or other correct format. For the 3D Ready DLP TV's and Projectors, we cannot give exact instructions as there are over 50 models of each (and neither Mitsubishi nor Samsung nor projector manuals or pages are very helpful), but we give the best general instructions on the web in our article "Connecting 3D Ready DLP TV's" on our page and included with all kits as well as detailed instructions for our glasses and dongles.

If you do get two overlapping images on the screen of your DLP TV or projector and the glasses are working (flicker when the sync is interrupted) then you are not giving it the proper image format.

YOU CAN ALWAYS TELL IF THE GLASSES ARE WORKING BY LOOKING AWAY FROM THE TV, WHEN THEY WILL START FLICKERING AND STOP, AND THEN START FLICKERING AND GO CLEAR WHEN YOU LOOK BACK AT THE TV (or just cover the glasses receiver or the emitter with your hand).

Also check our page www.3dtv.jp and www.3dmagic.com periodically for updates as things are changing very fast. The most user friendly way to buy our products (or just about any 3D glasses/emitter products anywhere) is to click the link to our store at the top of our page.

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