Tips for Using The

XREAL Beam Pro



By George Themelis
August 2025

<u>Outline</u>

What is it?

The Positives

Concerns

Tips: How to take better 3D pictures with it

What is it?

Android device

XREAL (Chinese company)
Model = Beam Pro

- Has two lenses (50 mm apart)
- Takes 3D pictures & 3D video
- Available on Amazon USA:

- 6G+128G: \$197

- 8G+256G: \$246

- 8G+256G (5G): \$296

I got mine in Sept. 2024 after I saw nice 3D pictures posted on Facebook by Gert-Jan Wolkers. I had it less than a year and already have taken some wonderful pictures with it.



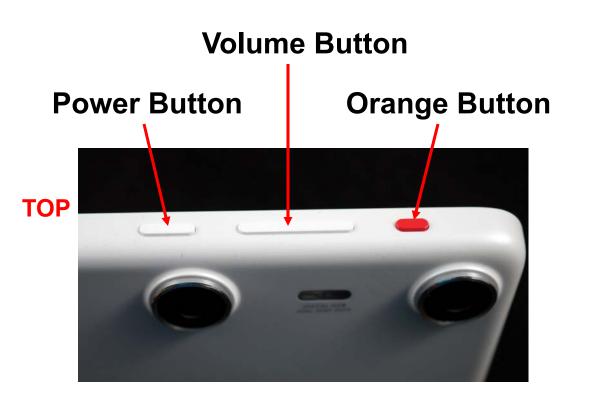


3D Specifications

- Stereo Base: 50mm
- Field of View: Ultra-wide (~18 mm equiv.)
- Lenses fixed focus and fixed aperture (f2.2)
- Still 3D pictures: jpeg (SBS 2x3840x2880 pixels 11 MP per side, 4:3 aspect ratio. The size of images is ~ 4-6MB)
- **3D Video: mp4** (SBS 2x1920x1080, 60 or 30 fps)

<u>Note</u>: The device can also take 2D pictures and there are more camera/photo options in 2D (picture format, aspect ratio, use of LED light, video, etc.). Also, the left lens focuses in 2D but it is fixed in 3D.

XREAL Beam Pro Controls

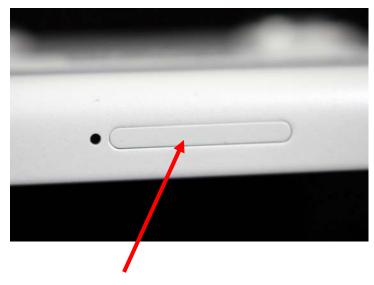


RIGHT SIDE



2x USB-C Ports

BOTTOM



Micro SD Tray - The device comes w/128 or 256 GB of internal memory. It can take micro SD cards up to 1T.

XREAL Beam Set-Up

Similar to setting up an Android Phone

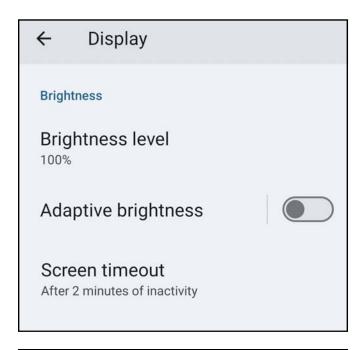
PIN (locked) or NOT (unlocked)?

It would be easier to use as a camera without a PIN (unlocked) however sensitive data (email, google account, etc.) can be accessed by others.



Change Default Settings

Goal: Operate more as a camera and less as a phone



Turn **Adaptive brightness off** and set brightness at 100%.

With these settings I have no problem seeing the screen during daytime

Change **Screen Timeout** to 2 or 5 min (the default is 1 min which is too short for me)



Turn Auto-rotate screen ON

Turn Double-tap to wake up the screen → OFF. The XBP will not turn on unless if you press the power button, which is how cameras work.

♦ 🗣 🖟 33% 4:17 Air 84% Google TV Play Store Google Meet

Camera App

Useful shortcut:

Double-pressing the power button brings the camera up



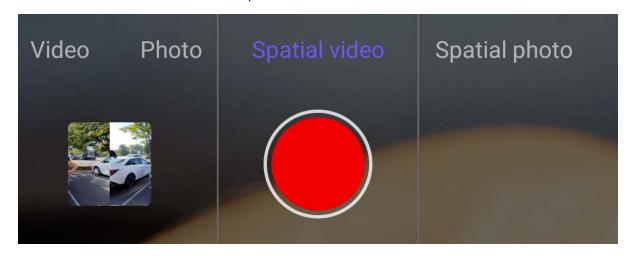
- If the device is unlocked, this always works
- If it is locked, then you have to enter the pin and bring up the camera at least once. Then this shortcut works until the device is shut down.

Camera

Camera App: Taking 3D Pictures



Video = RED button, Picture = WHITE button



4 Choices:

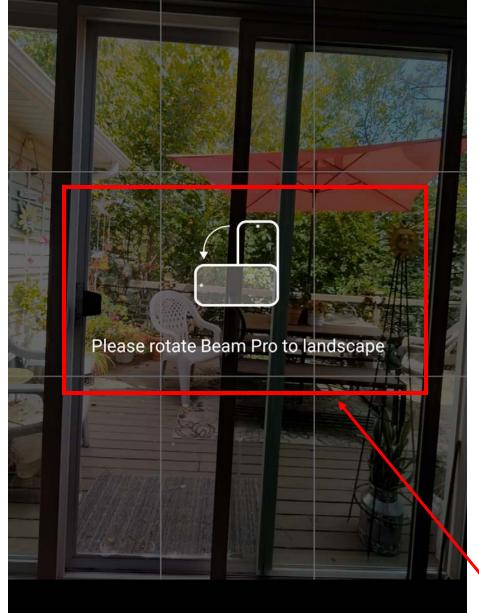
Video

Photo

Spatial video

Spatial photo





Spatial photo

Spatial video

2D or 3D?

- When the camera app first comes up, the default is 2D
- Make sure that you are taking 3D pictures!
- There are ways to tell that you are in 2D vs. 3D

If you are in a 3D mode and you turn the device vertically, the screen dims and displays this message. You can still take 3D pictures!

4 Ways to Take a Picture

These are universal for all phones

 Tap the on-screen shutter button

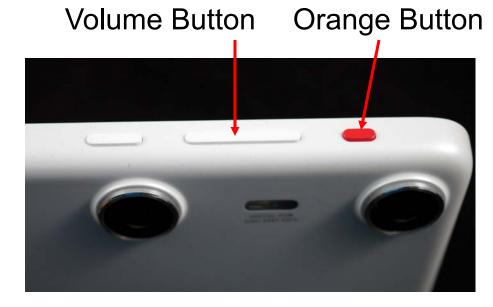


- ** Press the volume up or down buttons
- ** Press the orange button
- Use a Bluetooth camera shutter remote

(BT shutter remotes work by activating the volume button)

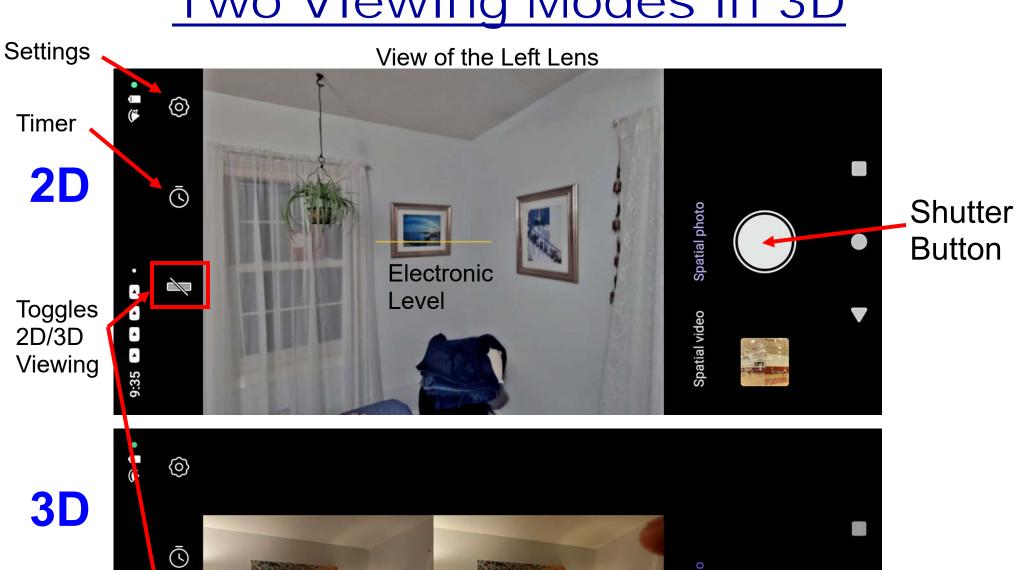






** Note: Shutter fires when the button is released!

Two Viewing Modes in 3D



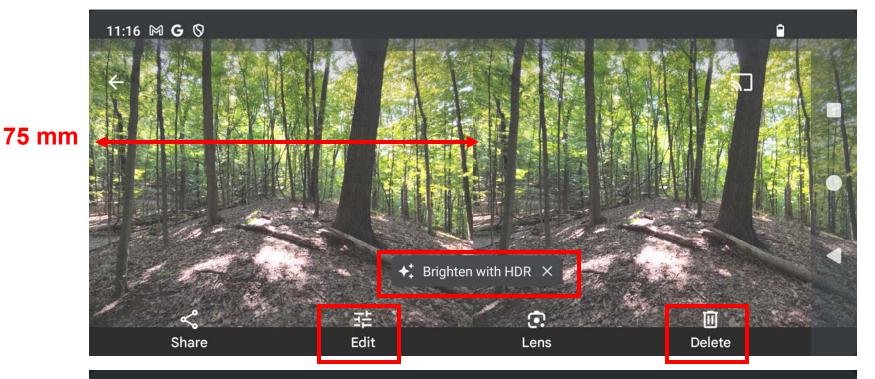
^ M

9:43

Picture Preview

Spatial video

Camera App: Viewing 3D & Editing



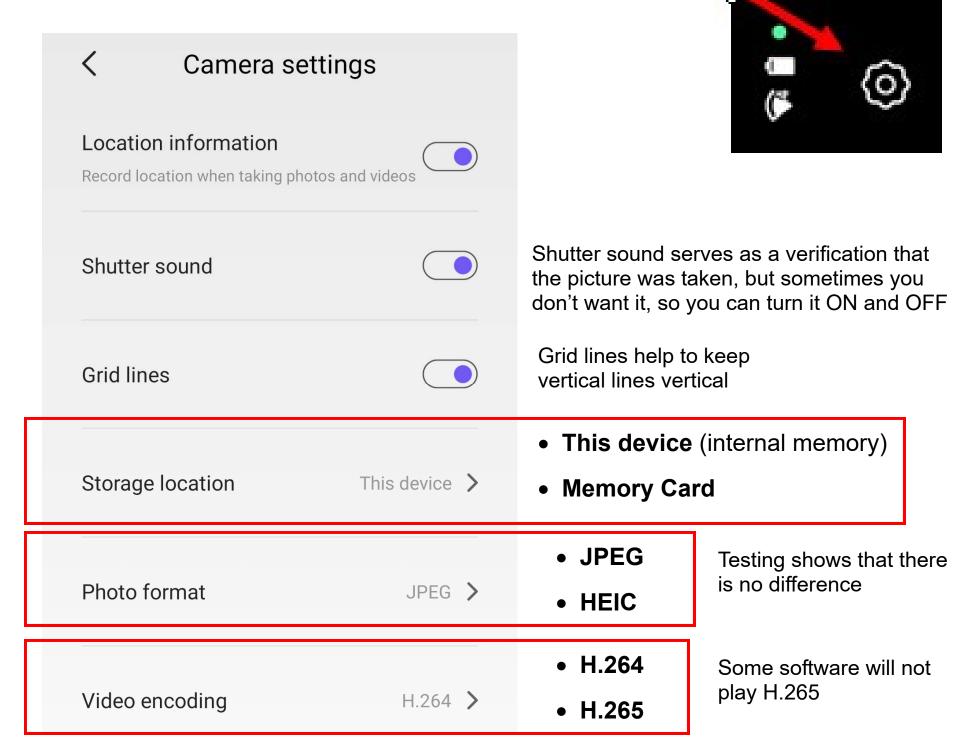
Taping the screen removes the information and only leaves the image

Returns to recording screen



Android feature goes back

Camera App Settings



How to Transfer Pictures to Computer



1. Store photos in micro SD card

2. Wireless transfer (Google Photos)

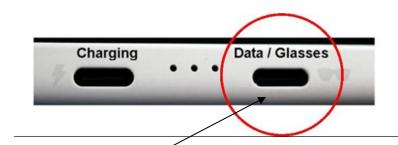


3. Direct Cable Connection

- Use a USB-C cable that allows data transfer (some cables only allow charging)
- 2) Plug the cable to the "glass" USB-C-port of the XBP and to the computer
- 3) Go to Settings > Connected devices > USB > select "File Transfer"

Note: this is an Android security feature and you have to do it every time. There is a way to avoid this step by turning on "Developer Options" (I have not done that).

You should see a folder **Beam Pro** > **Internal shared storage**Open the **DCIM** folder and then the **Camera** folder
All the pictures and videos are stored there.



USB Preferences



USB controlled by

- Connected device
- This device

Use USB for

- File Transfer
- USB tethering
- O MIDI

How are the pictures named and where are they stored?

Pictures are named by the clock time (examples):

- 3D Still Pictures: **SV**_20241031_113259.jpg
- <u>3D Video:</u> **SV**_20241031_113648.**mp4**
- <u>2D Still Pictures:</u> **IMG**_20250809_185551.**jpg**
- <u>2D Video:</u> **VID**_20250808_155847.**mp4**

SV_20241031_113259 was taken on 2024/10/31 at 11:32:59

Because files take their name from the XBP clock, **make sure that the clock is correct**. If not, they will be stored somewhere else. The clock is checked/corrected when the device is connected to the internet.

Because 3D pictures and video have the same names and only different extension, they are shown sequentially mixed up, in the chronological order that they were recorded.

Folder Structure

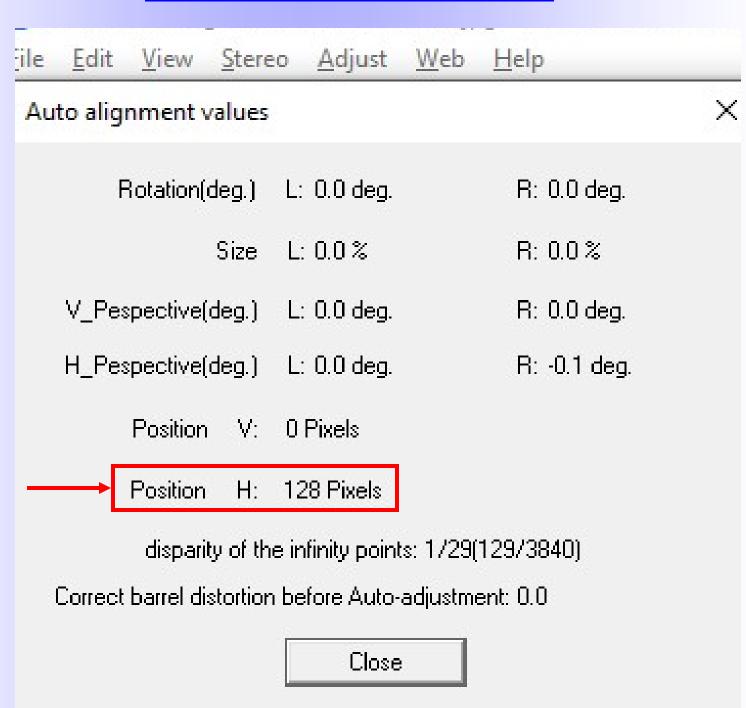
- ▼ Beam Pro
 - > 📥 disk
 - Internal shared storage
 - > Alarms
 - > Android
 - > apputils
 - Audiobooks
 - > 📙 data
 - ✓ □ DCIM
 - Camera
 - Documents
 - Download
 - > Movies
 - Music
 - > Notifications
 - → Pictures
 - > .thumbnails

The Positives

Phone Form & Functionality

- Does not attract attention
- Compact & easy to carry
- Can be used by anyone
- Water & shock resistant
- Good battery life
- Automatic exposure & stabilization
- Can use standard phone accessories
- Easy to Use (both physically & <u>format</u> wise)
- Good Quality of 3D pictures & 3D video
- Good for a variety of 3D pictures many not possible with a standard 3D camera

Perfect Alignment



Except for the Stereo Window which is at infinity

XREAL BP Auto Exposure

Aperture Fixed (f2.2)

Shutter Speed and ISO change

A: Good light. ISO fixed at 50. Shutter speed changes from 1/100 to about 1/1000s

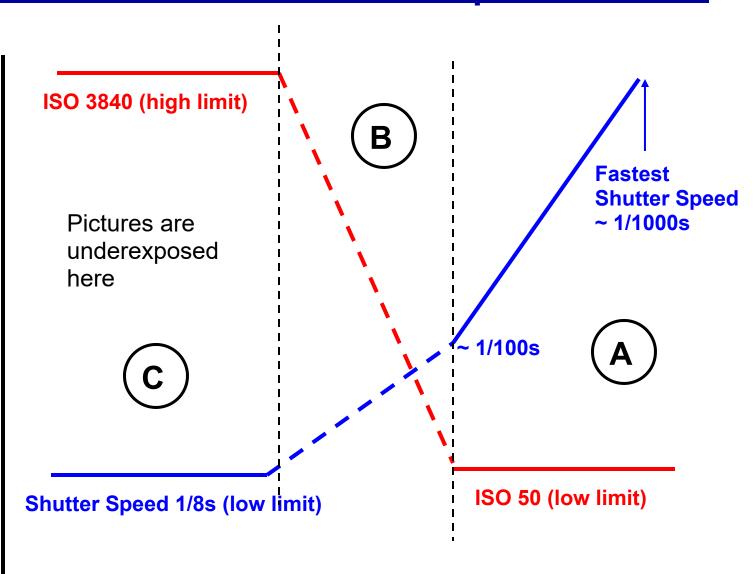
Speed

Shutter

B: Transition:

Shutter speed drops and ISO increases.

C: Low Light: Shutter speed bottoms down to 1/8s and ISO peaks at 3840



WARNING: Under low light there is a bias towards slow shutter speeds so you need to be careful! **Amount of Light**

Exposure Compensation



- In 2D viewing mode, touch the screen. This will create a square and adjust the exposure of the area outlined. Hold your finger and exposure is locked (see picture)
- Adjust the exposure by sliding the "sun" scale. Recompose.
- (The exposure will stay locked until the screen is touched. It will stay locked even
 if a picture is taken.)

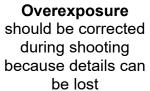
Automatic Exposure

Reduced Exposure





Automatic Exposure



Underexposure can be corrected with photo editing

It is better to underexpose and correct later than overexpose

Increased Exposure





XREAL Beam Pro White Balance

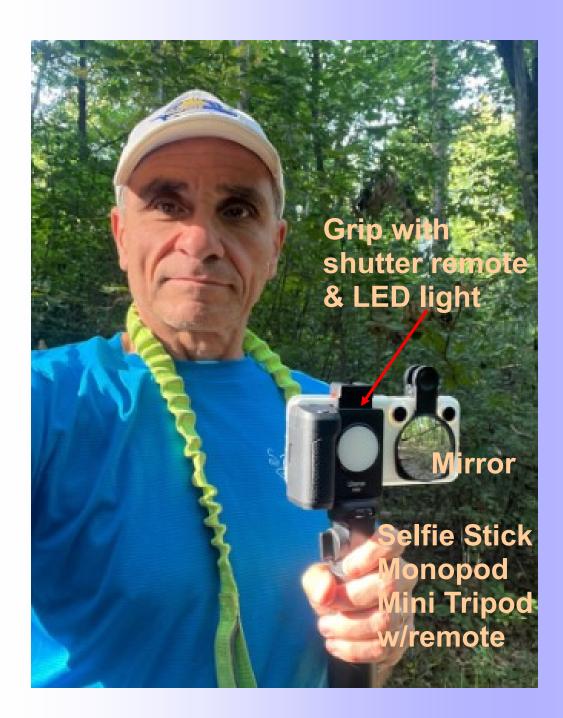
AUTO White Balance

Corrected with Editing



If a color dominates the picture, the XBP will trying to "neutralize" it, as in this picture

Plethora of Accessories

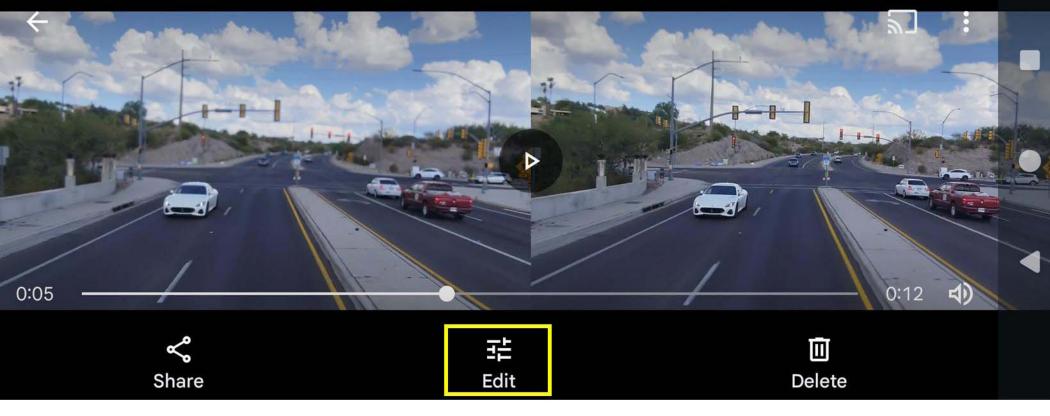






3D Video

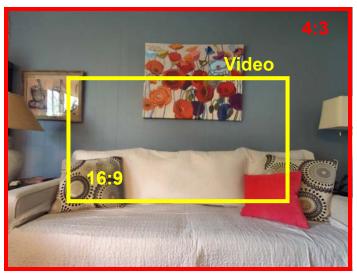




- Perfectly aligned (except for the stereo window)
- Very nicely stabilized
- Effective Focal Length ~ **35mm** (much easier to work with)
- Simple format, easy to edit with 2D Video Editors
- Some **editing** is possible in the device (crop, adjust exposure, change speed, capture/**export a still 3D frame**)

Just the 3D Video is worth the XBP price





Questions / Concerns

- Stereo base (50 mm) is too narrow
- Field of view (18 mm equiv.) is too wide
- Wide Angle Distortion
- Not enough depth
- No camera controls
- No 3D screen
- Image quality?
- "This is no better than what I am using now"

Not Enough Depth

XREAL vs. FUJI

	Stereo Base	Focal Length
XREAL	50 mm	18 mm
FUJI	75 mm	35 mm

Depth ~ (Stereo Base) x (Focal Length)

XREAL (50x18) / FUJI (75x35) = 0.34

XREAL shows ~ 1/3 of the "depth" of the Fuji

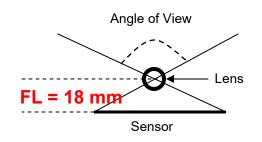
** All other things being the same

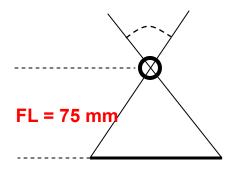
Solution: Get closer !! 2.1 m \rightarrow ~ 0.7 m

or closer if there is no infinity

WIDE Angle Lenses

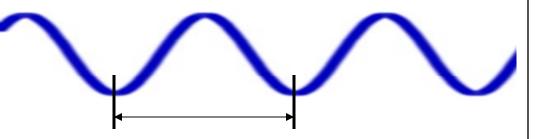
LONG (Telephoto) Lenses

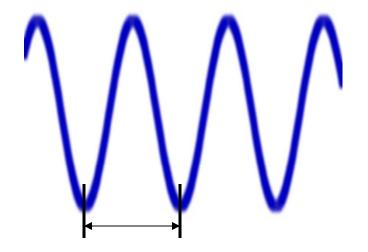




Expand Space

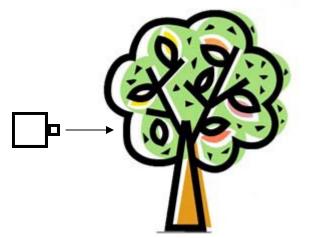


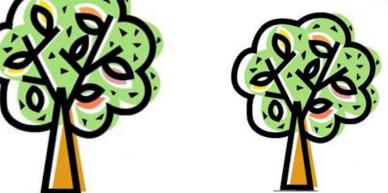




Emphasize Foreground









No choices for Aspect Ratio or FL

Some users find the FOV too wide and wish that the camera had:

- A choice of different aspect ratios
- A choice for different FL (24 mm, 35 mm, etc.)

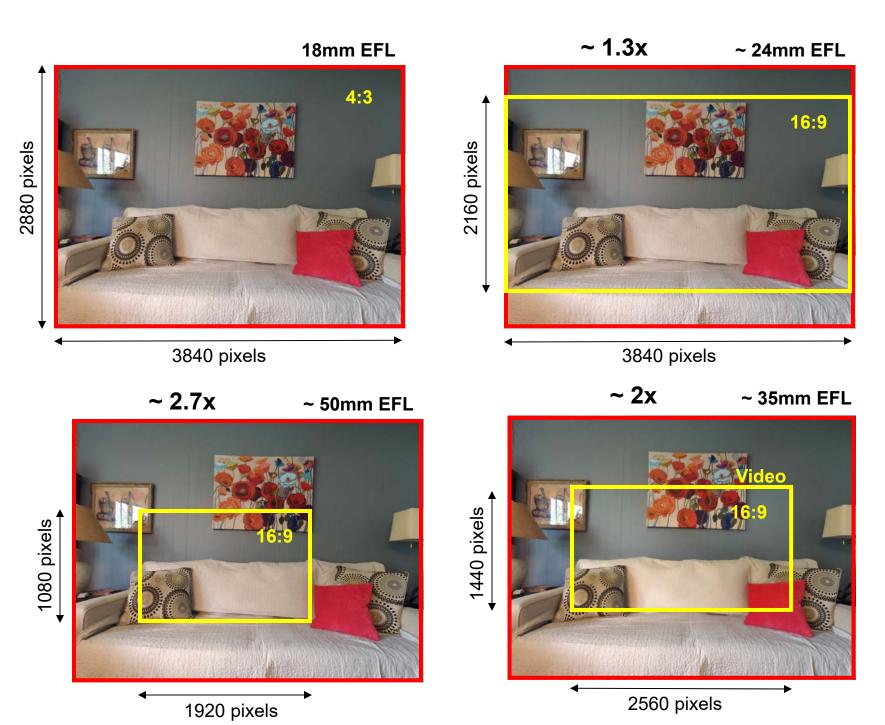
Since the camera only has one pair of lenses any change in aspect ratio or FL must be done by cropping (digital zoom)

The question is, who does the cropping?

- The camera
- The user

The advantage of the user doing the cropping is that **they have the choice** to select any area, vs. the center that the camera selects by default.

Cropping increases Effective Focal Length



Simple cropping from 4:3 to 16:9 aspect ratio changes the EFL ~24mm

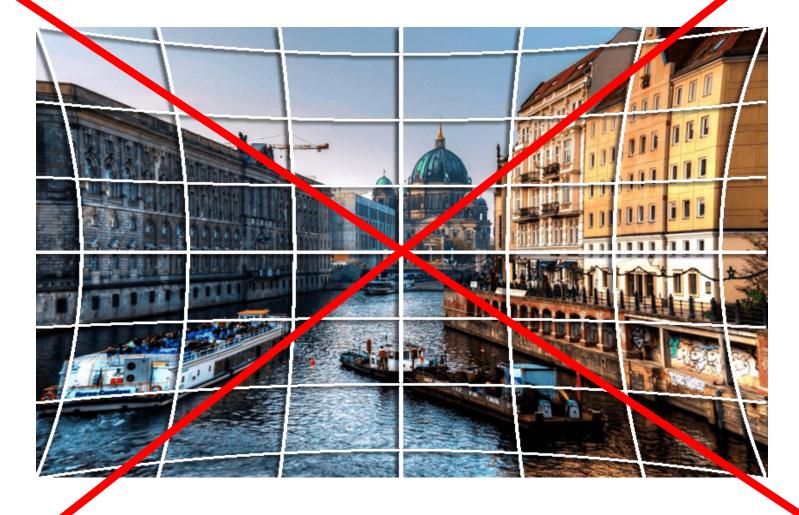
Maximum cropping maintaining HD resolution (1920x1080) EFL ~50mm

In-between, a 2x enlargement results in an EFL ~35mm

(This is the same as the video frame. The resolution is ~2560x1440 pixels but in video the camera resizes this to 1920x1080)



Pincushion Distortion



Example of Pincushion Distortion NOT from the XREAL BP

Careful testing shows that the XBP does not have any distortion







Original "Distorted Image"

Note the converging lines in the back, a normal perspective, exaggerated by the wide angle lenses. This was caused by tiling the camera down.

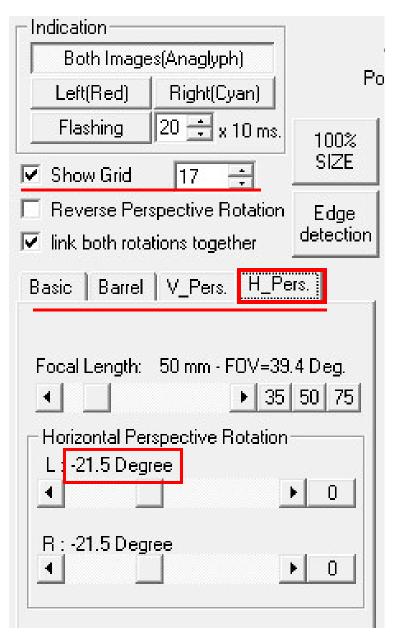
Corrected with SPM

Using SPM Horizontal Perspective Rotation you can straighten the vertical lines. This automatically removes the distortion of the faces.

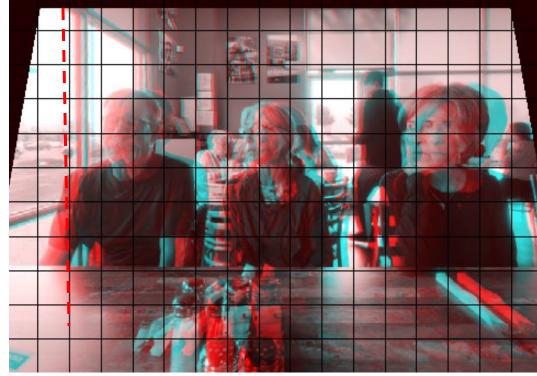


SPM Easy adjustment (shortcut "K")

Not "easy" or intuitive but very powerful. Can correct rotation errors ("Basic"), vertical or horizontal perspective, and barrel distortion.







Slide the scale until the converging lines become parallel



Questions / Concerns

- Stereo base (50mm) is too narrow
- Field of view (20mm equiv.) is too wide
- Wide Angle Distortion
- Not enough depth
- No camera controls
- No 3D screen
- Image quality?



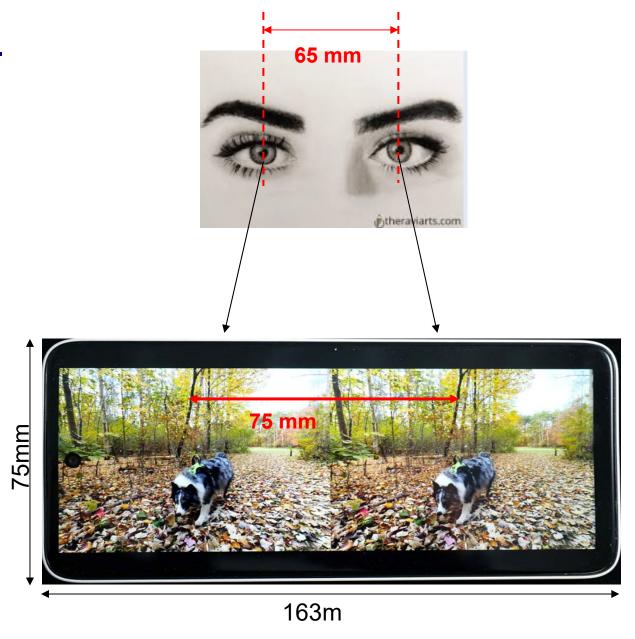
Grip
Shutter Button (removable)
Tripod Screw
Cold shoe
Storage for cable
Selfie mirror or LED light

- "I don't want to have to carry this and a phone"
- "This is no better than what I am using now"

Viewing 3D Viewing the Screen

- Freeview
- Use a Viewer (stereoscope)

Spacing of lenses (75mm) is **wider** than the spacing of the eyes (65mm)



Prismatic Lenses



- Vintage
- Modern
- Large
- Compact



Symmetric Lenses

Lite OWL



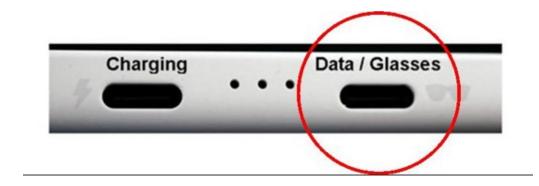
IA ≥ 75 mm

FL ≥ 100 mm

Requirements for a simple stereoscope to be used with the XBP:

- Interaxial Distance: 75mm or longer (this is a requirement)
- Focal Length: 100 mm or longer (it is a matter of comfort. A short FL shows pixels and it is harder to fuse the images.)

Viewing 3D Using Glass Port



- 3D computer monitor
- 3D TV
- 3D projector
- External 3D Viewer (GOOVIS for example)
- 3D Glasses (XREAL & others)
- Looking Glass







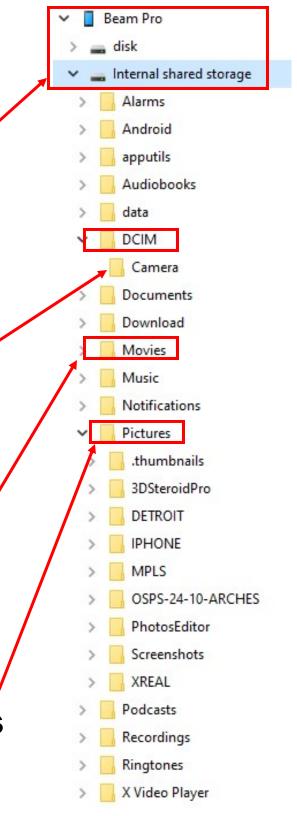
XREAL Beam Pro as a 3D Media Player

The XBP has a large storage capacity:

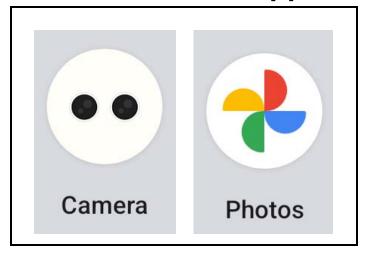
- Internal Memory: 128/256GB
- Micro-SD card, up to 1T (1000GB) (a good choice is 256GB)

You can store 3D Content:

- Pictures taken with the device:
 - 3D Still Pictures
 Example: SV_20241031_113259.jpg
 - 3D Video Example: SV_20241031_113648.mp4
- 3D Movies
- Pictures/video taken with other 3D cameras

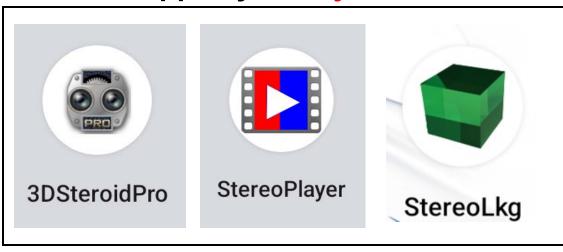


Native 2D Photo apps



Using Different Photo Apps

3D Photo apps by Masuji Suto





3DSteroid as a 3D Viewer

3DSteroid can be used a stereo viewer for the XBP, in addition to being a 3D editor

3DSteroidPro

Taping the screen removes the information and only leaves the image



- Different 3D viewing modes (parallel, anaglyph, half width, etc.)
- It has a "Slide" mode (images advance automatically, as in a slide show).
- The volume button can be used as an image advance button
- A **remote** (Bluetooth) shutter release can advance images (double-clicking advances to the next image, single-clicking reverses the direction of advance)



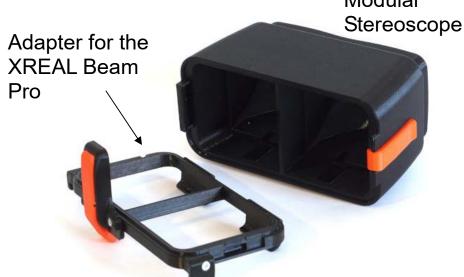
• The image can be reduced in size so the infinity separation is reduced from 75 mm to ~ 65 mm which then makes it possible to use any stereoscope

One limitation of 3DStereoid is that it can only play **still 3D images and not 3D video** That's why Masuji created the **StereoPlayer app**

Matej Bohac's Achromatic Viewer







3D Steroid allows you to resize the image so the infinity separation is reduced and then:

Any stereoscope can be used

Using devices with a screen wider than 122 mm

back to 3D-printed Modular Stereoscope overview

The **optimal width of the displayed image pair** for optically correct viewing without eye divergence is **122 mm**. If the screen is larger, **black bars have to be displayed on the sides**.

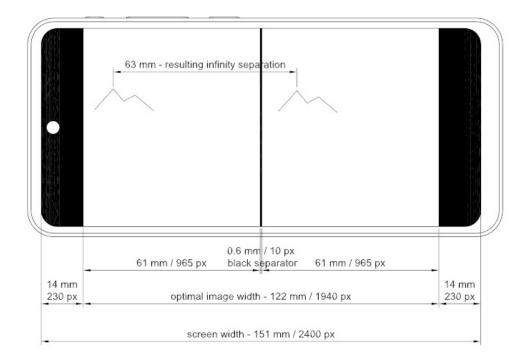
This can be done on the fly during image viewing - I know of two apps capable of doing this:

- Stéréoscope
- 3Dsteroid

The drawing below shows the optimal image dimensions on the XREAL Beam Pro (both in mm and pixels).

The thin separator in the centre is not crucial, but helps to see a clear stereo window.

The easiest way of checking whether the settings are correct is to measure the width of the image pair with a ruler.





StereoPlayer 3D Viewer

For 3D Still Pictures and 3D Video



Taping the screen removes the information and only leaves the image

Can adjust the stereo window and the setting stays from one picture to another and even from picture to video

The Positives

- Compact & easy to carry
- Very easy to use
- Can use standard phone accessories
- Unique combination of base & FOV
- Very responsive & large touch screen
- Good battery life
- Water & shock resistant
- Good stabilization
- Good low light performance
- Does not attract attention
- Can be used by anyone
- Fixed focus in 3D
- Simple file formats & file naming
- Perfect alignment
- Simple post processing
- Can use many apps
- Many viewing options
- 3D Media player
- Two USB-C ports
- Good 3D video for the casual user

XBP's Strengths

- 3D Documentation
- Spontaneous photography
- Creative compositions

Concerns / Wishes

- Image Quality?
- Fully Automatic Exposures
 (no Manual / Control of shutter speed)
- Short base & wide FOV?

My Goal

- Take advantage of the XREAL Beam Pro's unique characteristics
- Produce pictures that look normal
- Take interesting / creative pictures or pictures that no other camera can take

<u>Outline</u>

What is it?

The Positives

Concerns

Tips: How to take better 3D pictures with it

AFTER

Tips for Using the XREAL Beam Pro

- Find a good way to carry it
- Practice accessing the camera quickly
- Charge battery & carry external battery
- Carry any accessories you might need
- Think before you shoot
- Try to hold the camera vertically & horizontally aligned
- Come close to your near subject (2.5 ft / 0.5 m or closer)
- Compose with near & mid-range depth
- Keep an open eye for unusual compositions
- Fire the camera carefully under low light
- Utilize exposure compensation (if needed)
- Take lots of pictures
- Study the picture on the screen
- Do on-camera editing (optional)
- Crop & fix window
- Further photo editing

Before Tips

- Find a good way to carry it and always have it with you!
- Practice accessing the camera quickly
- Charge battery
 & carry external battery
- Carry any accessories you might need

My most Useful Accessory: Selfie Stick Tripod Has 4 functions:

- Handle
- Selfie-stick (8"-31")
- Tabletop tripod
- Remote firing of camera



Oktay Akdeniz & stealthy XBP for street photography



During Tips

- Think before you shoot Study the screen
- Try to hold the camera vertically & horizontally aligned
- Come close to your near subject (0.6m / 2.5 ft or closer)
- Compose with near & mid-range depth
- Keep an open eye for unusual compositions
- Fire the camera carefully (especially under low light)
- Utilize exposure compensation (if needed)
- Take lots of pictures



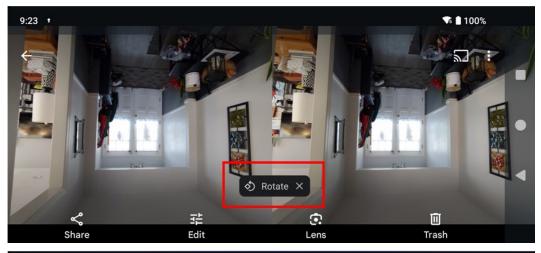




- Instruct people to stay still
- Take a deep breath
- Lightly touch the on-screen shutter button
- Or fire the shutter remotely

After Tips

- Study the picture on the screen
- Do on-camera editing (optional)
- Crop & adjust window
- Further photo editing



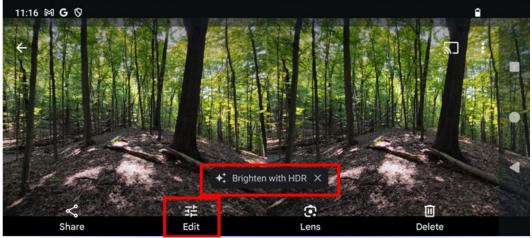






Photo Editing done here:

- Adjust exposure
- De-noise
- Sharpen

Examples of XBP Pictures

- 3D Close-ups
- 3D Pictures that look "normal"
- 3D in confined spaces
- 3D Selfies People Portraits
- Creative 3D pictures
- Night Photography
- Street Photography
- 3D and Running
- 3D Precious Memories & Fun Pictures
- Extracting 3D still pictures from 3D Video



If you think you are close

... get closer !!!

2nd place Award NSA 3D-Con On-Site







Pictures that look "Normal"

One cannot really tell which 3D camera took these



During a morning run in Arizona, I took this. I carefully composed this picture by putting the camera near the ground. I came very close to the near object. I made sure that the camera was not tilted up. I like the early light, plus the different depth levels here: Foreground, middle ground (tree) and background (distant mountains)





"The Detroit Fist"

Monument to Joe Louis, in downtown Detroit USA

Normal 3D camera

One of my most successful XBP pictures. It has received the "Best 3D" Award in the 2025 Hollywood International 3D Exhibition.

Compared to a normal 3D picture, the fist is exaggerated, the arm looks small, depth is stretched. A lot of buildings are included in the background and their convergence adds to the impact. This is the result of using an ultra-wide lens and coming really close to the near object.





Navy Pier, Chicago IL

These pictures cannot be taken with a "standard" 3D camera.

XBP's ultra wide lens includes a lot of the background (top) and creates interesting effects when photographing the statue (below).







Surprisingly, the ultra-wide lens can take decent portraits

With slight cropping



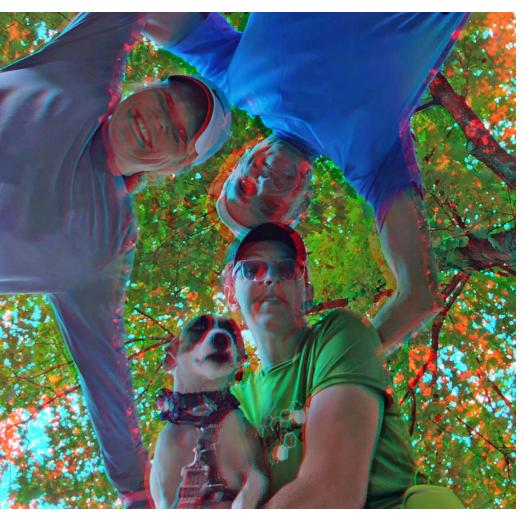




Taking 3D pictures in confined (narrow) spaces is one of the best uses of the XBP







Creative 3D pictures

Look for unusual angles of view. Do not hesitate to put the camera on the ground and look up.





Street 3D Photography

Look for fun & spontaneous 3D pictures all around you



Stereoscopy 141 (1-2025)

Street Photography with the XREAL Beam Pro

Oktay Akdeniz (Turkey)

Since my childhood, I've been very passionate about photography. However, I really started taking photography seriously during the late 60's, when I could finally afford to buy an old but unused Leica IIIf.

I was mostly shooting B&W film; developing and printing my pictures in a darkroom. At the same time, I started gathering information on photography. In order to train my eye, I acquired all the "Photography Annual" magazines, starting with the 1955 edition, which were a showcase of the best pictures of the year, selected by a group of prominent photographers. I've noticed that most of the photographs in those "Photography Annual" magazines had a certain hallmark characteristic that caught my attention. I felt that the distinguishing essence of those photographs was not simply based on the depiction of a certain object, but rather the capture of emotions and moments that were telling stories, meanwhile following widely accepted aesthetic principles.

That is when I first came across the term Candid Photography. The term Street Photography, a sub-genre of candid photography, was not that popular at the time. So, whenever I found opportunities, I took to the streets to take candid photographs; sometimes with friends who shared the same passion.

Although not absolutely necessary, most of street photography's objects are human beings. It's the capturing of their emotions, gestures, the look in their eyes that expose their mood, all in a natural way.

Any posed photograph cannot qualify as candid; although also natural. An old lady reading a book while sitting on a bench does not qualify as candid photography as it lacks the element of a magical frozen moment or the reflection of a unique characteristic or an unexpected emotion or gesture.

Street photography is about the natural expressions of people without them being aware of the camera. The essence of street photography lies in its ability to capture life as it is. Being able to shoot from the hip is also one of the important skills of the street photographer. Camouflaging oneself from the subject leads to spontaneity and catching the decisive moment.

Here comes the issue of taking someone else's photograph without his/her consent. As far as I know regarding the right to privacy, the law is flexible depending on whose property you take the picture on, how crowded the area is, and so on. One thing that's certain is that you may not publish or share other people's photographs without their written consent.

Street photographers should respect their subject; they should avoid taking photos that may exploit, embarrass, or harm an individual. Whether legal or not, some people simply don't want their photographs taken. If they notice that you're secretly taking their photograph you may get into trouble.













10 ISU STEREOSCOPY



3D Self Portraits

Easy to do with the BT remote

George & George





3D and Running

- Running marathons & trail races (in nature/mountains) is my "other hobby".
- In 2009 I took the brand new Fuji W1
 and ran the Athens (Greece) marathon.
 The Fuji does not have image
 stabilization and does not have good low
 light performance, so it is a problem.
- The Panasonic Lumix 3D1 is better but has short stereo base and it is prone to damage by water.
- XREAL BP is perfect! Easy to carry & use when running, excellent IS, good low light performance, good stereo base.



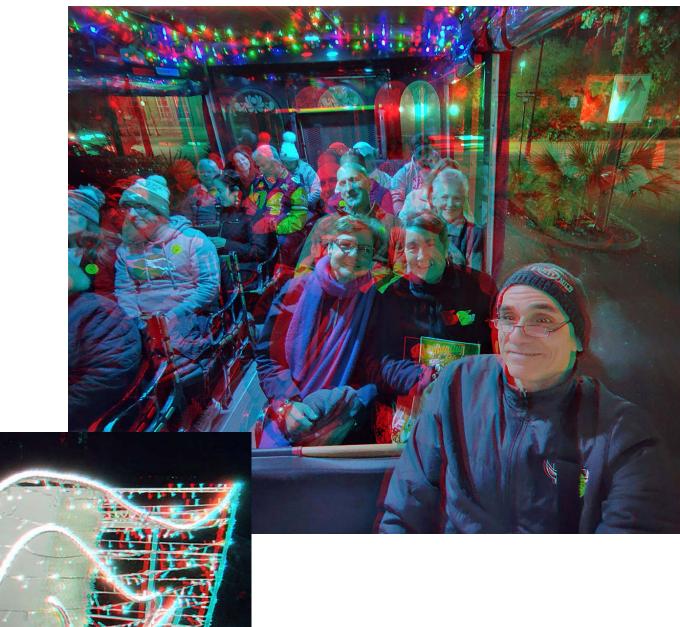


Night (Low Light) 3D Photography

Works surprisingly well

Be careful of the low shutter speed (~1/10s)

Some de-noising with photo editing will help



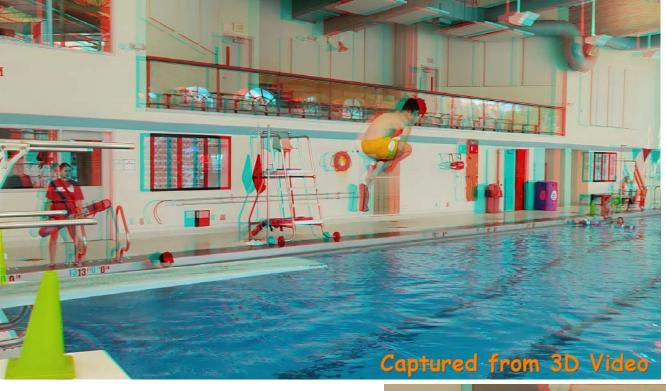


Precious 3D Memories

Fun too!







Extracting frames from 3D Video

For capturing the peak action or best moment



An "Accidental" Success Story



Bulletin No 301 July 2025

"Givehimthehonour" takes the fence

by Derek Medhurst

Background

I have been taking photographs at Plumpton Racecourse in Sussex (in southeast England) for about eight years, primarily in 2D flat photography which accounts for the bulk of all my pictures. I have tried occasional shots there with the Fuji W3, which has been my main stereo camera, but it's always been a difficult subject for it, especially with the shutter lag.

I got my Xreal Beam Pro in autumn 2024 and I thought it worth giving it a try at a Plumpton meeting. The wide angle view, fixed focal length and small lens separation ruled out shots from afar, so I got close to the fence, low to the ground to take a shot looking up as the horses came over.

When the horses were about 200 yards away I knelt down, set the camera to spatial photo and listened as they approached unseen. I pressed the release when I figured they were taking off. When I looked at the Xreal's screen I realised that I had accidentally set it to spatial video and had captured 1.6 seconds of video! I said "oh dear" ... or something like that!

These 4 pictures (captured from the video) have already won several awards, including First Place in the PSA Stereo Sequence Competition









What is the XREAL BP for?

Not good for good quality landscape 3D or anything that requires long FL, large stereo base, or control of shutter speed (wildlife, macro, sports, fireworks, etc.)

But great for:

- Spontaneous, creative & fun 3D photography
- Photography in confined areas (inside house, restaurants, buses, trains, planes, crowed markets, etc.)
- Travel & Street photography with a camera that fits in your pocket
- 3D Documentation & memories
- 3D Video "the easy way"
- Many types of 3D using a huge selection of "phone" accessories (head/body straps, underwater cases, etc.)

I would like to thank **David Starkman** and **Gert-Jan Wolkers**for their help and guidance with
the XREAL Beam Pro (and many
other 3D related questions and
issues).

Gert-Jan Wolkers is maintaining a Facebook User's Group:

https://www.facebook.com/ groups/474727928845639

This picture of his Gert-Jan's sister celebrating her 60th birthday was taken with the XPB and it demonstrates how the camera can capture **fun 3D memories** in a **confined space**, thanks to its unique combination of shorter-than-normal stereo base and ultrawide field of view.

