



Boxfish 360 FAQ

Do you have more information?

Owner's Manual:

<https://www.boxfish.nz/wp-content/uploads/2020/05/Boxfish-360-Spherical-Camera-Owners-Manual.pdf>

Workflow overview:

<https://www.boxfish-research.com/brochures/Boxfish360Workflow.png>

If you have a minute, have a look what New Zealand Geographic created with their Boxfish 360. It was their very first 360 shoot:

<https://www.nzgeo.com/video/talking-fish/>

What's special about the Boxfish 360?

The Boxfish 360 is the only underwater 360 rig that is custom calibrated to shoot sharp underwater video and photos without needing dioptres. Large m4/3 sensors, genlocked cameras, and long runtime make it the highest quality rig available today. With only three cameras and the supporting App the whole workflow from setting up to rendering is very easy and fast. No tools required, and you never have to take the cameras out. Shooting on the water this is very important, as only the Boxfish allows you to change batteries and cards quickly on a small boat even in difficult conditions - e.g. rocking RIB in large swells with rain.

What are the benefits of having only 3 cameras/seams as opposed to 6?

First - fewer seams means less parallax errors to worry about. With gopro setups, you always have a seam in your view, and with moving cameras or subjects this is always a huge headache. With fewer seams you can deliver a much more polished experience with a lot less work.

Second - fewer cameras -> less troubles. We've built several prototypes with 2 to 10 Cameras, and we quickly found out that beyond 4 cameras it starts to become a huge time sink and nightmare. It starts by setting them all up, keeping them charged, not losing a card, organising the files, and then rendering also takes forever. 2 cameras is great on land but



due to the optical restrictions of semi-sphere domes not feasible underwater. After testing for more than a year we're pretty sure 3 is the best compromise.

Third - mechanics: 3 cameras allows us to have a flat top and bottom, and that means much improved handling. You can actually put the rig down on 5 sides to work on any part, e.g. lube o-ring or attach lights to the mounts. It's so easy to do anything with it, and the risk of damaging or scratching the domes is much reduced. You'll love it.

By the way, the Catlin Seaview SVII, legendary panorama rig, also uses the cameras in the same configuration as the Boxfish 360: https://en.wikipedia.org/wiki/Seaview_SVII

Can the Boxfish 360 be used for freediving, or only scuba?

A few people used the Boxfish 360 for freediving and liked it a lot, including William Trubridge. He's done a few 360 shoots before and he said he liked the Boxfish best by far. Drag is about the same as a GH4 or A6000 or similar small mirrorless without strobes. Not as bad as a full DSLR.

How heavy is the Boxfish 360 on the surface and in the water?

The Boxfish 360 weighs 6kg and has is 670g negatively buoyant in fresh water.

Do I need a separate configuration for topside 360 photography?

Not at all, the camera works great on the surface. If you have a look here: <https://www.nzgeo.com/video/talking-fish/>

Both surface and underwater was shot with the same Boxfish 360. Richie Robinson just took the domes off for the surface shoot and set aperture to f/8. f/4 also works, but on the surface f/8 provides the best sharpness at distance.



How long does the camera run?

The standard runtime is up to 90 minutes (warm climates). In cold climates 60 minutes is common.

We offer an optional battery extender that fits into the housing. It provides up to 4 hours of runtime.

Why do you use the Z-Cam E1, and not the Blackmagic Micro 4K?

The Blackmagic micro 4K is great for streaming 4K, but it can't record. Also the additional sensor crop (~3x) is a big disadvantage in lower light and behind domes. The additional bulk and power requirements of a recording solution for multiple cameras, not to mention the cables, make this not practical for an autonomous recording rig. Especially if it has to fit in a dive housing, where volume has to be offset by weight.

In comparison, the E1 has a larger sensor (true m43, 2x crop), records 4K internally, and is also genlocked. Both 4K recording and millisecond accuracy genlock are vital to creating a polished 360 video experience. The E1 camera have proofed to be very reliable and consistent in quality. We really like them and have a good relationship with the manufacturer.

How reliable are the Z-Cam E1 cameras?

We are really excited about the Z-Cam, we've had them since the kickstarter. The first versions were not very usable because the firmware wasn't ready, but since four versions ago they are really great. They work very reliably, runtime is great, image quality too. And off course the genlock is just the best thing ever. It makes the whole post-production workflow a breeze because it eliminates the biggest worry.

What's the lead time for shipping?

Lead time is 2-3 weeks, but at the moment we have one Boxfish 360 ready to ship. Contact us to find out the shipping cost from New Zealand



to your destination. The Boxfish 360 comes assembled and custom calibrated in a nice Nanuk hard case and includes memory cards, power supply, spare batteries 3x card reader, spare o-rings, spare domes, lens cloth, laminated quick start guide.

Everything to get you started and keep you going.

What are the potential issues around working on boats?

We've been out on sailboats, and live aboards, and had no issues. If you have power available – from inverter, generator, or shore - you plug in the power supply (110-240V AC) straight into the camera - takes 2 hrs from 0 charge. You can also charge straight with 5V DC (6A though) if that is more convenient. The Boxfish 360 has voltage and polarisation protection, so nothing can go wrong even if you plug in 12V boat power.

What does the audio sync buzzer do?

There is an audible confirmation sound when the button is pressed, and then a few seconds later the sync buzzer sounds. Due to the genlock this is more of a safety than necessity. However, our electronics detect if any of the cameras start up at all. So if they hadn't been switched on or ran out of power, you'll get eight fast beeps instead of the sync buzzer, and know nothing is recording.

Where is the environmental data recorded to?

The environmental data is recorded to a memory chip inside our electronics package. The data is read out through the App through a micro-USB connection. The App also sets the time. No need to handle cards.

Are there any spare parts that I should purchase?

The Boxfish 360 ships with spare screws, o-rings, lube, microfibre cloth, and one spare domes. One of us have lived on a sailboat for 4 years before starting this, and when he go diving it's usually on live-aboard for the weekend or a week. So when we designed the Boxfish 360 and



packaging we added everything that's necessary to start shooting straight away, and keep shooting.

What service does the Boxfish 360 require?

The Boxfish 360 requires very little work. Unlike other underwater 360 cameras, you never have to take the domes off or cameras out to access cards or charge it. That's not only a huge time saver, it also means the mechanical strain on the unit during use is very small. You open the lid and everything is right there - aperture adjust, card slots, charge port. No tools required.

That reduces the service requirements to lubricating the hatch o-ring, and checking the dome o-rings once a year. Spare o-rings, lubricant and hex-keys are of course included with the Boxfish 360.

Can the Boxfish 360 be mounted on a ROV?

Yes.

How long does it take to charge the Boxfish 360?

From empty (3.6V):

In Boxfish 360 to 85% charge: 90min

In Boxfish 360 to to 100% charge : 120min

In USB plate charger to 85% charge: 120min

In USB plate charger to 100% charge: 150min

Rate of plate charger is independent of whether there's one or two batteries installed.

Can the Boxfish 360 shoot at 50 or 60fps?

The E1 cameras inside the Boxfish 360 can record at 24, 25, and 30fps.

However, even more important for sports than the higher frame rate is genlock, which provides accurate syncing of the recorded frames across multiple cameras. This guarantees that there are no problems with subjects moving across seams, even when the movement is very fast. The



millisecond sync of the E1 is really fantastic for that! And only three seams make it a lot easier as well.

Not to mention the runtime, there's always so much waiting for the action. Off the shelf you get up to 90 minutes, and we have a battery extender that fits inside the housing that runs up to 4 hours.

Why are you not using Entapano or iZugar lenses?

We spent half a year trying a number of cameras and lenses, and found the combination of E1 + Fujinon to be the best. Then we spent half a year figuring out the best calibration, as the normal surface calibration doesn't work underwater (out of focus). The Entapano lenses are much too large and too wide for underwater. Behind a semi-spherical dome you don't get more than about 185 degree angle independent of how wide the lens is. That's also the reason why iZugar doesn't have an underwater housing for their rigs.