Wireless Range Finder Servo

Black Tusk Workshop

This is a wireless servo kit. Each helmet is different but this document should give you enough information to adapt it do your helmet and range finder.

What's in the box:

- Low profile servo
- Transmitter module (in the black shrink wrap)
- Receiver module (in the white 3D printed box)
- Servo adapter x2 (long)
- Servo adapter x1 (short)
- Servo Mount (Generic)
- Servo Mount (Shaped for some helmets)

Recommended accessories:

- Magnetic ear cap
- Light weight range finder stalk
- Light weight range finder topper

If you have a heavy range finder and it won't stay up I will have to upgrade your software to a version that keeps the servo powered at all times. This may result in a unwanted servo noise however.

Step 1: Servo Orientation

Start by finding the orientation of the servo. Generally, the servo will mount horizontally with the long part of the servo pointing toward the front (gear side toward the rear). To find the exact orientation power everything on and press the button. Take note of which way the gear turns. You will want the servo mounted as perfectly as possible to avoid gear stripping.

Servo mounted in the helmet.

Step 2: Servo adapter

When you have the orientation of the servo noted continue by drilling a hole through your helmet and/or ear. This will be a 3/8th hole (if you use the included servo extensions) that will go from the servo to the range finder. You want the hole to have some wiggle room to ensure everything will turn without issue. I recommend after drilling the hole to move the drill around a little to create more room. Test to make sure the servo adapter fits.

Hole for servo extension. Servo gear shown in the middle.

Step 3: Range finder stalk

Attach the range finder stalk to the servo extension as best as possible. If the two parts come apart the range finder will fall and the servo can't move it back up. I recommended super glue with "insta-set" (purchase from amazon) or a strong epoxy. Also recommended is putting a magnet on your range finder and one on the helmet hear cap holder. This will help hold the range finder up when not in use. If you have a heavy range finder this may be highly beneficial.

Step 4: Mounting the servo

This is when things can get tricky. You must mount the servo in such a way that the gear and adapter are perfectly parallel with the ear. This will keep the servo from turning crooked and the range finder straight up and down. I have included two mounts. One is uncut and printed with solid ABS plastic. You can trim it down to fit your helmet. The other mount is made to fit my Boba Fett helmet made by 'animefan'. This may work well for you or it may not. Alternatively you can ignore the mounts and make your own. Just remember to center everything perfectly and align correctly. You can choose to glue the servo gear to the servo attachment if you want or you can leave it securely attached.

Step 5: Ear

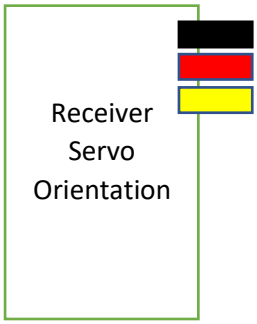
When everything is in place it's time to attach the ear. You can glue the ear cap right onto the other part of the ear but I recommend attaching magnets to the ear mount and the ear cap. This way you can easily remove and/or maintenance the range finder and attachment if needed.

Step 6: Operation

Hopefully at this point you have everything mounted and drilled. The servo is simple to operate, turn on both units, wait a few seconds, and press the button. Note that if you hold the button or double press it the servo may act unexpectedly.

While not recommended, you can manually move the range finder.

Questions and trouble shooting



In the event the servo becomes detached from the board the black wire goes toward the top of the board. See diagram.

If the system ever stops working check the batteries first. If they get low the system will halt.

If your servo gets out of sync and doesn't go up or down all the way, remove the servo from the helmet and power cycle it. This will reset it back to the up position.

If you have a heavy range finder and need a software upgrade to hold it up contact us. If this is the case you cannot move the servo while the system if powered.