

The following is a description of an anamorphic lens constructed out of two inexpensive wedge type prisms. The idea for this is from a long thread on www.diyaudio.com and several people did a lot of research to come up with the plans and sources for the prisms. All I did was follow their instructions and make minor modifications to suit my setup.

The key breakthrough that made this possible was the discovery by someone who posted to the thread the source of these prisms. I obtained my prisms (J25, 5"x7") from Massilon Plaque. They cost about \$40 each. One could use a smaller one and a bigger one as a pair, I just used two medium sized prisms for ease of construction.

My projector (a Sanyo PLV-Z4) is ceiling mounted, so the I wanted to make a case that will allow easy setup (including setting prism angles), as well as a way to slide the prism out if needed. The Z4 has a "zoom" mode that allows it to stretch a "scope" aspect ratio (which leaves black bars on top and bottom on a 16:9 screen) picture vertically, to project a tall and thin picture, which when expanded horizontally by the anamorphic lens produces a nice scope picture of 2.35:1 aspect ratio. There is a slight geometric distortion (mine was a little bowing in the top center, but all other sides were perfect). There is a bit of chromatic aberration. I taped a pair of 5x7 anti-reflection coated glasses to the sides of the prisms facing the projector to reduce reflection (this is not strictly speaking the best way, since the internal interfaces can still produce reflections, but it is the best I could do since there was no way to coat the prisms with AR coating cheaply). I think there was some reduction in reflections from the faces, but I can't be sure.

All the sides of the prisms were taped off to prevent reflections and light leaks. I first glued, using epoxy, four bolts to the center of the top and bottom sides of the prisms, but they came off with a little pressure due to the small surface area. Then I glued them back on, but this time used thin cardboard cutouts with small holes to allow the bolts to come through. This allowed the surface for epoxy to be larger (and also sealed off the top and bottom optically), and this time there was no way the bolts were coming off. The bolts came in handy if one wanted to change the angles of the prisms. Also, I used wingnuts to lock the prisms in place.

The box itself was quite simple, and was made out of half inch MDF. I could have simply drilled holes for the bolts, but instead decided to route slots on all sides of the box. This allowed me not only to turn the prisms to adjust angles, but also to move them forward and backwards to adjust the distance between them and also the distance to the front of the projector lens (I placed the prism furthest from the screen as close I could to the projector lens). The Z4 has a sliding lens cover, but this didn't cause any issues, I could place the rear prism snug against the case of the Z4.

I had no visible internal reflections even in credits and dark scenes. I did notice some minor reflections in some scenes, but interestingly, moving the prism slightly to one side or another (maybe it centered the picture better on the prisms) and tilting the housing slightly up or down got rid of most of it.

I used a heavy duty ball-bearing drawer slide with three sections and a locking latch (that prevents the slide being pulled completely out) to mount the housing to the ceiling. The housing with prisms is quite heavy, but the drawer slide (I think I got it from rockler wood working) had no trouble holding it. In my case it is ceiling mounted so I should at

some point have the housing attach loosely to the ceiling with some picture hanging cable, so it won't drop even accidentally!

The best way to attach the housing to the slide might have been with an aluminum U bracket with slots on the sides, but I couldn't find one. So I made a U-shaped bracket out of wood pieces (the one in picture is actually a U-bracket out of a view camera rear standard I made some time ago).

I also used self-stick (peel-and-stick) black velvet inside the housing to get rid of any stray lights.

Moving the housing in and out of the projection beam is very easy. The ball bearing slide moves very easily, with a slight push. I plan to make it remote controlled sometime in the future, using an X-10 controlled drapery controller (\$90 from smarthome.com) that has limit switches. The slide should move easily in both directions just like drapes.

Using TheaterTek, there is really no reason to move the lens out while watching a 16:9 movie, since Theatertek can be used to scale the picture. However, when using my Toshiba HD-A1, I need to slide the lens out when watching a 16:9 movie.

P1: The Anamorphic Lens (Lens) mounted to the ceiling in front of a Z4 (lens in "out" position, moved out of the way of the beam).



P2: Lens moved into the beam



P3: Side View



P4: With the bracket and housing removed (below)



P5: Side view



Various pictures below:







