



Telescope 106mm 900mm f.l.



kozmicid

VIEW IN BROWSER

updated 6. 4. 2023 | published 6. 4. 2023

Summary

This is a 106mm diameter, 900mm f.l. refractor

[Learning](#) > [Physics & Astronomy](#)

Tags: [telescope](#) [thingiverse](#)

This is a 106mm diameter, 900mm f.l. refractor, based on the following components:

Objective lens: https://www.aliexpress.com/item/1005001797311188.html?spm=a2g0o.order_list.0.0.7c581802rSG52C

Focuser: https://www.aliexpress.com/item/32952077276.html?spm=a2g0o.order_list.0.0.7c581802rSG52C

The objective lens I used is no longer available. However, this item appears to be identical: <https://www.aliexpress.com/item/2251832827891886.html>

Note that the diameter and thickness may differ slightly from one lens to the next. The objective cell may be either too tight or too loose depending.

The focuser I used is no longer available. However, this item may be a suitable substitute: <https://www.aliexpress.com/item/32952109020.html>

This is a Crayford focuser with the same 78mmX1mm metric thread. I don't know what the back focus would be with this design. It's more expensive than the focuser I used. but it does come with a 2" to 1.25" adapter, which I had to buy separately.

Finally, the star diagonal I used is here: <https://www.aliexpress.com/item/3256803070978421.html>

The scope consists of the following 3D printed parts:

Objective lens cell

Objective lens retaining ring

Dew shield

OTA section 1 attaches to the lens cell with three #4 X 3/8" wood screws

OTA section 2 mates to section 1

OTA section 3 mates to section 2

OTA section 4 mates to section 3 and threads onto the focuser with a 78mm X 1mm metric thread

Mounting bar, 200mm, Vixen-style dovetail

Mounting strap, bottom, 2 required. This attaches to the mounting bar with 4mm hardware

Mounting strap, top, 2 required. This attaches to the bottom strap with 3mm hardware. You can choose from three variations: 1) no attachments for mounting additional accessories, 2) one additional attachment, 3) two additional attachments. The photo shows the version with two additional attachments.

If you build the version with additional accessory mounts, I've included:

Base plate: This mounts to the straps with M4X12mm flat head screws

Vixen clamp: This mounts to the base plate with four M4X16mm flat head screws

Vixen clamp part b: This sliding part attaches to the Vixen clamp with two M4X40mm pan head screws.

I've included a file for a laser pointer mount. The laser pointer I used is similar to this: <https://www.amazon.com/Flashlight-Outdoor-Camping-Astronomy-Hiking/dp/B0B4ZSK8JL>

The sections and dew shield should be painted flat black inside. Prime first with white primer to avoid black paint seeping through the print. Make sure your paint is compatible with plastic. The OTA sections are glued together with epoxy. Make sure you mask off the glue surfaces. Also, try to align the sections so that they're all oriented the same relative to their printing orientation. My prints had artifacts which clearly showed the alignment. By aligning them all the same way, I was able to ensure that the overall OTA was straight.

The objective lens holder and retaining ring, and OTA section 4 (and matching mask) all have threads which are best printed at 0.12mm layer height. 0.16mm might work as well. Everything else can be printed at 0.2 or 0.24mm layer height. All parts are printed in PLA, white for the OTA and dew shield, and black for everything else.

UPDATE: I've had a question about the mount for this telescope. This is an old EQ-1 equivalent donated by a friend. I refurbished it and made some modifications, which you can see in the added photos. The three-point brace adds stability and still allows the tripod to be folded. The clock drive consists of a NEMA-23 stepper motor controlled by an Arduino with a motor shield. The drive is fairly smooth, with controls to slew at 8X forward and reverse, as well as 2X forward. Pressing the "pause" button disengages the drive and allows manual adjustment.

Print Settings

Printer Brand:

Creality

Printer:

CR-10S

Rafts:

No

Supports:

No

Resolution:

0.12 for threaded parts; 0.24 otherwise

Infill:

20%

Filament: Inland PLA+

White/Black

Category: Physics & Astronomy

Model files

ota_strap_top_v2_106d_900fl.stl

ota_cap.stl

dew_shield_106d900fl.stl

ota_strap_top_double_header.stl

106mm_vixen_clamp_part_a.stl

objective_lens_cell.stl

laser_mount_vixen.stl

ota_segment_4_106d900fl_v2.stl

ota_mounting_bar_vixen_106d900fl.stl

ota_segment_2_106d900fl_star_diagonal.stl

ota_segment_1_106d900fl_star_diagonal.stl

ota_segment_3_106d900fl_star_diagonal.stl

106mm_scope_base_plate.stl

ota_strap_bottom_v2_106d_900fl.stl

106mm_vixen_clamp_part_b.stl

objective_mount_part_b.stl

[Find source .stl files on Thingiverse.com](#)

License ©

This work is licensed under a
Creative Commons (4.0 International License)



Attribution

-
- ✗ | Sharing without ATTRIBUTION
 - ✓ | Remix Culture allowed
 - ✓ | Commercial Use
 - ✓ | Free Cultural Works
 - ✓ | Meets Open Definition