All About Binoculars

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Binoculars **Overview**

- Portable, comfortable, two-eye viewing
- Typical aperture of 50-100mm per eye
- Typical power from 7-20x and up to 50x
- Maximum FOVs around 6º
- Right-side up images

Nikon WX 10x50 ($6,400)

Orion 20x80 ($160)

Analog Sky - Ember ($500)

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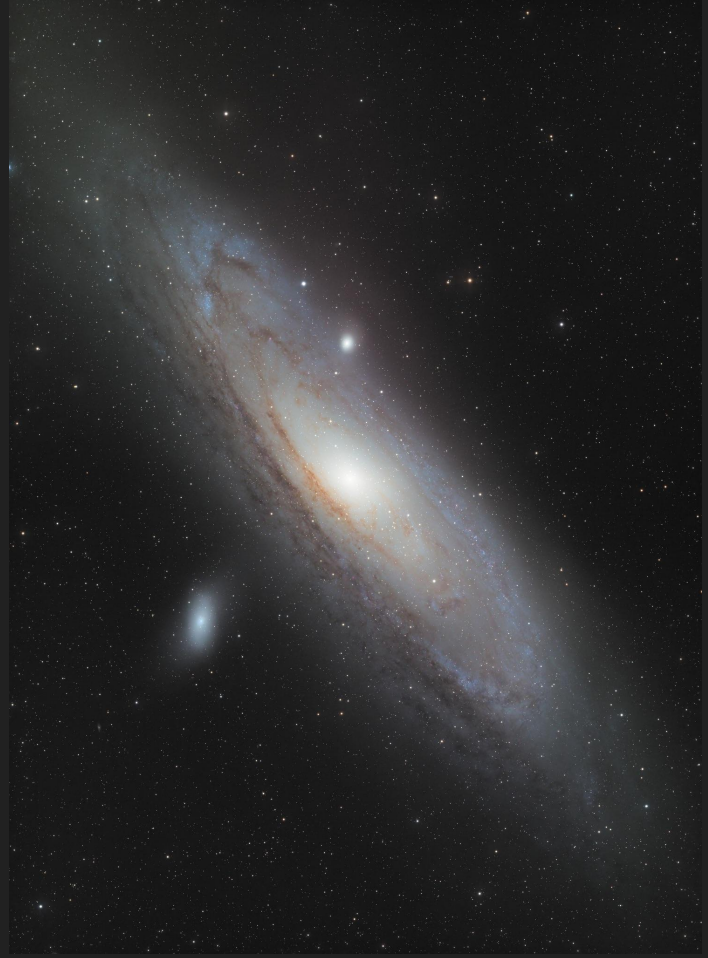
Binocular **Targets**

- Bright DSOs
- Constellations and asterisms
- Comets
- Star clusters
- Anything BIG

Pleiades (M45) by Carl Svensson

Note: Images are brighter and more colorful than visual views.



Andromeda (M31) by Carl Svensson

Note: Images are brighter and more colorful than visual views.

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Binocular **Targets - Expectations**

Remember! Visual views are less bright and less colorful than photos.

Pleiades (M45) by Carl Svensson

Note: Images are brighter and more colorful than visual views.

Andromeda (M31) by Carl Svensson

Note: Images are brighter and more colorful than visual views.

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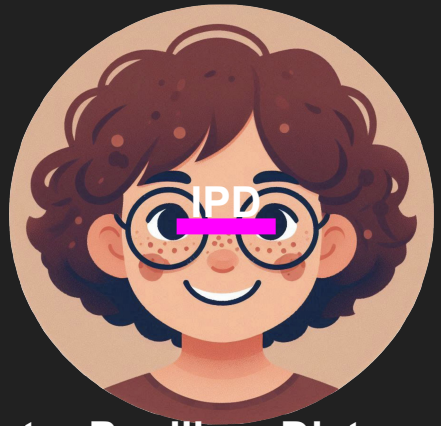
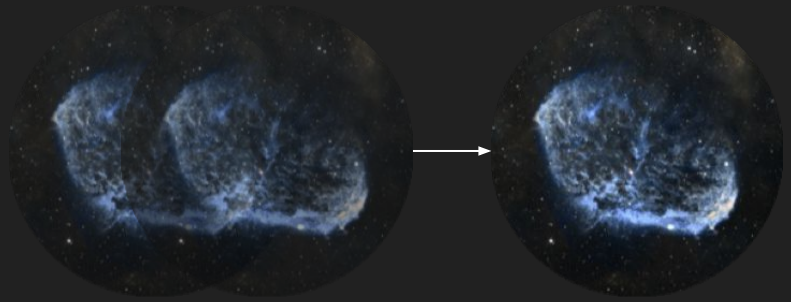
Binocular **Considerations**



Inter Pupillary Distance



Collimation / Merging

Viewing Angle

Mounting

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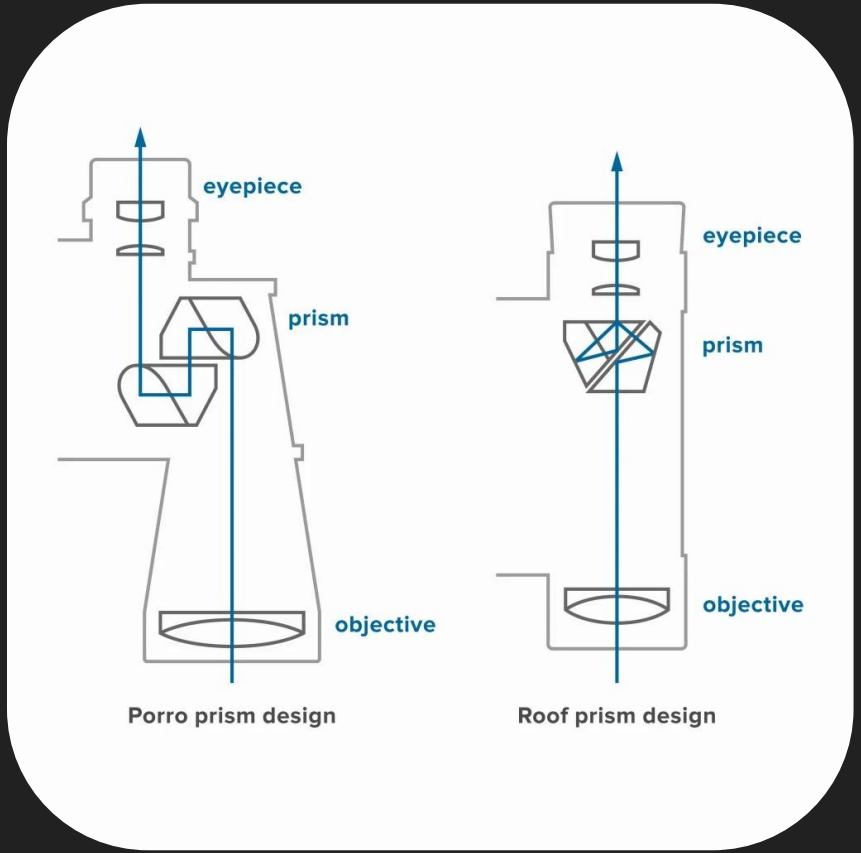
How (Most) Binoculars Work

Light…

- Enters the objective lenses
- Bounces around a prism configuration
- Exits the prism and enters the eyepiece
- Exits the eyepiece and enters your eye!



https://www.scienceabc.com/eyeopeners/how-do-binoculars-work.html

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Binoculars **Celestron 10x50**

Pros

- Handheld
- Good for glasses
- Large IPD range
- Good value

Cons

- Limited mounting options
- Awkward viewing angle
- One eyepiece

Power	10x
Aperture	50 mm
IPD	50-74 mm
Exit Pupil	5 mm
Eye Relief	18 mm
FOV	6º
Weight	1.6 lbs

Celestron 10x50 Ultima Water Proof Porro Prism Binocular with 6 Degree Angle of View ($115)

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Binoculars **ES BT-82**

Pros

- Mounted stability
- Interchangeable eyepieces
- More comfortable viewing angle

Cons

- Requires heavier duty mounting solutions ($300-$1000)
- Only accepts 1.25” eyepieces
- Cost

Power	Varies
Aperture	82 mm
IPD	54-76 mm
Exit Pupil	Varies
Eye Relief	Varies
FOV	Up to 4º
Weight	9.5 lbs

Explore Scientific BT-82 SF ($1,800)

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Binoculars **Analog Sky Heart**

Pros

- Mounted stability
- Accepts 2” eyepieces
- Comfortable viewing
- Support for accessories
- Built-in laser finder

Cons

- Requires medium duty mounting solutions ($300-$500)
- Assembly required

Power	Varies
Aperture	80 mm
IPD	58-78 mm
Exit Pupil	Varies
Eye Relief	Varies
FOV	Up to 6º
Weight	< 8 lbs

Analog Sky Heart ($650 - $900)

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Binoculars **Can Be Big, Too!**

20-Inch Binoscope by Kunho Lee

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