Conforms to and meets the Transmission Requirements of ISO 12312-2, Filters for Direct Observation of the Sun

MODELS # 71237, 71238
Thank you for your purchase of the Celestron EclipSmart binocular. We are confident it will bring you many years of enjoyable solar observation. As this EclipSmart binocular is a very specialized optical instrument, please read these instructions on its use and care before using it.

**IMPORTANT SAFETY NOTE:** If done incorrectly, direct observation of the Sun can be harmful to your vision. Never look directly at the Sun without using equipment specially designed and tested for that purpose. Celestron’s EclipSmart binoculars meet and conform to the ISO 12312-2 International Standard for safe direct visual observation of the Sun. EclipSmart binoculars should not be used for solar observation if the objective filters have been damaged, tampered with, or removed.
Solar Binoculars

SET-UP AND USE OF YOUR CELESTRON ECLIPSMART BINOCULAR

Because of its built-in solar filters, nothing less bright than the sun as seen from Earth should be able to be seen through an EclipSmart binocular. If you can see anything other than the Sun through these binoculars, do not attempt solar viewing with them and contact Celestron’s customer service department.

SET-UP

1. Adjusting the Interpupillary Distance (IPD)
   Since the distance between the eyes (specifically, the distance between the centers of the pupils) varies among individuals, the two eyepieces of the binoculars must be correctly aligned (adjusted). This is called adjusting the interpupillary distance. To adjust this distance, lift the binoculars up to your eyes (using both hands) and move the two halves of the binoculars by flexing the hinge until both eyes seem to be fully covered by the eyepieces.
2. Adjusting Diopter
EclipSmart binoculars feature a diopter compensation adjustment mechanism on the right eyepiece for sharpest focus. If you do not wish to make an initial diopter correction adjustment, simply check to make sure the indicator on the right eyepiece is set to the “zero” mark prior to use.

3. Positioning the Rubber Eyecups
Leave the rubber eyecups up if you do not wear eyeglasses, but fold them down if you do wear eyeglasses to obtain the maximum field of view.
Solar Binoculars

USE

Unlike standard binoculars, in order to keep your eyes protected, proper use of the EclipSmart binocular requires that you position your eyes behind the eyecups BEFORE raising them into position to view the Sun.

1. Positioning the Binocular
   Take up the binocular in both hands and with your view downward toward the ground in front of you, turn your body so that you are facing the direction of the Sun. Place the binocular eyecups in front of your eyes so that they are both completely covered. Then, keeping the eyecups of the binocular squarely in front of your eyes, raise your head until the solar disk appears in the binocular’s field of view. If the solar disk is not immediately apparent in the field of view, slowly scan with the binocular until it becomes apparent. AT NO TIME REMOVE THE ECLIPSMART BINOCULAR FROM IN FRONT OF YOUR EYES WHILE YOUR GAZE IS DIRECTED TOWARD THE SUN.
2. Adjusting Focus
To focus your EclipSmart binocular, simply turn the large dial located between the two barrels until a sharp image of the solar disk is seen through the binocular.

3. Adjusting Diopter
With the EclipSmart binocular safely positioned in front of your eyes and the solar disk in view, without moving the binocular away from your eyes:

A. With both eyes open, use one hand to cover the right objective lens and then adjust the center focus dial until the image seen through the left eyepiece is satisfactorily sharp. Make no further adjustment to the center focus dial until this process is complete.

B. Move your hand way from the right objective lens and cover the left objective lens. If the image seen through the right eyepiece is satisfactorily sharp, you are finished. If it is not, adjust the diopter correction dial on the right eyepiece until it is.

C. Move your hand away from the left objective lens and assess the image as seen through both eyepieces simultaneously. The image should now be sharp and satisfying to view.
Solar Binoculars

ACTIVITIES WITH YOUR CELESTRON ECLIPSMART BINOCULAR

The Celestron EclipSmart binocular opens up the possibility of some amazing sky-viewing adventures to you. After all, by using it in accordance with these instructions, you can actually view the Sun!

THE GREAT AMERICAN SOLAR ECLIPSE OF 2017

On August 21, 2017, one of the greatest spectacles of our time will take place over most of North America – a total solar eclipse. The Moon will pass between the Earth and the Sun and the Moon’s shadow will trace a path directly across the United States from coast to coast.

While solar eclipses happen at least twice a year, somewhere on Earth, the last time there was a total solar eclipse over the USA was in 1979. At that time, the Sun just grazed the states of Washington, Idaho and Montana. The August 2017 total solar eclipse is expected to be the most watched celestial event in American history.
A total solar eclipse occurs when the Moon is close enough to Earth in its orbit so that it blocks the entire disk of the Sun from view. The partial phases of a total solar eclipse leading up to totality are incredible to watch. The Moon will first appear as a small dark dent in the edge of the Sun, growing to a large bite. If you are in the path of totality, the Sun will eventually become a thin crescent and will disappear completely. For a couple of minutes, daytime turns to deep twilight. Bright stars and planets are visible in the daytime sky. After totality, the process reverses itself as the Sun reemerges from behind the Moon. It is a sight that should not be missed.

How much of a given total solar eclipse you can see will depend greatly on where you are located. The closer you are to the centerline of the path of the Moon’s shadow, the greater the percentage of the Sun will be blocked and the longer the solar eclipse will last. In order to experience totality, you need to be directly under the Moon’s shadow. This path of totality is extremely narrow and for the 2017 total solar eclipse the path is only 75 miles (120km) wide. If you are too far north or south of the path of totality, you will only see a partial solar eclipse. Even if you are unable to travel to the path of totality, everyone in the continental United States and most of Canada will be treated to a partial solar eclipse with at least 60% of the Sun covered by the Moon.
Solar Binoculars

Now that you have a Celestron EclipSmart binocular to provide you a full view with both eyes at 10x magnification – the optimal way to view such an event - you are ready to be part of history.
SUNSPOTS

Sunspots are dark spots that appear on the photosphere, or visible “surface” of the Sun. They usually have a dark core, called the umbra, surrounded by a lighter border, called the penumbra. They form when large disturbances in the Sun’s magnetic field cool portions of the photosphere. Sunspots are relatively cool, being only 6000°F (3300°C) compared to the normal 10,000°F (5500°C) of the rest of the photosphere. Although these spots appear to be almost black, they are actually quite bright. If it were possible to remove a sunspot from the Sun and put it in the night sky, it would shine brighter than the full moon. They only appears to be “dark” when compared to the rest of the photosphere.

Sunspots can be big. Very big. They can range in size from 10 to 100,000 miles (16 to 160,000 km) in diameter. To put that into perspective, the Earth is only 8,000 miles (12,800 km) in diameter!

Sunspots usually appear in pairs but can also appear in very large groups. They can last from a few days to several weeks and can change their shape, size and number as they slowly rotate across the face of the Sun. It will take about two weeks for a sunspot group to cross the Sun. Try looking at the Sun every day and draw a picture of what you see. At the end of the week, compare your drawings and you’ll see how sunspots evolve.
Solar Binoculars

Try looking at the Sun every day and draw a picture of what you see. At the end of the week, compare your drawings and you’ll see how sunspots evolve. If you are observing an eclipse and there are large sunspot groups on the face of the Sun, it is fun to watch the Moon slowly cover and uncover them as the eclipse progresses.

THE MERCURY TRANSIT OF 2019

Mercury transits occur when the planet Mercury passes in between the Sun and Earth allowing observers on Earth to track Mercury’s dark disk as it crosses the face of the Sun. This is an extremely rare event, occurring only four times over the next 50 years. On the morning of November 11, 2019. Mercury will transit the face of the Sun. For most of North America, the event will already be underway as the Sun rises, but you will still be able to view the transit for a few hours. Be sure not to miss this event as the next transit of Mercury will not occur for another 13 years in 2032.
CARE AND CLEANING

Binoculars do not need routine maintenance other than making sure that the objective lenses and eyepieces are kept clean. If repairs become necessary, please contact Celestron’s customer service department.

Collimation (optical alignment) is the biggest concern with binoculars. If your binoculars are roughly handled or dropped, there is a good chance that the collimation will be out and they should be serviced. When not using your binocular store it in the case provided.
Solar Binoculars

Avoid touching the glass surfaces but if fingerprints (which contain mild acid) get on them, they should be cleaned as soon as possible to avoid damaging the coatings.

To clean the optical surfaces, we recommend a lens/optics cleaning kit available at most photo or optical shops and follow the instructions provided closely. If you have a lot of dust or dirt accumulated, brush it off gently with a camel’s hair brush and/or utilize a can of pressurized air before using the cleaning kit. Alternately, you could use the Celestron LensPen made especially for cleaning binoculars.

NEVER ATTEMPT TO CLEAN YOUR BINOCULARS INTERNALLY OR TRY TO DISASSEMBLE THEM!
PROBLEMS OR REPAIR

If warranty problems arise or repairs are necessary, contact the Celestron technical support department if you live in the U.S.A. or Canada. If you live elsewhere, please contact the Celestron dealer you purchased the binoculars from or the Celestron distributor in your country (listings on the Celestron website).

IMPORTANT: Celestron EclipSmart binoculars are specially designed with built-in Solar Safe filters. If you notice any damage to these filters, do not use them for solar observation and contact Celestron’s customer service department.
WARRANTY

Your binocular has the Limited Lifetime Warranty for U.S.A. and Canadian customers. For complete details of eligibility and for warranty information on customers in other countries visit the Celestron website: www.celestron.com

This product is designed and intended for use by those 14 years of age and older. Product design and specifications are subject to change without prior notification.

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71237/71238
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Printed in China