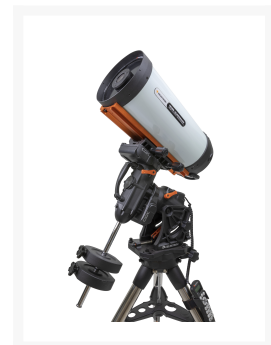


# Celestron CGX 800 Rowe-Ackermann Schmidt Astrograph (RASA) Telescope

**AUD**  
**\$7,399.00**

## Product Images



## Short Description

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- Flat-field free of optical aberrations like field curvature, coma, astigmatism and chromatic aberration across an entire APS-C sensor.
- Unlike the larger RASAs that work with DSLR and large CCD cameras, the 8" model was designed with color astronomical CMOS cameras, smaller CCD cameras, and mirrorless cameras in mind. The telescope does not work with standard DSLR cameras.
- Ultra-Stable Focus System – precision linear ball bearing virtually eliminates image shift.
- Internal filter mount – seamlessly accommodates a Light Pollution Imaging Filter into the optical path.
- Performs over a wider spectral range than most telescopes, from 400-800 nm, so more of the light passing through the astrograph is in sharp focus.
- The CGX, with its 55 lb load capacity, is Celestron's most innovative, state-of-the-art, computerized equatorial mount to date, and provides a very sturdy and rigid platform for the fully-loaded RASA 8.
- The drive system utilizes low cog DC Servo motors with integrated optical encoders, belt and pulley motor connection, spring-loaded steel worm gears supported by precision sealed bearings, and brass worm wheels for smooth, accurate slewing and tracking performance with little backlash.
- Fully remote imaging capable, with optical limit switches, home sensors, through-mount cabling, and hard stops.
- Included Celestron PWI software allows direct computer control via USB 2.0 connection.
- Proven NexStar+ computerized telescope control technology supports functions to address imagers' needs, such as All-Star Polar Alignment, Permanent Periodic Error Correction (PPEC), and adjustable tracking through meridian.

## Description

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This kit combines the 8" Rowe-Ackermann Schmidt Astrograph (RASA) with the state-of-the-art CGX German equatorial mount. Simply add a camera and this package offers everything you need to take spectacular images of wide-field deep sky objects. Although about the same size as the CGEM II, the CGX is a big step up in performance and features, especially for imaging applications.

### **RASA Performance Made for Everyone**

Capture spectacular wide-field deep sky images in seconds with Celestron's portable astrograph, the 8" Rowe-Ackermann Schmidt Astrograph (RASA). This incredibly fast f/2.0 system is the perfect companion to today's color astronomical CMOS cameras, smaller CCD cameras, and mirrorless cameras. Thanks to its fast focal ratio and patented optical design, you can produce sharp, detailed images and, in many cases, skip the autoguider completely. Weighing in at just 17 pounds, it's easy to transport your 8" RASA to the most remote dark sky locations.

The 8" RASA is an imaging telescope that delivers a flat-field without optical aberrations for razor sharp stars across a wide field-of-view. It can capture stunning deep-sky astronomical images without the challenges typically presented by longer focal length instruments at a fraction of the cost of those systems.

The latest addition to the RASA family, this 8" version is a much more portable and affordable version of the heralded RASA 11, which was introduced to much acclaim in 2014. With the 8" RASA joining the lineup, a wider range of astroimagers can enjoy the benefits of the RASA design. It has many of the same thoughtfully designed features as its "big brother" RASA 11, including the integrated air-cooling system, internal filter mount, and sturdy CGE dovetail mounting bar.

Purely designed for imaging, the 8" RASA cannot be used visually. The prime focus focal plane is located at the front of the optical system, so it cannot accommodate a traditional eyepiece.

### **Shorter Exposure Times and Virtual "Real-Time" Observing**

Since it is an F/2.0 optical system, imagers can use shorter exposure times to capture detail in faint objects. When combined with sensitive cameras and the proper "live stacking" software, the 8" RASA can provide an almost real-time observing experience. View images on a computer instantly that are brighter and more detailed than can be seen in much bigger telescopes with the naked eye.

## Ultra-Stable Focus System

With the launch of the 8" RASA, Celestron is unveiling a focuser design that mitigates lateral movement of the primary mirror when focusing, slewing, or tracking with the astrograph. Focusing is easier, more accurate, and more stable than ever. The key to the Ultra-Stable Focus System is a precision linear ball bearing, which is tested during assembly to ensure optimal results.

## Built for Today's Latest Cameras

Unlike the larger RASAs that work with DSLR and large CCD cameras, the 8" model was designed with color astronomical CMOS cameras, smaller CCD cameras, and mirrorless cameras in mind. The telescope does not work with standard DSLR cameras. It is optimized for sensors with up to a 22mm diagonal, but performs well with sensors up to 32mm diagonal. The APS-C sized sensors used in many mirrorless cameras are a good choice. 42mm full frame sensors will also work, but performance will be poor at the edges of the sensor and field illumination will be reduced. Additionally, we do not recommend pairing RASA 8 with any camera body more than 4" in diameter. See the chart below to determine if your camera is compatible with RASA 8.

Camera	Compatible with RASA 8?	Adapter required
Astronomical CMOS/CCD camera with C-mount	Yes	C-mount adapter (included)
Astronomical CMOS/CCD camera with M42-thread mount	Yes	M42 adapter (included) with M42 extension tubes (not included)
Astronomical CMOS/CCD camera with other mount	Yes	Custom camera adapter
Canon mirrorless with APS-C sensor	Yes	Canon mirrorless adapter (sold separately)
Sony mirrorless with APS-C sensor	Yes	Sony mirrorless adapter (sold separately)
Canon mirrorless with full frame (42mm) sensor	Yes, but not optimized across the full sensor	Canon mirrorless adapter (sold separately)
Sony mirrorless with full frame (42mm) sensor	Yes, but not optimized across the full sensor	Sony mirrorless adapter (sold separately)
DSLR	No	--

## Unique Optical Design

RASA's optical design is patented (US 2016/0299331 A1). The design consists of a Schmidt corrector, primary mirror, lens group, and optical window. The lens group contains 4-elements and utilizes rare-earth elements. Unlike many telescopes that only perform well over the visible spectrum (400-700nm), the 8" RASA's optics are designed to perform over a wider spectral range, from 400-800nm. This allows more of the light emitted from the astronomical object to be sharply focused in the image.

With many imaging systems, adding an extra piece of flat glass such as a filter does not change optical performance. However, that is not the case with super-fast optical systems like the RASA. Our engineers addressed this by designing the RASA with a removeable optical window, so you can maintain peak optical performance if a filter is added or if a camera has its own optical window. Celestron offers a Light Pollution Imaging Filter designed specifically for the 8" RASA, which mounts in place of the optical window.

All refractive optical surfaces are coated with StarBright XLT coatings, while the primary mirror uses enhanced aluminum coatings. This maintains high light transmission through the entire optical system.

When compared with "Hyperstar SCT" systems, the RASA 8 provides better optical performance and field illumination.

## CGX: The Ideal Platform for RASA

The CGX is the culmination of Celestron engineers' decades of experience in equatorial mount design, incorporating feedback from

imagers worldwide. Combined with the RASA 8, it is a state-of-the-art deep-sky astronomical imaging system.

The CGX is an incredibly sturdy equatorial mount which rigidly supports the RASA 8. The mount was designed more compactly, so the instrument load is held closer to the R.A. axis, thus reducing torque from the load. It was also designed using FEA (Finite Element Analysis) software, which helped to optimize the stout structure of the mount. As a result, the CGX can support more weight than other mounts with similar mass. With its 55 lb load capacity, it can easily handle the RASA 8, which weighs only 17 lbs., along with a camera and any accessories. Expect a vibration-free setup, even in somewhat windy conditions. The RASA 8 connects directly to the CGX with its CGE dovetail mounting bar.

The heavy-duty adjustable height tripod has 2" diameter steel tripod legs with an extra-wide stance for improved stability. Graduated markings on the tripod legs make it easy to extend them to the same height and level the tripod.

The mount is packed with functionality and conveniences that make imaging with the 8" RASA easy. The fully computerized mount will automatically "GoTo" any of the 40,000+ astronomical objects selected from the NexStar+ hand controller's database and automatically track the object as it appears to move across the night sky.

Designed with imaging in mind, the CGX motor drive system builds upon learnings from previous generations of mounts. You can trust CGX to accurately track during an exposure. At the heart of the system are low cog DC servo motors with integrated optical encoders. The low cog design helps the motors run smoothly, while the integrated optical encoders provide accuracy. The motors connect to the worm gears with a belt-and-pulley system (instead of spur gears) to reduce gear backlash when the motor changes directions. The steel worm gears are supported by precision bearings and spring-loaded against a brass worm wheel, which also helps ensure a smoothly operating drive system with minimal backlash and no binding.

To track objects in the night sky, the mount must first be polar-aligned. Celestron makes this process easier than ever with the innovative All-Star Polar Alignment procedure. No extra equipment, such as a polar finder scope, is required. (An optional polar alignment finder scope is available if desired.) Best of all, the alignment can usually be completed in about 15 minutes, even without a clear view of Polaris.

All mounts have some amount of "periodic tracking error" inherent in them caused by tiny gear imperfections. To mitigate this, the CGX has Permanent Periodic Error Correction (PPEC). This allows you to run a routine to record the periodic errors only once; the recording is kept in memory, and subsequently corrects for the mount's periodic tracking error. If an even higher level of tracking accuracy is desired, the CGX also has a dedicated autoguider port to connect an autoguiding camera directly to the mount to correct for any residual tracking errors.

Conditions for imaging are best when celestial objects are at their highest point in the sky with the darkest background, called the meridian. But some German equatorial mounts have trouble tracking near the meridian because they need to perform a "meridian flip," readjusting their position to avoid the tube striking the mount. CGX does not suffer from this problem, imaging through the meridian with ease and not requiring a meridian flip until the object is a full 20° past the meridian.

The NexStar+ also has dozens of other functions to control every aspect of the mount's behavior. These include:

- Multiple ways to align the mount to the night sky
- Adjustable slew rates up to 5°/second
- Northern or Southern hemisphere compatibility
- Adjustable autoguiding rates
- Hibernate mode so the mount can be powered down without loss of alignment
- Continual firmware development, with new features added regularly

In addition to the autoguider port, the CGX also has other ports to enhance and expand the capabilities of the mount. The hand controller has a USB 2.0 port for those who wish to control the mount with an external computer and optional third-party software (see "Ready for Remote Imaging" section below). There are also 2 AUX ports on the mount that can support optional accessories such as StarSense AutoAlign.

Transporting the entire system to a dark site is extremely manageable, even for one person. The optical tube, mount head, tripod, counterweight bar, and counterweight all disassemble into separate pieces. The only tool ever required is a supplied hex key, which has a holder built into the mount, so you can't lose or forget it. CGX also features two ergonomic carry handles that make carrying and setting up this heavy-duty mount much more comfortable. When it's time to transport your mount, the tripod accessory tray "nests" into the legs when collapsed, stabilizing the tripod in your vehicle and ensuring that you don't lose the tray.

### **Ready for Remote Imaging**

Today's imagers do not necessarily want to be near their telescope outside when they are capturing images. Rather, they would prefer to be indoors controlling the mount and camera with a computer, while the telescope is in the backyard, or even hundreds of miles away in a dark remote observing site. Not every mount is capable of remote observing operation, but the CGX was

designed specifically with this in mind. Celestron's engineers thought through every scenario that might occur in the field, since it's very likely that no one will be around to immediately "rescue" a remote telescope if something unexpected occurs.

One of the most critical problems that can occur during remote operation is the optical tube inadvertently striking the mount. This will not only ruin an exposure and require realignment with the sky, but could also damage expensive equipment. This type of strike cannot happen with CGX because optical switches on each axis stop the motors before the astrograph can run into the mount, without loss of alignment.

Should power be somehow interrupted, the mount has "home position" optical switches that allow easy remote realignment of the mount. The mount's cables are all wired internally through the mount, and all external inputs, including the power jack, are on a stationary section of the mount. This prevents cables from becoming snagged or tangled and unplugged as the astrograph is moving. The mount also has hard stops to physically limit the motion of the astrograph on each axis, preventing the internal cabling from being overly twisted or pulled and potentially failing. In addition, the hard stops provide a "fail safe" safety measure to protect the astrograph should the limit switches somehow fail. The power jack for the mount utilizes a threaded barrel connector, ensuring the power cable won't become unplugged and cause the mount to lose power.

For remote imaging, the mount needs a way to be controlled by an external computer. The CGX has two ways to connect to a computer via USB 2.0. First, it has a USB port on the mount itself which is used exclusively to connect to a PC running the included Celestron PWI telescope control software. Developed in partnership with PlaneWave Instruments, the software has an intuitive graphical user interface and provides an excellent solution for remotely operating the mount. It incorporates multi-point mount modeling to provide the most accurate alignment of the mount to the sky possible. In addition, the included NexStar+ hand controller also has its own USB 2.0 port for computer connection; this can be used with optional third-party telescope control software by use of an ASCOM driver.

In summary, the CGX and RASA 8 together are a top-tier imaging system built for performance and ease of use. This kit is perfect for imaging in the backyard or at a remote dark sky site, whether you are near the telescope or on the other side of the globe.

## CGX Mount and Tripod Features

- Sturdier and more rigid with quicker dampening time
- Increased load capacity to 55 lbs.
- Motors provide more torque, better slewing and tracking under heavy loads
- Heavy Duty belt-drive system minimizes backlash while providing smooth motor operation under heavy loads



### Smoother Belt-Drive System

- Spring-loaded brass worm wheel and stainless steel worm gear reduce friction and provide optimum gear mesh
- Internal cabling for worry-free remote operation. Power input and accessory ports remain stationary while the mount slews to avoid snags
- Internal hard stops for both axes prevents cable tension and tripod strike



### Mechanical Hard Stops

- Internal optical sensors on both axes for simple and safe remote operation



## Home and Limit Sensors

- Home sensors allow the mount to always start in the index position regardless of orientation before a power reset
- Limit sensors automatically shut off slewing or tracking before reaching the hard stop fail safe
- Control software developed in conjunction with PlaneWave Instruments for professional level control operation and imaging
- Software includes multi-point mount modeling for extremely precise pointing accuracy and many more additional features for remote astroimaging
- Wider tripod stance for improved stability
- Adjustable EQ head position to optimize center of gravity over the tripod and fully utilize the increased 3°-65° latitude range
- Dual-fit CG-5/Vixen and CGE/Losmandy dovetail saddle



## Dual Dovetail Saddle

### Tripod includes:

- 2" steel legs with height index marks for quick leveling
- "Jack of all trays" can hold three 1.25" eyepieces, two 2" eyepieces, your smartphone, or other accessories
- +20° of additional tracking past the meridian on either side
- Tripod legs can be collapsed with accessory tray installed for faster setup and transport



## Tripod

### Ergonomics:

- Two handles for easy pickup and transport



## Ergonomic Carry Handles

- Ergonomically designed dovetail clamping knobs
- Innovative and improved polar alignment adjustment system



## Polar Alignment Adjustment

- Ergonomic latitude adjuster for smooth and easy adjustment under full loads
- Optional add-on polar axis finderscope

## Electronics

- NexStar+ hand control with USB port
- Two AUX accessory ports to support wireless/WiFi alignment and operation with StarSense AutoAlign and SkyPortal WiFi Module accessories (sold separately)
- USB 2.0 port, used to connect directly to PC with included software
- Autoguider port
- PPEC ready
- Threaded 12VDC power input barrel connector
- Internal Real Time Clock (keeps time and site information saved)

## Additional Information

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Specifications

N/A