CELESTRON®

NEXIMAGE®

NexImage 20
USER'S MANUAL

Model #93707

ENGLISH

Table of Contents

Welcome to Your NexImage 20

Congratulations on your purchase of the Celestron NexImage 20—a high-resolution Solar System imaging camera designed to bring out incredible detail in the Moon, planets, and other bright celestial objects.

How NexImage 20 Works

NexImage 20 captures streaming video using a light-sensitive CMOS imaging sensor. Instead of snapping just one photo, you record a short video of your target, like the Moon or a planet. Then, using free third-party software, you extract hundreds of individual frames from the video and digitally "stack" them.

This stacking process significantly reduces the grainy electronic "noise" that can obscure fine details in your image. That's because the signal-to-noise ratio of the final image improves with the square root of the number of frames combined. In simple terms:

- Stacking 16 frames can reduce noise by a factor of 4
- Stacking 900 frames can improve your image quality by about 30 times

That's why NexImage 20 can produce such sharp, detailed results—even under average seeing conditions.

What's in the Box

Your NexImage 20 camera package includes:

- NexImage 20 Camera
- 1.25" Nosepiece
- USB-A to USB-C Cable

Fig. 1 NexImage Camera | 1.25" Nose Piece | USB Cable

Recommended Minimum System Requirements

NexImage 20 is compatible with a wide range of PCs. At a minimum, your computer should have:

- Pentium IV, 2.0 GHz processor or better
- 1 GB RAM
- Graphics card with 24- or 32-bit color support
- Operating system: Windows XP, Windows Vista, or Windows 7 (32- or 64-bit)

While NexImage 20 supports older systems, it also performs well on modern Windows 10 and 11 machines. A USB 3.0 port is recommended for faster data transfer.

Mac Compatibility

Although the NexImage 20 is primarily supported on Windows, it can also work with macOS via compatible third-party applications. Please note: The instructions in this manual apply to Windows only. Additionally, Mac users may need to supply their own USB-C to USB-C cable to connect the camera to their computer.

Install and Connect

1. **Go to the NexImage 20 Downloads Page**
   - Visit **celestron.com/NexImage20Downloads** (or scan the QR code) to access everything you need in one place.
   - Download the camera driver and NexImage iCap software.
2. **Install the Driver**
   - Before connecting your camera, run the driver installer and follow the onscreen instructions.
3. **Install NexImage iCap**
   - Click the NexImage iCap installer and follow the prompts.
4. **Assemble the Camera**
   - Unthread the cap from the NexImage 20 and thread on the included 1.25" nosepiece. **(Fig. 2)**
5. **Insert into Your Telescope**
   - Slide the camera into your telescope's eyepiece barrel. **(Fig. 3)**
6. **Connect the Cable**
   - Plug the USB-C end of the included cable into the NexImage 20.
   - Plug the USB-A end into an available USB-A port on your PC.
7. **Ready to Image**
   - Windows will detect and install the camera. You're ready to start capturing!

Fig. 2

Fig. 3

Start Imaging

1. Launch the NexImage iCap Software

- Double-click the NexImage iCap icon on your desktop to open the program. **(Fig. 4)**
- If the NexImage camera is not detected automatically, select it and click OK. **(Fig. 5)**

Fig. 4

2. Choose Your Target and Focus

- Start with a bright, easy target like the Moon.
- Center and focus your telescope on the object.
- Ensure the Auto boxes for Gain and Exposure are checked. You should now see a live image in the Preview window. **(Fig. 6)**
- Use your telescope's focuser to fine-tune the image until it appears crisp and sharp. **(Fig. 7)**

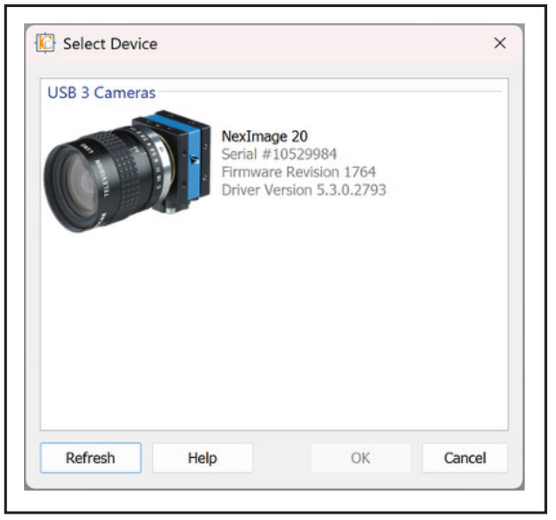

Fig. 5

3. Adjust Gain and Exposure (Optional)

If you want more control over your image quality:

- Uncheck the Auto boxes to manually adjust Gain and Exposure with the sliders.
  - Gain determines the camera's sensitivity to light. Higher gain produces a brighter image but more digital noise.
  - Exposure sets the shutter speed. Faster speeds reduce motion blur but may require higher Gain.
- Aim for a balance. In unstable seeing conditions, use a faster shutter speed and increase gain to compensate.

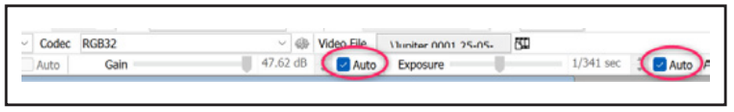

Fig. 6

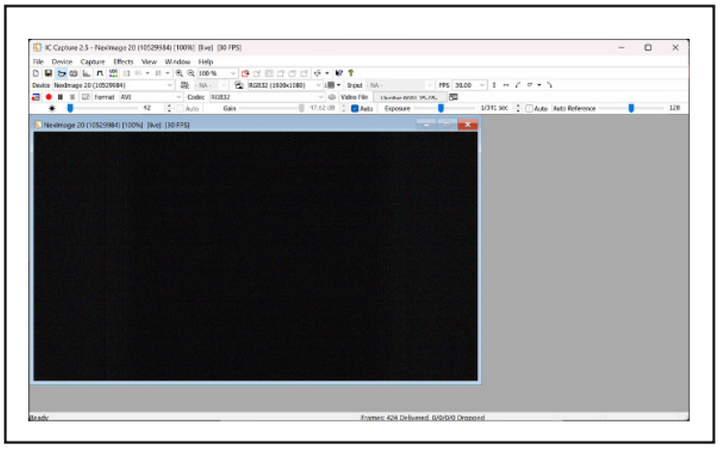

Fig. 7

4. Select Video Settings

- **Video Format:** Choose from AVI, MP4, or WMV. (Fig. 8)
  - AVI has the least compression (best quality), but results in larger files
- **Resolution:** Higher resolutions will lower your frame rate. (Fig. 9)
  - Maximum resolution: 5120 x 3840 at 19 fps
  - Minimum resolution: 640 x 480 at 432 fps
  - Each resolution includes bit depth options for color (RGB32, RGB64) and monochrome (Y800, Y16). If you're not sure what to pick, start with RGB32.
- **Codec:** Select the appropriate video codec. (Fig. 10)
  - For AVI format, choose the codec that matches your resolution and bit depth.
- **Frame Rate:** Select your desired frame rate in frames per second (FPS). (Fig. 11)
  - The software automatically displays the maximum FPS based on your chosen resolution.

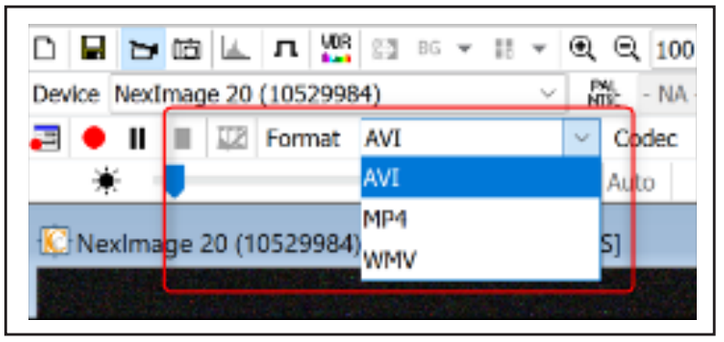

Fig. 8

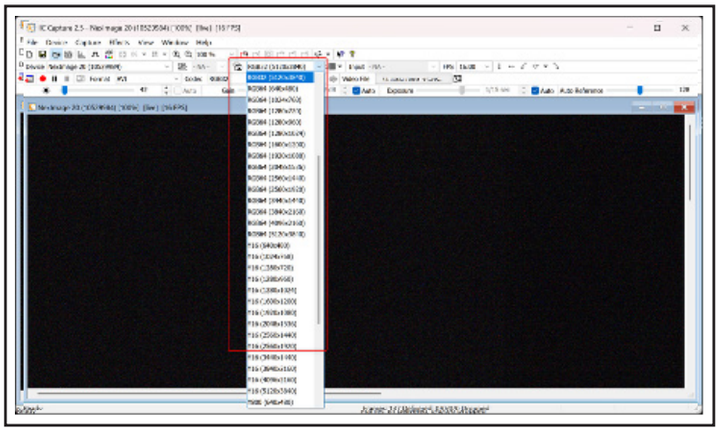
Fig. 9

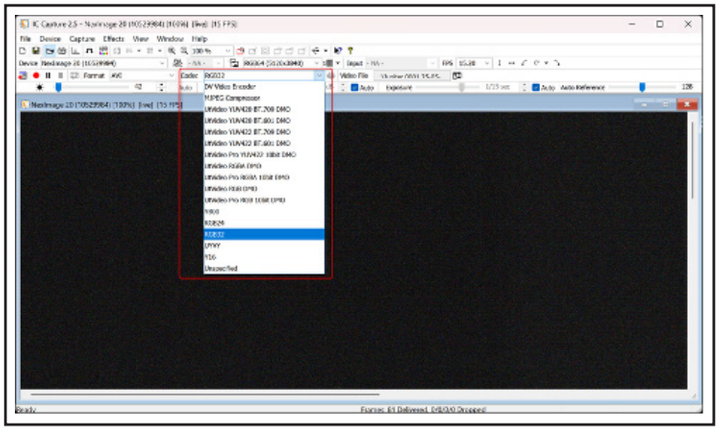
Fig. 10

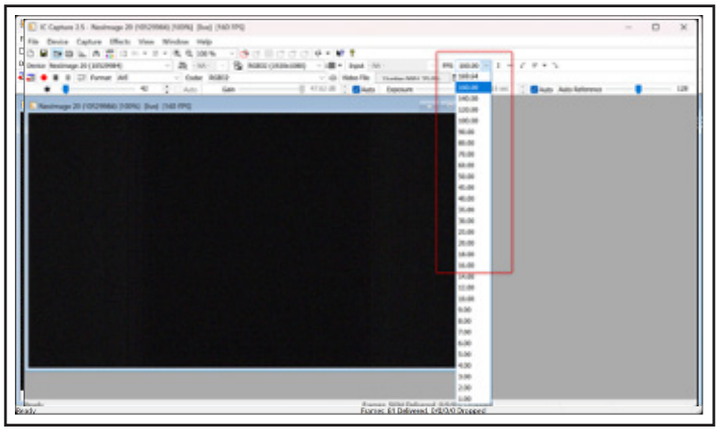
Fig. 11

5. **Record Your Video**
    - Click the Video File button **(Fig. 12)** to open the recording settings.
        - Define your save location and file naming format. **(Fig. 13)**
    - Click the Clock icon to set the recording length, either by number of seconds or number of frames.
    - Click the Record button to begin. Recording will stop automatically when your limit is reached, or you can pause or stop it manually. **(Fig. 14)**

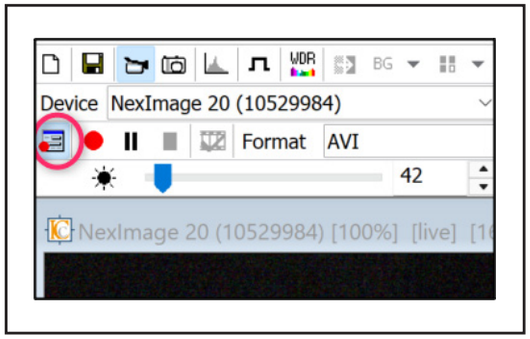

Fig. 12

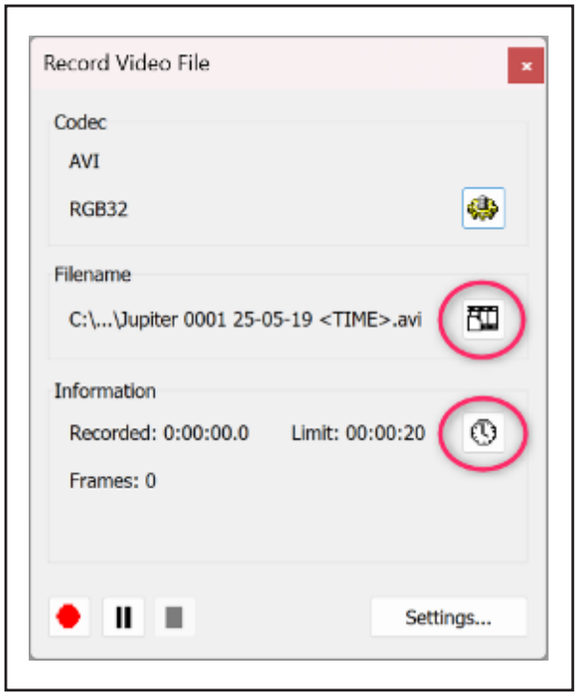

Fig. 13

Fig. 14

Define a Region of Interest

If your target is small (like a planet), it will not take up the NexImage 20 sensor's full frame. Defining a region of interest (ROI) crops the image and only captures the intended target. When you use ROI, you can:

- Increase your frame rate for smoother video
- Reduce file size and save disk space
- Improve processing speed when stacking your images

To use ROI:

1. Click the ROI icon in the iCap toolbar. **(Fig. 15)**
2. Draw a box around the area you want to capture in the live view.
3. Click once inside the box you just drew to confirm.

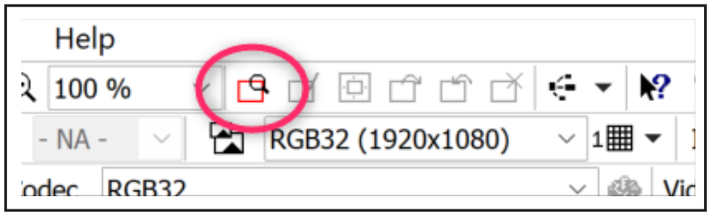

Fig. 15

Explore More Features in iCap

Looking to go beyond the basics?

Click the Help icon in the iCap toolbar **(Fig. 16)** to learn about the software's advanced features. You can select any button in the interface to view detailed information about how it works.

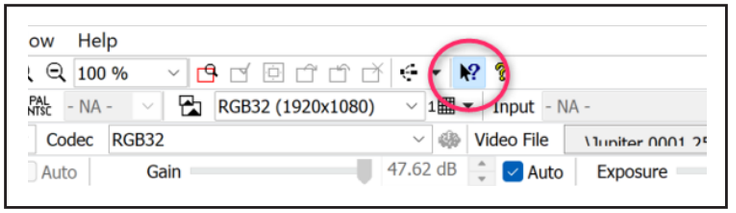

Fig. 16

Process and Stack Your Video

Taking a video of your target is only the first step to making a highly detailed still image. To create a sharp, detailed final image, you'll need to:

1. Import your video file into a stacking program.
2. Break the video into individual frames.
3. Align and stack the best frames to reduce noise and enhance detail.

We recommend two popular (and free) stacking tools:

- AutoStakkert! 4
  www.autostakkert.com/wp/download/
- RegiStax 6
  www.astronomie.be/registax/download.html

These programs are trusted by planetary imagers and make it easy to get great results, even if you're just starting out.

Advanced Use

Additional Software Options

In addition to iCap, the NexImage 20 is compatible with several popular third-party image capture programs. These tools provide expanded control and advanced imaging features for users who want more flexibility or prefer a different workflow.

Depending on your operating system, here are some options to explore:

For macOS:

- oaCapture (for image capture)
- Lynkeos (for image stacking)

For Windows:

- FireCapture
- SharpCap

Autoguiding with NexImage 20

In addition to capturing images of Solar System objects, NexImage 20 also works as an autoguiding camera—a tool that helps your telescope stay precisely locked on a target during long-exposure astrophotography.

This setup is intended for advanced users and requires additional equipment not included with your NexImage 20.

To use the NexImage 20 for autoguiding, you'll need:

- An off-axis guider or a piggybacked guidescope
- Autoguiding software such as MetaGuide
- A guide port interface, like the GPUSB from Shoestring Astronomy

Technical Specifications

Sensor	AR2020 Back-Illuminated CMOS
Camera Resolution	20 MP (5240 x 3840)
Sensor Size	7.3mm x 5.4mm (9mm diagonal)
Pixel Size	1.4 µm square
Sensitivity	8.7 ke-/lux-sec
USB Cable	Super-Speed USB 3.0
Back Focus with Nose Piece	13.1 mm
Back Focus from Threads	10.6 mm

FCC Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Carta

Separate waste collection. Check your local municipal guidelines.

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Points de collecte sur www.quefairedemesdechets.fr
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UK: Unit 2 Transigo, Gables Way, Thatcham RG19 4JZ, United Kingdom

This product is designed and intended for use by those 14 years of age and older.

Made in China 05-25

celestron.com/pages/warranty