



ANT CINEKIT

USER GUIDE

*The complete production toolkit for cinematographers,
camera assistants, DITs, and filmmakers.*

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Welcome to Ant CineKit

Ant CineKit is an all-in-one production toolkit for cinematographers, camera assistants, DITs, filmmakers, and content creators.

Explore a growing database of cameras and lenses, check sensor coverage, plan shots around the sun and Golden Hour, calculate depth of field and angle of view, estimate recording data and transfer time, find safer shutter settings, and prepare underwater focus — all from one app.

I created this app using knowledge gained from more than 15 years of working professionally as a Digital Imaging Technician, with the goal of making everyday camera, lens, data, and production calculations faster and easier on set.

IMPORTANT LIMITATION

Information in this app is provided for reference only. While every effort has been made to ensure accuracy, specifications, calculations, and data may change without notice. Always verify critical information with the actual camera, lens, and official manufacturer documentation before production.

Key Features

- Cinema-camera and recording-format database
- Cinema-lens specifications and comparisons
- Sensor and lens-coverage visualization
- Depth-of-field calculation with visual preview
- Angle-of-view and field-size calculation
- Live viewfinder with framing, sun path, and Golden Hour planning
- Recording-time and storage calculation
- Data-transfer time estimation
- Flicker-free shutter recommendations
- Shutter-speed and shutter-angle conversion
- Flat-port underwater-focus calculation
- Custom units, language, and production defaults
- In-app feedback and bug reporting

Ant CineKit provides reference information and estimates for production planning. Results should be verified with the actual equipment and current manufacturer documentation. For full legal information, see Legal & Privacy in the app's Settings.

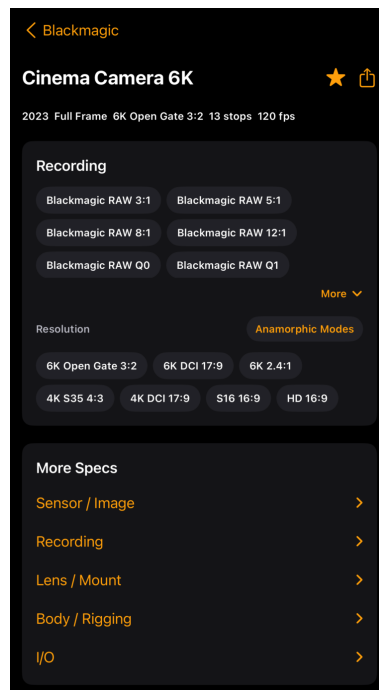


Camera

Browse and compare cinema cameras, sensor specifications, recording formats, resolutions, frame rates, codecs, data rates, and other production details.

KEY CAPABILITIES

- Browse cameras by manufacturer
- View sensor size and image-circle requirements
- Explore recording resolutions and aspect ratios
- Check frame-rate options
- Review codecs, bit depths, and chroma sampling
- Estimate recording data rates
- View dynamic range, ISO, weight, and power information
- Save frequently used cameras
- Compare camera specifications
- Select a camera and recording format for other calculators



The Camera page is a searchable database of cameras, high-speed cameras, hybrid cameras, smartphones, and reference formats.

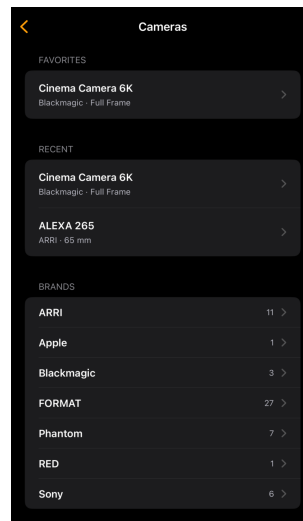
Browse Cameras

The first screen displays:

- Favorite cameras
- Recently viewed cameras
- Camera manufacturers

- Number of available cameras for each manufacturer

Select a manufacturer to view its camera models. Cameras are grouped by type and generally arranged with newer models first.



Camera Details

Select a camera to view its specifications. The top of the page shows important information such as:

- Release year
- Sensor format
- Maximum resolution
- Dynamic range
- Maximum frame rate
- Internal ND availability

Additional sections provide information about the sensor, recording capabilities, lens mount, body, power, media, connections, and recommended uses.

Recording Format and Resolution

Choose a recording codec or mode, then select a supported resolution. The page displays information including:

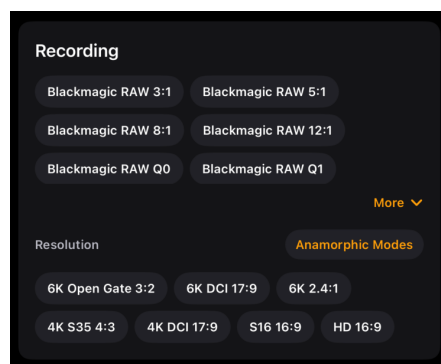
- Recorded pixel dimensions
- Active sensor area
- Sensor diagonal
- Aspect ratio
- Maximum frame rate
- Anamorphic support
- Crop or recording notes
- Estimated or fixed bitrate information

An Anamorphic Modes filter is available when the camera supports anamorphic recording formats.

Camera Selection

Opening a camera automatically makes it the active camera for other tools. The selected camera, recording mode, and resolution can then be used by:

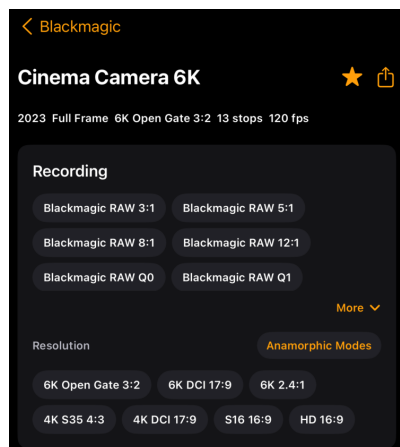
- Sensor & Lens Coverage
- Depth of Field
- Angle of View
- Data Calculator
- Viewfinder



Favorites, Recent, and Comparison

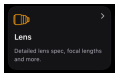
Tap the star button to add or remove a camera from Favorites. Recently opened cameras appear automatically in the Recent section for faster access.

Tap Compare Camera to add a camera to the comparison list. Select another camera to open the comparison page. Up to four cameras can be included.



SHARE

Share renders the Camera Detail content as an image using the same colors and section order, including the selected recording mode, resolution, codec, and FPS details, then opens the iOS share sheet with that image — ready to send to another crew member.

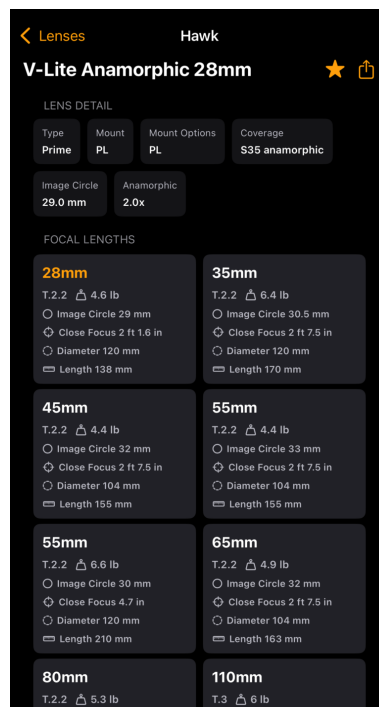


Lens

Browse and compare lenses by focal length, aperture, image-circle coverage, anamorphic format, minimum-focus distance, dimensions, and weight.

KEY CAPABILITIES

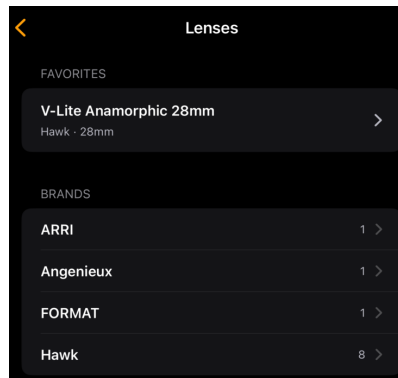
- Browse lenses by manufacturer and series
- View focal lengths and zoom ranges
- Check maximum aperture or T-stop
- Review image-circle coverage
- Identify spherical and anamorphic lenses
- Check anamorphic squeeze factors
- View minimum-focus distance
- Review dimensions, weight, and front diameter
- Save frequently used lenses
- Compare lens specifications
- Select a lens for Depth of Field, Angle of View, and Sensor & Lens Coverage tools



The Lens page is a database of cinema lenses organized by manufacturer, series, and focal length.

Browse Lenses

The first screen displays favorite lenses, lens manufacturers, and the number of available lens series for each manufacturer. Select a manufacturer to see its available lens series.



Lens Series and Focal Length

Each series displays a summary containing the number of lenses, lens type, and available focal-length range. Select a series to open its detailed page; lenses are arranged by focal length.

Each focal-length card can display focal length or zoom range, maximum aperture, weight, image-circle diameter, minimum-focus distance, front diameter, and lens length. Tap a focal length to make it the active lens.

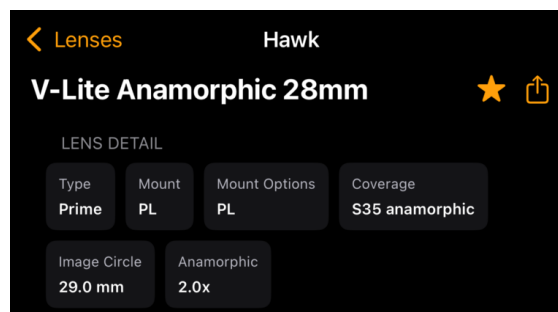
Lens Details

The Lens Detail section can include prime or zoom type, release year, lens mount and interchangeable-mount options, sensor coverage, image-circle diameter, focus/iris/zoom rotation, number of iris blades, autofocus and image stabilization, servo zoom and macro capability, and anamorphic format and squeeze factor. The page can also display special features, recommended uses, notes, and source references.

Lens Selection, Favorites, and Comparison

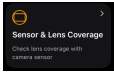
Opening a lens series automatically selects its default lens. Selecting another focal length updates the active lens used by Sensor & Lens Coverage, Depth of Field, Angle of View, and Viewfinder.

Tap the star button to add the selected lens to Favorites; favorites appear at the top of the main Lens page. Tap Compare Lens to add the selected lens to the comparison list — up to four lenses can be compared.



SHARE

Share sends every focal length/lens entry in the selected series, with all available specifications for each one.

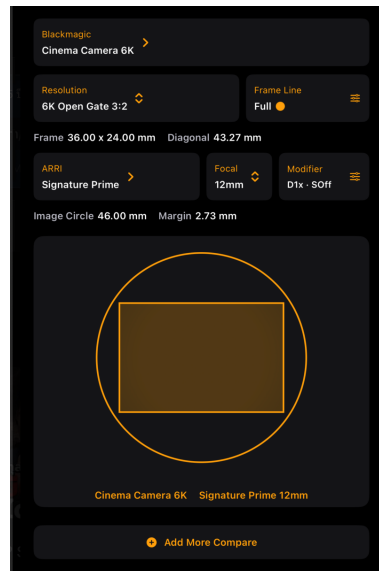


Sensor & Lens Coverage

Compare camera sensors and recording formats, preview lens image-circle coverage, and identify possible vignetting before choosing a camera-and-lens combination.

KEY CAPABILITIES

- Compare sensor and recording-area sizes
- Check whether a lens's image circle fully covers the sensor
- Identify possible vignetting
- Preview framing and aspect ratios
- Compare camera formats visually
- Apply anamorphic desqueeze and frame lines
- Understand how different camera-and-lens combinations affect the final image



This tool checks whether a lens's image circle is large enough to cover the active sensor area of a selected camera and recording format.

Select a Camera and Resolution

Tap the Camera field and choose a camera model, then choose a recording resolution or sensor mode. Different recording modes may use different areas of the camera sensor. The tool displays active frame width, active frame height, and frame diagonal — the minimum image-circle diameter normally required to cover the complete recording area.

Select a Lens

Tap the Lens field and choose a lens series, then use the Focal menu to select a specific prime lens or zoom range. The tool reads the selected lens's specified image-circle diameter.

Coverage Margin

The tool calculates:

$$\text{Coverage margin} = \text{Lens image circle} - \text{Frame diagonal}$$

- Positive margin: the lens image circle is larger than the frame diagonal
- Zero margin: the lens circle and frame diagonal are approximately equal
- Negative margin: the image circle is smaller than the frame diagonal, indicating possible vignetting or uncovered corners

Example – Lens image circle: 46.3 mm · Frame diagonal: 43.3 mm · Coverage margin: +3.0 mm

The lens has approximately 3 mm of additional coverage.

Visual Preview and Frame Lines

The preview displays a rectangle representing the active camera frame, an ellipse representing the lens image circle, a composition frame line, and darkened areas where lens coverage may be insufficient.

Select a composition format such as Full sensor, 2.00:1, 2.39:1, 1.78:1, 1.33:1, 1:1, or a custom ratio, and choose separate colors for the camera frame and lens circle. Frame lines show intended composition and do not change the camera's actual recording resolution.

Anamorphic Lenses and Modifiers

When an anamorphic lens or compatible recording mode is selected, the Desqueeze option becomes available. The tool can preview the desqueezed frame, filter for compatible anamorphic resolutions, apply the lens or camera squeeze factor, and warn when a required camera desqueeze ratio does not match the lens squeeze factor.

The Modifier control can simulate diopter changes to the lens projection or a forced desqueeze factor — these affect the visual preview only, not the physical recording format.

Compare Multiple Setups

Tap Add More Compare to add another setup. Up to four combinations — A, B, C, and D — can be displayed together, each with its own camera, recording resolution, lens, focal selection, frame line, display colors, and anamorphic desqueeze setting. Remove a comparison using its close button.

SHARE

Share exports the main setup, coverage graphic, all additional compare setups, cameras, resolutions, lenses, focal lengths, frame dimensions, image circles, margins, modifiers, desqueeze settings, and selected colors.

IMPORTANT LIMITATION

The result is based on the manufacturer's stated image-circle diameter and active sensor dimensions. It is a geometric coverage estimate, not a laboratory measurement of real optical performance. Actual vignetting can also depend on focal length, focus distance, lens mount, filters, adapters, and manufacturer tolerances. Always test the physical camera-and-lens combination before production.

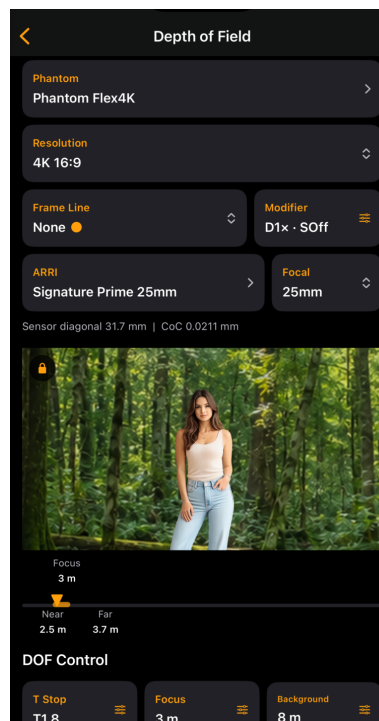


Depth of Field

Calculate near focus, far focus, and total depth of field using your selected camera, recording format, lens, aperture, and focus distance — with a visual preview of subject and background separation.

KEY CAPABILITIES

- Select a camera, recording format, and lens
- Enter focus and background distances
- Choose the lens aperture or T-stop
- Calculate near focus, far focus, and total depth of field
- Adjust the circle of confusion
- Preview subject and background separation
- Check anamorphic desqueeze and diopter settings
- Add frame lines for composition reference
- Work in meters or feet



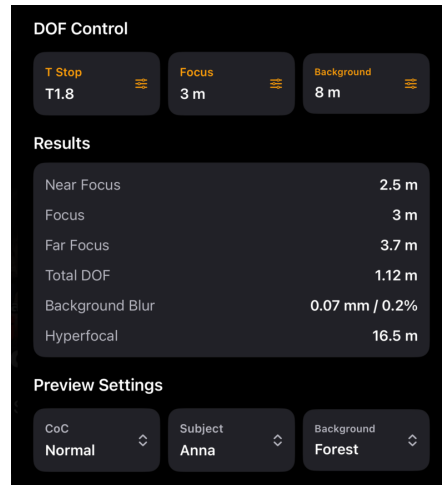
This tool calculates the range of acceptable sharpness in front of and behind the selected focus distance, and provides a visual preview of subject separation and background blur.

Select a Camera and Lens

Tap the Camera field, choose a camera model, then select the required recording resolution — this determines the active sensor dimensions and sensor diagonal used for the calculation. If the recording mode supports anamorphic capture, an Anamorphic control becomes available.

Tap the Lens field and choose a lens series. For prime-lens series, use the Focal menu to select a focal length; for zoom lenses, use the Focal control to set a focal length within the zoom range. Selecting a lens automatically

loads its maximum aperture or T-stop, minimum-focus distance, focal length or zoom range, and image-circle information.



Controls and Results

The main controls are T Stop (selected lens aperture), Focus (distance from camera to subject), and Background (distance from camera to background). Tap any control to open its adjustment slider. The Background distance must remain behind the Focus distance; if the selected focus distance is closer than the lens's specified minimum focus, the app displays a warning.

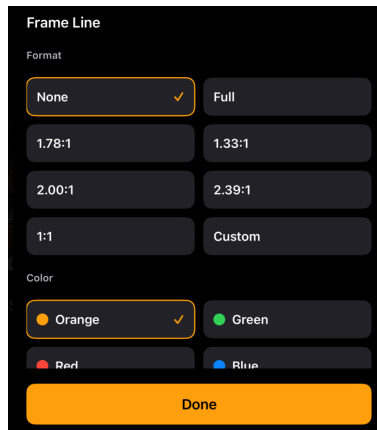
The tool calculates:

- Near Focus — closest distance considered acceptably sharp
- Focus — selected focus distance
- Far Focus — farthest distance considered acceptably sharp
- Total Depth of Field — distance between the near and far focus limits
- Background Blur — estimated blur-circle diameter and its size relative to the sensor diagonal
- Hyperfocal — focus distance that extends the far depth-of-field limit to infinity

When the focus distance reaches or passes the hyperfocal region, Far Focus and Total Depth of Field may display Infinity.

Visual Preview

The preview illustrates the selected subject, background environment, subject size and framing, estimated background blur, near/focus/far distance markers, selected recording aspect ratio, possible lens-coverage limitations, and anamorphic desqueeze. It updates whenever the camera, resolution, lens, focal length, T-stop, focus distance, or background distance changes, and is an estimate rather than a replacement for testing the physical camera and lens.



Circle of Confusion

Circle of confusion (CoC) determines how much blur is accepted as appearing sharp. Available modes are:

- Strict — smaller acceptable blur circle and a narrower depth of field
- Normal — balanced default setting
- Soft — larger acceptable blur circle and a wider depth of field
- Custom — manually enter a CoC value in millimetres

The preset CoC values are calculated from the selected sensor diagonal.

Preview Settings, Frame Lines, and Modifiers

Preview Settings allow choosing Anna or Michael as the preview subject, and City, Forest, or Interior as the background — these change the visual preview only, not the mathematical result. Frame Line settings add a composition guide and do not change the recording resolution or depth-of-field calculation. The Modifier control provides diopter preview adjustment, forced anamorphic desqueeze, and a preview-position reset, all affecting the preview only.

Anamorphic Compatibility and Units

When an anamorphic recording mode is selected, the tool can apply the supported desqueeze factor. A warning appears if a spherical lens is selected for an anamorphic-only mode, or if the lens squeeze factor does not match the selected camera desqueeze factor. Focus distances follow the preference selected in Settings (meters, or feet and inches); small depth-of-field results are automatically shown in millimetres, centimetres, or inches for precision.

SHARE

Share exports the page in the same order and style.

IMPORTANT LIMITATION

The tool uses a standard thin-lens depth-of-field model. Real results may vary because of lens design, focus breathing, manufacturer markings, optical tolerances, sensor interpretation, and viewing conditions. The app uses the lens T-stop as the aperture input, so results should be treated as a practical production estimate rather than a laboratory measurement.

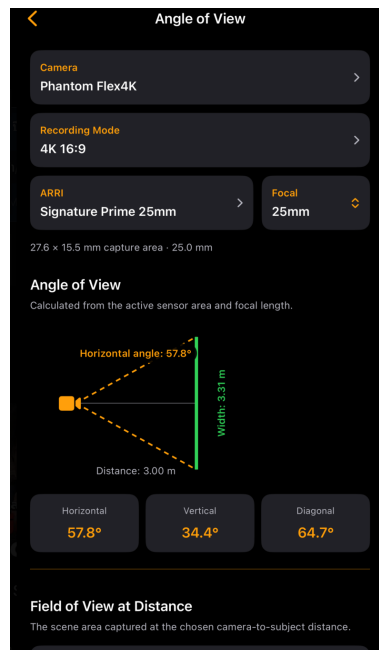


Angle of View

Calculate horizontal, vertical, and diagonal angles of view, preview the captured field size at a selected distance, and find the focal length required for a desired composition.

KEY CAPABILITIES

- Select a camera, recording format, and lens
- Calculate horizontal, vertical, and diagonal viewing angles
- Preview field width and height at a selected distance
- Check how sensor size affects framing
- Compare focal lengths within a lens series
- Calculate the focal length required for a desired composition
- Account for anamorphic squeeze
- Warn about possible lens-coverage or vignetting issues
- Work in meters or feet



This tool calculates how much of a scene a camera-and-lens combination can capture, the physical field size at a chosen distance, and the focal length needed to frame a known object.

Select a Camera and Lens

Tap the Camera field and choose a camera model and recording mode — the selected recording mode determines the active sensor width and height, since cropped recording modes produce a narrower angle of view than the full sensor. When exact active-area dimensions are unavailable, the app estimates them from the recording resolution relative to the camera's largest sensor mode.

Tap the Lens field and choose a lens series. For prime lenses, use the Focal menu; for zoom lenses, use the focal-length slider. A shorter focal length produces a wider angle, and a longer focal length produces a narrower angle.

Setup Summary and Results

The page displays the active setup — sensor width and height, selected focal length, and anamorphic squeeze factor when applicable — and warns if the selected lens's stated image circle is smaller than the active sensor diagonal, indicating possible vignetting.

The tool calculates the horizontal angle (left to right), vertical angle (top to bottom), and diagonal angle (across the sensor diagonal):

$$\text{Angle of view} = 2 \times \arctan(\text{sensor dimension} \div (2 \times \text{focal length}))$$

The cone diagram provides a visual representation of the horizontal viewing angle and captured width at the selected distance.

The screenshot shows a dark-themed interface with two main sections. The top section, 'Field of View at Distance', has a subtitle 'The scene area captured at the chosen camera-to-subject distance.' It features a 'Distance' input field set to '3.00 m' with a menu icon. Below are three buttons for 'Width' (3.31 m), 'Height' (1.86 m), and 'Diagonal' (3.80 m). The bottom section, 'Frame a Known Object', has a subtitle 'Find the angle and longest focal length that will still fit the object.' It includes 'Object Width' (1.70 m) and 'Object Height' (1.70 m) input fields with menu icons. Below these are three buttons for 'Required H angle' (31.6°), 'Required V angle' (31.6°), and 'Required diagonal' (43.7°). At the bottom, it states 'Maximum focal length to fit' followed by '27.4 mm' in large text. A small note at the very bottom reads: 'Width suggests 48.7 mm; height suggests 27.4 mm. The shorter value fits both dimensions.'

Field of View at Distance

Tap Distance to select the camera-to-subject distance. The tool calculates the physical scene area visible at that distance — width, height, and diagonal. For example, it can show how many metres of a set will fit horizontally when using a 35 mm lens from a distance of 5 m. Increasing the distance captures a larger physical area; moving closer captures a smaller area.

Frame a Known Object

This section determines which focal length will fit a subject of known size. Enter the object width, object height, and camera-to-object distance. The tool calculates the required horizontal, vertical, and diagonal angles, the focal length suggested by the object width, the focal length suggested by the object height, and the maximum focal length that will fit the complete object.

The shorter of the horizontal and vertical focal-length results is used, since it is the longest focal length that still fits both dimensions. For example, if width allows a 50 mm lens but height allows only a 40 mm lens, the recommended maximum is 40 mm.

Anamorphic Lenses and Units

For an anamorphic lens, the app multiplies the effective horizontal sensor width by the lens squeeze factor, producing a wider horizontal angle, an unchanged vertical angle, a wider diagonal angle, and a wider horizontal field size after desqueeze. The selected lens must contain correct anamorphic squeeze information for an accurate result.

Distance and object dimensions follow the Field of View unit selected in Settings (meters, or feet and inches). Angle results are displayed in degrees, and focal-length recommendations in millimetres.

SHARE

Share exports the page in the same order and style.

IMPORTANT LIMITATION

The calculator uses ideal geometric lens formulas. Actual framing can vary because of focus breathing, optical distortion, manufacturer focal-length tolerances, lens design, sensor cropping, and the location from which distance is measured. Anamorphic calculations use a simplified horizontal-squeeze model. Confirm critical framing with the physical camera and lens before production.



Viewfinder

Plan shots with a live camera preview, simulated cinema framing, custom frame lines, anamorphic desqueeze, electronic horizon, sun-position tracking, and Golden Hour timing.

KEY CAPABILITIES

- Preview the selected camera, recording format, and lens
- Simulate cinema framing using the phone camera
- Display custom aspect-ratio frame lines
- Apply anamorphic desqueeze and lens modifiers
- View the sun's current position and projected trail
- Check sunrise and sunset direction
- Monitor camera heading, tilt, and electronic horizon
- Adjust the preview when the cinema field of view exceeds the phone camera
- Save commonly used camera and lens combinations
- Share the viewfinder setup



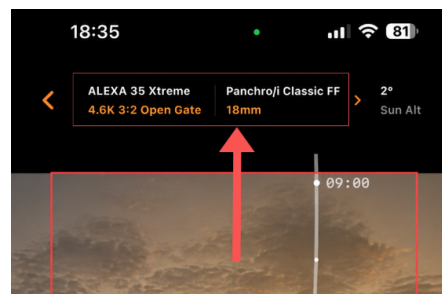
The Viewfinder combines the iPhone's live camera feed with cinema framing, lens simulation, sun-path planning, Golden Hour timing, and orientation tools.

Permissions

For full operation, allow access to:

- Camera — live preview, photographs, and video
- Location — accurate sun position and Golden Hour for the current location
- Photos — saving captured photographs and videos

If location is unavailable, the top information bar displays Default and the app uses its fallback location. For accurate planning, confirm that it displays GPS.



Select a Camera and Lens

Tap the Camera information box at the top of the Viewfinder and choose the camera manufacturer, model, and recording resolution or sensor mode — this determines the simulated frame dimensions and aspect ratio.

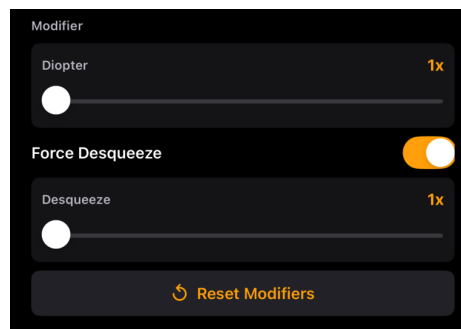
Favorite cameras are available in the selection sheet for faster access.

Tap the Lens information box and choose the lens manufacturer, series, and prime focal length or zoom range. Use the arrow controls near the capture button to move between focal lengths.

Cinema Field-of-View Simulation

The app compares the selected camera sensor width, selected focal length, anamorphic squeeze, and the actual horizontal field of view of the iPhone camera, then digitally scales the live preview to approximate the selected cinema-camera field of view. The displayed zoom value is a preview scale, not optical zoom from the selected cinema lens.

If the selected cinema field of view is wider than the iPhone camera can capture, the preview becomes smaller and displays black surrounding areas with the warning “Cinema FOV wider than iPhone lens” — the missing area cannot be recreated by the phone camera.



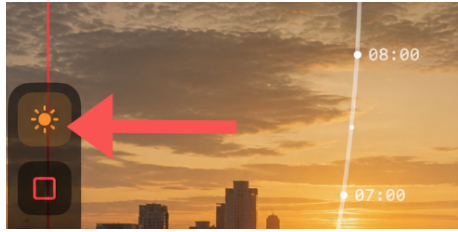
Optical Modifiers and Frame Lines

The camera and lens settings provide preview modifiers: a Diopter modifier (changes the effective focal-length simulation), Forced desqueeze (applies a manually selected anamorphic factor), and Reset Modifiers. These settings affect the simulated preview only.

Tap the Frame button to add a composition guide — available formats include None, Full, 1.78:1, 2.00:1, 2.39:1, 1.33:1, 1:1, and a custom ratio, with a selectable frame-line color. Frame lines are composition references and do not change the iPhone camera's recording format.

Sun Information and Sun Path

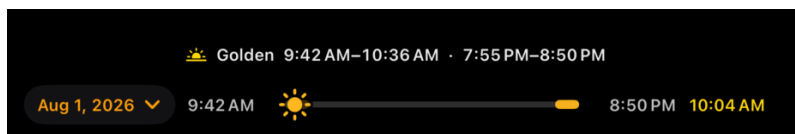
The top information bar displays sun altitude, sun azimuth, sun direction relative to the camera, camera heading, GPS or default-location status, and compass quality. Sun direction is described as ahead, behind, left, or right relative to where the phone is pointing.



Enable Sun Path to display the sun's projected movement across the live camera view, using the selected date and time, GPS coordinates, compass heading, phone orientation and elevation, and calculated solar altitude and azimuth. The curved line represents the sun's path through the day; optional dots and time labels show sampled positions.

If the path appears incorrectly aligned, move the phone in a figure-eight motion to calibrate the compass and avoid nearby metal objects, vehicles, magnets, or electrical equipment.

- Best Results: use outdoors with a clear view of the sky
- Remove all magnetic cases and accessories
- Keep away from large metal objects and electronics



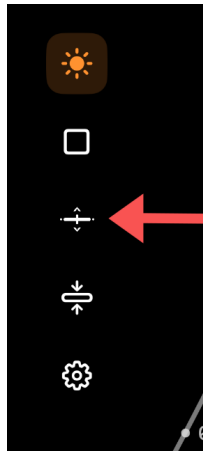
Date, Time, and Golden Hour

Tap the displayed date to choose another shooting day. Use the time slider to preview the sun's position throughout the available daylight and Golden Hour window — it shows the start time, selected planning time, end time, and highlighted Golden Hour ranges. Changing the slider moves the projected sun position without changing the phone's real clock.

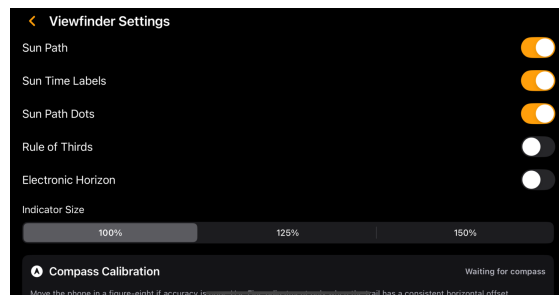
The Viewfinder calculates morning and evening Golden Hour for the selected date and location. The app defines its photographic Golden Hour as the time when the sun's centre is between approximately 4° below the horizon and 6° above it. Golden Hour is displayed as morning and evening time ranges, in yellow on the time slider, as highlighted parts of the sun path, and with Golden Start and Golden End markers when labels are enabled. Golden Hour may be unavailable in some locations or seasons.

Electronic Horizon and Settings

The Electronic Horizon helps monitor camera roll and tilt, indicating how far the phone is from level. The Rule of Thirds grid can be enabled in Viewfinder Settings for composition assistance.

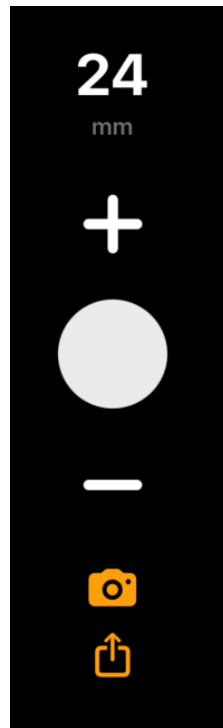


The Settings button provides controls for Sun Path, Sun Time Labels, Sun Path Dots, Rule of Thirds, Electronic Horizon, and Sun Trail sampling interval, and shows the detected iPhone model and the measured field of view of its active camera.



Clean View and Capture

Tap the Clean View button to hide interface controls for a clearer preview; tap the preview again to restore the controls.



Use the Photo/Video button to change capture mode. In Photo mode, the white button captures a photograph; in Video mode, the red button starts recording, and while recording the control changes to a stop symbol with elapsed recording time displayed. Captured media is saved to the Photos library when permission is granted.

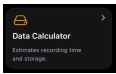
The Sun Trail overlay is not included in recorded video footage because real-time rendering requires significant device resources.

SHARE

Share captures the current camera image and opens the iOS sharing menu with the selected camera, resolution, lens, and focal-length setup.

IMPORTANT LIMITATION

The cinema view is a digital simulation made from the iPhone camera feed. It cannot reproduce the exact distortion, focus breathing, depth of field, bokeh, lens shading, or optical character of the selected cinema lens. Sun alignment depends on accurate GPS, compass calibration, phone orientation, local horizon conditions, and magnetic interference. Always verify critical sun positions and framing on location.



Data Calculator

Calculate recording time, media usage, and required storage using the selected camera, recording format, codec, frame rate, shooting duration, and number of cameras.

KEY CAPABILITIES

- Select a camera and recording format
- Choose resolution, codec, frame rate, and compression settings
- Calculate data generated per second, minute, or hour
- Estimate recording time for available storage
- Calculate required storage for a planned shooting duration
- Account for multiple cameras
- Include additional storage or safety margins
- Compare media-capacity options
- Plan production and backup storage

Data Calculator

Phantom
Phantom Flex4K

Codec: Phantom Cine RAW Resolution: 4K 16:9

Project FPS: 25 Sensor FPS: 1-938

Media: 1000 GB

Estimated Available Time
0h 47m

Recording Resolution: 4096 x 2304
Data Rate: 2831 Mbps
Storage / Hour: 1274.0 GB

Calculate by Duration

Hours: 1 Minutes: 0

Total Storage

Selected Duration: 1h 0m
Storage Used: 1.27 TB
Media: 1000 GB
Media Needed: 2

This is an estimate. Actual recording time may vary depending on the camera, media and recording settings. Verify with the actual camera before shooting.

The Data Calculator estimates recording time, data rate, storage use, and the number of media cards required for a shoot.

Workflow

1. **Select Camera** — choose your camera from the database; the calculator automatically selects a compatible codec and resolution.
2. **Select Codec and Resolution** — different choices produce different data rates and storage requirements.
3. **Set Project FPS** — the playback frame rate of your project, such as 23.976, 25, or 29.97 fps.

4. **Set Sensor FPS** — the frame rate captured by the camera; the available range changes with camera, resolution, codec, and media.
5. **Select Media** — choose a supported media card or enter a custom capacity; the app displays the estimated recording time available.
6. **Review Recording Information** — the calculator shows:
 - a. Recording resolution
 - b. Data rate
 - c. Storage required per hour
 - d. Maximum FPS supported by the selected media, when available
7. **Enter the Recording Duration** — enter the total hours and minutes you expect to record; the app calculates:
 - e. Total storage used
 - f. Selected media
 - g. Number of media cards required

For Phantom high-speed cameras, the available-time result shows the conformed playback time based on the relationship between Sensor FPS and Project FPS. Use Add Camera to compare or plan up to four separate camera setups — each camera is calculated independently.

Main Formula

The camera data rate is stored or estimated in Mbps (megabits per second).

Storage per hour: $\text{GB per hour} = \text{Mbps} \times 3,600 \div 8 \div 1,000$
(the division by 8 converts bits into bytes)

Example — for a data rate of 1,000 Mbps:

$1,000 \times 3,600 \div 8 \div 1,000 = 450$ GB per hour

For a recording duration of 2 hours: $450 \text{ GB} \times 2 = 900$ GB

Media Calculations

Available recording time = Usable media capacity ÷ GB per hour

For a 1,000 GB card: $1,000 \div 450 \approx 2.22$ hours — approximately 2 hours 13 minutes.

Media needed = Total storage ÷ Media capacity

The result is rounded up, since part of a media card still requires another complete card.

Frame Rates

Project FPS is the playback or timeline frame rate. Sensor FPS is the frame rate actually recorded by the camera — the app uses Sensor FPS to calculate recorded data. Some codecs have a fixed data rate; others increase their data rate as Sensor FPS increases. The app first uses data supplied by the camera database, and estimates the rate from codec, resolution, and frame rate when an exact value is unavailable.

For Phantom cameras, the app also converts the captured high-speed footage into its longer playback duration using:

$$\text{Playback time} = \text{Capture time} \times \text{Sensor FPS} \div \text{Project FPS}$$

SHARE

Share exports every populated calculator card in the same page order, including camera, codec, resolution, FPS, media, available time, data rate, duration, storage totals, and disclaimer.

IMPORTANT LIMITATION

All results are estimates. Actual recording time can vary depending on camera settings, media capacity, firmware, and recording conditions. Always verify important figures with the actual camera before shooting.

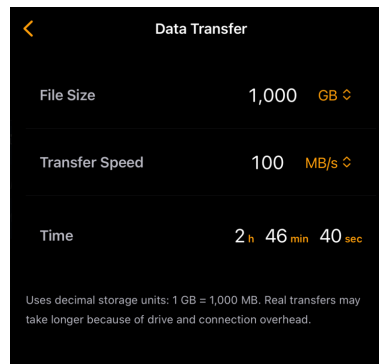


Data Transfer

Calculate the estimated time required to transfer footage or production files using the total data size and the transfer speed of a drive, card reader, network, or storage system.

KEY CAPABILITIES

- Enter the total file size
- Choose MB, GB, or TB
- Enter the transfer speed
- Choose MB/s, GB/s, Mbps, or Gbps
- View the estimated transfer time in days, hours, minutes, and seconds
- Compare drives, card readers, networks, and backup workflows
- Plan on-set media-management time



The Data Transfer calculator estimates how long it will take to copy footage from one storage device to another.

Workflow

- Enter File Size** — enter the total amount of data you want to transfer and choose MB, GB, or TB.
- Enter Transfer Speed** — enter the expected transfer speed and choose:
 - MB/s — megabytes per second
 - GB/s — gigabytes per second
 - Mbps — megabits per second
 - Gbps — gigabits per second
- View the Estimated Time** — the app immediately displays the estimated transfer duration in days, hours, minutes, and seconds.

Example — transferring 1,000 GB at 100 MB/s takes approximately 2 hours, 46 minutes, and 40 seconds.

Use the real sustained speed of the slowest part of your setup — the camera media, card reader, connection, or destination drive. The app uses decimal storage units, where 1 GB equals 1,000 MB. Actual transfers may take longer because of drive performance, connection overhead, file verification, and many small files.

SHARE

Share exports the page in the same order and style.

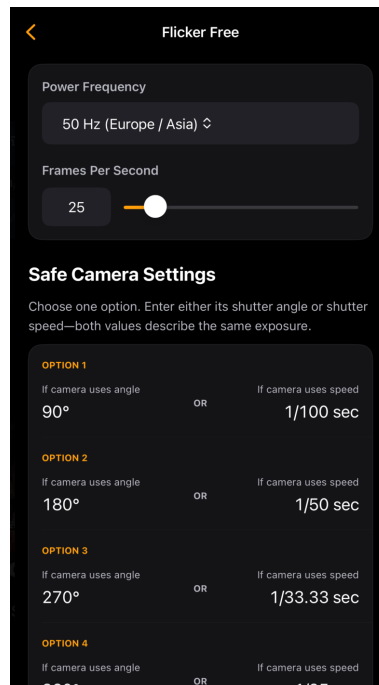


Flicker Free

Calculate shutter angles and shutter speeds that synchronize with 50 Hz or 60 Hz lighting, helping reduce flicker and banding when shooting under mains-powered lights.

KEY CAPABILITIES

- Select the local mains frequency: 50 Hz or 60 Hz
- Enter the camera frame rate
- Find compatible shutter angles
- View equivalent shutter speeds
- Identify safer settings for mains-powered lighting
- Check how close the current setting is to a flicker-free value
- Quickly adapt when filming in another country or region



Flicker can also come from LEDs, dimmers, screens, and high-speed fixtures, so the calculated settings are a strong starting point rather than a guarantee. Always verify with the actual camera and lighting setup.

Workflow

- Select Power Frequency** — choose the electrical frequency used at your shooting location:
 - 50 Hz — commonly used in Europe and much of Asia
 - 60 Hz — commonly used in North America
- Enter Frames Per Second** — enter your camera's recording frame rate or adjust it with the slider; the page initially uses the frame rate and power frequency selected in Settings.
- Choose a Safe Camera Setting** — the app displays compatible options, each providing a shutter angle for cameras using angle, and an equivalent shutter speed for cameras using fractions of a second. Use either

the angle or the shutter speed from the same option — they represent the same exposure, so you do not enter both.

14. **Choose the Look You Want** — smaller shutter angles create sharper motion with less exposure; larger angles provide more motion blur and more exposure.

Always confirm the mains frequency for the actual country and location. The calculation matches the exposure time to complete lighting pulses — if the selected FPS is too high, the app may show that no flicker-free setting is available. These settings mainly help with mains-powered lighting; LEDs, neon lights, dimmers, displays, and high-speed shooting can behave differently, so always record a short camera test before shooting.

SHARE

Share exports the page in the same order and style.

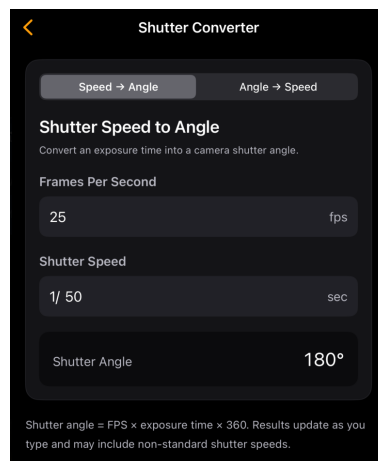


Shutter Angle

Convert shutter speed and shutter angle using the selected frame rate, helping maintain consistent exposure time and motion blur across different cameras and frame rates.

KEY CAPABILITIES

- Enter the camera frame rate
- Convert shutter speed into shutter angle
- Convert shutter angle into shutter speed
- Calculate equivalent exposure settings
- Match shutter settings across different cameras
- Maintain consistent motion blur when changing frame rates
- Identify exposure times longer than one frame



The Shutter Converter changes shutter speed into shutter angle, or shutter angle into shutter speed.

Speed → Angle

Use this when you know the shutter speed:

15. **Select Speed → Angle.**
16. **Enter the recording frame rate.**
17. **Enter the shutter-speed denominator — for example, enter 48 for 1/48 second.**
18. **The equivalent shutter angle appears automatically.**

Example: 24 fps at 1/48 second = 180°

The initial frame rate comes from the Video Standard selected in Settings. Results update while you type and may include non-standard shutter speeds.

A smaller shutter angle gives less motion blur and less exposure; a larger angle gives more motion blur and more exposure. The app displays a warning when the exposure exceeds 360°, because it is longer than one complete frame.

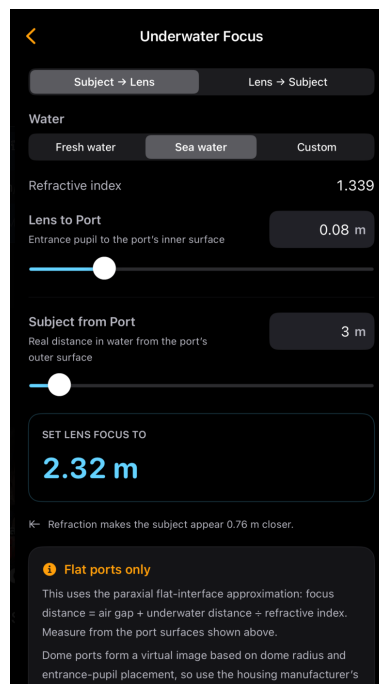


Underwater Focus

Convert between real underwater subject distance and the lens focus setting using flat-port refraction, water type, and the distance between the lens and housing port.

KEY CAPABILITIES

- Convert real subject distance into the lens focus setting
- Convert a lens focus mark back into real underwater distance
- Choose freshwater, seawater, or a custom refractive index
- Enter the distance between the lens entrance pupil and port
- Adjust distances using precise values or sliders
- Work in meters or feet
- Account for subjects appearing closer because of refraction



Underwater Focus calculates the focus correction created by refraction when shooting through a flat underwater port. This calculator is for flat ports only — dome ports create a virtual image affected by dome radius and entrance-pupil position, so use the housing manufacturer's chart or confirm focus directly with the camera.

1. Select the Water Type

- Fresh water — refractive index 1.333
- Sea water — refractive index 1.339
- Custom — enter your own refractive index

2. Enter Lens to Port

Measure from the lens's entrance pupil to the port's inner surface. This represents the air space inside the housing, and is needed because this part of the light path is not underwater.

Subject → Lens

Use this mode when you know the subject's real position: measure from the port's outer surface to the subject, enter this under Subject from Port, and read Set Lens Focus To — the approximate distance you should set on the lens. The app also shows how much closer the subject appears because of refraction.

Example: a subject approximately 3 metres from the port in seawater may require the lens to focus at roughly 2.3 metres, depending on the lens-to-port distance.

Lens → Subject

Use this mode when you already know the focus mark on the lens: enter the current Lens Focus Mark, and the app calculates the approximate real Subject from Port distance. This is useful when you want to know where a subject must be positioned for a particular lens focus mark, and is mainly helpful when the lens is preset, remotely controlled, or cannot focus closer.

For most camera assistants, Subject → Lens is the useful everyday mode:

- Subject → Lens — diver is 3 m from the port → set lens near 2.32 m
- Lens → Subject — lens is set to 2 m → subject should be approximately 2.57 m from the port

The units follow the Focus Unit selection in Settings, using metres or feet.

IMPORTANT LIMITATION

The result is an optical approximation based on flat-port refraction, so critical shots should always be checked in-camera. Dome ports require dome radius, port geometry, and entrance-pupil alignment to calculate their curved virtual image accurately, and are not supported by this calculator.



The Film Calculator

Converts between film length, frame count, and run-time.

How to Use It

19. **Choose Film Format** — select 16mm, 35mm 2/3/4-perf, VistaVision, 65mm, IMAX, etc. Each format uses its perforation transport data from the camera database.
20. **Enter Frame Rate** — for example, 24, 25, or 29.97 fps.
21. **Choose Calculate From:**
 - n. Length — enter the available film stock; it calculates frames and run-time
 - o. Frames — enter a frame count; it calculates required film and run-time
 - p. Run-time — enter hours, minutes, and seconds; it calculates frames and required film
22. **Length Unit** — this follows the app's global Length Unit setting: metric displays metres, imperial displays feet.

Example: 400 ft of 35mm 4-perf at 24 fps → 16 frames per foot, 6,400 frames, approximately 4 min 26 sec.

The Film Usage section shows the selected format's transport rate, such as 16 frames per foot · 4-perf. For production, add extra film for loading, threading, slates, camera tests, and unusable roll ends.

Core Formula

Frames per foot = Perforations per foot ÷ Perforations per frame

Format	Calculation	Frames/foot
16mm 1-perf	$40 \div 1$	40
35mm 2-perf	$64 \div 2$	32
35mm 3-perf	$64 \div 3$	21.333
35mm 4-perf	$64 \div 4$	16
VistaVision 8-perf	$64 \div 8$	8
65mm 5-perf	$64 \div 5$	12.8
IMAX 15-perf	$64 \div 15$	4.267

Calculate From Film Length

Feet = Metres $\times$ 3.280839895

Frames = Film length in feet $\times$ Frames per foot

Run-time in seconds = Frames $\div$ FPS

Example: 400 ft of 35mm 4-perf at 24 fps

$400 \times 16 = 6,400$ frames

$6,400 \div 24 = 266.67$ seconds $\approx$ 4 min 26 sec

Calculate From Frames

Film length in feet = Frames $\div$ Frames per foot

Run-time = Frames $\div$ FPS

Example: 9,600 frames of 35mm 4-perf

$9,600 \div 16 = 600$ ft

At 24 fps: $9,600 \div 24 = 400$ sec = 6 min 40 sec

Calculate From Run-Time

Total seconds = (hours $\times$ 3600) + (minutes $\times$ 60) + seconds

Frames = Total seconds $\times$ FPS

Film length = Frames $\div$ Frames per foot

Example: 10 minutes at 24 fps using 35mm 4-perf

$10 \times 60 \times 24 = 14,400$ frames

$14,400 \div 16 = 900$ ft

The result is the theoretical camera usage. Extra film should be added for loading, threading, slates, tests, and roll ends.

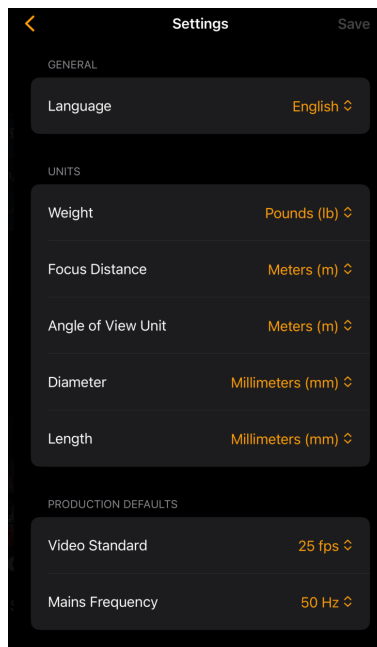


Settings

Customize measurement units, app language, project frame rate, and local mains frequency so supported calculators and production tools match your preferred workflow.

KEY CAPABILITIES

- Choose kilograms or pounds
- Select focus distance in meters or feet
- Select field-of-view distance units
- Choose millimeters or inches for dimensions
- Change the app language
- Set the default project frame rate
- Choose the local 50 Hz or 60 Hz mains frequency
- Apply these preferences across supported calculators and tools
- Reset preferences to their default values



General

Language changes the app interface and User Manual language. The available languages are English, Thai, Simplified Chinese, and Japanese.

Units

Choose how measurements are displayed:

- Weight — kilograms or pounds
- Focus Distance — metres or feet/inches
- Angle of View Unit — metres or feet/inches
- Diameter — millimetres or inches

- Length — millimetres or inches

These choices are automatically used by the relevant calculators and database pages. For example, Focus Distance affects the Depth of Field and Underwater Focus tools.

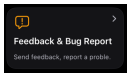
Production Defaults

Video Standard sets your usual project frame rate — 24 fps, 25 fps, or 29.97 fps — and becomes the initial frame rate in tools such as Data Calculator, Flicker Free, and Shutter Converter.

Mains Frequency sets the local electrical frequency — 50 Hz or 60 Hz — which Flicker Free uses as its starting frequency.

Saving Your Settings

After making changes, tap Save. Your selections are stored and remain active the next time you open the app. Reset to Defaults returns the choices to the app's standard setup — tap Save afterward to apply them. Legal & Privacy information is also available from this screen.



Feedback & Bug Report

Send bug reports, feature requests, and general feedback through a dedicated form, with optional screenshots and automatic app and device information to help diagnose problems.

KEY CAPABILITIES

- Report bugs or unexpected behavior
- Request new features
- Share general feedback
- Describe steps needed to reproduce a problem
- Explain the expected and actual results
- Attach screenshots or supporting files
- Optionally provide contact information
- Enter text in any language you prefer
- Automatically include the app version, build number, iOS version, device type, and anonymous installation ID

Disclaimer

Professional Reference Only

Ant CineKit is a professional reference and estimation tool. Its calculations and database information are provided for planning and informational purposes only.

Results May Vary

Results — including depth of field, angle of view, lens coverage, storage requirements, transfer time, flicker-free settings, sun position, golden hour, shutter angle, viewfinder framing, and underwater-focus calculations — may differ from real-world results. Differences may result from equipment tolerances, lens breathing, manufacturer measurement methods, firmware, recording settings, compression behaviour, media formatting, environmental conditions, refraction, weather, terrain, device sensors, GPS accuracy, rounding, or incomplete information.

Verify Before Shooting

Always verify critical settings and calculations using the actual camera, lens, media, measuring equipment, current manufacturer documentation, and appropriate professional judgment before shooting. Do not rely on the App as the sole basis for safety-critical, navigation, diving, electrical, financial, or production decisions.

Thank you for using Ant CineKit.

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