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What makes the difference between a good shot and a truly memorable shot? Masters know it: "It's all about designing the image carefully before you press the shutter". The Planner gives you full creative control over your outdoor photos! Imagine: design every detail of the photo. Plan: calculate the exact date and time it happens. Shoot: just get out there, immerse yourself in the great outdoors and enjoy taking great photos.

A. Top buttons

1. Home button
2. Save button

B. Info bar

1. Shadow length calculator

Introduce the object's height to calculate its shadow length for the selected date, time and Observer's pin location. Tap on the shadow button to visualize, on the map, the shadow length and the azimuth (direction) of an object placed in the location of the Observer's pin, caused by the sun (daytime) or the moon (night time), for the selected date and time.
2. **Obstacles calculator**

Tap the Obstacle button. On the map, place the Obstacle's pin in the location of a mountain. Use the time bar to set the time just when the sun/moon will be aligned with the mountain and find out if the sun/moon will be above the mountain (visible) or hidden behind (not visible). Find out when a valley will be in shade or if the moon will appear from behind a hill. Furthermore, you get the following information: distance between the Observer's Pin and the Obstacle's pin; relative altitude between the two pins; the elevation angle of the Obstacle's pin relative to the Observer's pin; the bearing or the angle centred on the Observer's pin location and measured between the direction of the Obstacle's pin and the north.

![Obstacle's pin]

3. **Sun and moon position**

Position (azimuth and elevation) of the sun and moon, moon phase name and phase percentage for the selected date, time and Observer's pin location. Tap on the Sun/moon button to toggle what information is displayed on the map: only sun, only moon or sun and moon.

4. **Rise and set information**

Time and azimuth (time@azimuth) of sunrise, sunset, moonrise and moonset for the selected date and Observer's pin location. Picture of the moon that shows how you would see the moon on the selected date and time if you were placed in the location of the Observer's pin.

![Daytime](image1) ![Night-time](image2)

![Moonset in daytime](image3) ![Moonset in night-time](image4)

5. **Twilights**

Time range of the civil, nautical and astronomical twilight for the selected date and Observer's pin location. Tap on the Twilight button to visualize, on the map, the worldwide distribution of light. Visualize the parts of the world that are in night-time, astronomical twilight, nautical twilight, civil twilight, golden hour and daytime for the selected date and time.

6. **Magic hours**

Time range of golden hour and blue hour for the selected date and Observer's pin location.
TIPS

- Tap on moon's picture to jump forward in time to the next main moon phase (new, first quarter, last quarter, full).
- Double tap on moon's picture to jump backwards in time to the main moon phase (new, first quarter, last quarter, full).
- After moonset, the picture of the moon will appear slightly darkened. This way you can visually know that the moon has already set.

C. Map

1. GPS map button
   
   Quickly place the Observer's pin in your current position.

2. Compass map button
   
   Auto rotate the map according to compass orientation. It helps to orientate yourself when doing field work.

3. Expand map button
   
   Work comfortably with a larger map screen.

4. Move Observer's pin button
   
   It is very useful for long distance moves. Tap on it. Then, scroll the map to explore the territory. Once you have found a good location, tap on it again, or tap on the white X to place the Observer's pin in the desired location.

5. Observer's pin
   
   Place the Observer's pin in the location you want to analyse. All information displayed in the Planner is related to the location of the Observer's pin (latitude, longitude, altitude, height above the horizon).
6. Sun and moon azimuth lines

Represent the direction of the sun and moon for the selected date, time and Observer's pin location. If you tap on the Shadow Button from the shadow length calculator you will also be able to visualize the sun or moon shadow line.

- Sunrise
- Sunset
- Sun
- Moonrise
- Moonset
- Moon
- Shadow

TIPS

- Do a long press on the map to place the Observer's pin in the pressed location.
- Sun/moon azimuth lines are infinite, therefore it is possible to follow the lines in the distance to make sure the sun/moon will be at the place you really want.
- Double tap on the map with one finger to zoom in.
- Tap on the map with two fingers to zoom out.
- If you have activated the Twilight button you will be able to visualize, on the map, how light changes in the Observer's pin location as you drag the time bar. Therefore, it is possible to know with a single glance at the map, if the Observer's pin is in night time, astronomical twilight, nautical twilight, civil twilight, golden hour or daytime for the selected date and time.
- Tap on the Observer's pin to see the information of the location (latitude, longitude, altitude and height above the horizon).
- Choose one of the following map types from the option "Settings" from the menu "My Stuff": Standard, Satellite, Hybrid, OpenStreetMap, OpenCycleMap (classic) and OpenCycleMap (landscape).
- Using Offline Maps. If you think there will be no network coverage, to make a map available offline you must proceed as follows: first, before you go into the field, set one of the following map types: OpenStreetMap, OpenCycleMap (classic) or OpenCycleMap (landscape). Second, in the Planner, view the locations you want available offline by panning and zoom in and out to cover all the views you need. Notice that PhotoPills stores offline map tiles in Cache memory and, if there's problems of running out of space on your device, the maps views will be deleted.

D. Time bar

1. Infinite time bar

Drag the time bar towards the left to go forwards in time and towards the right to go backwards in time. The normal time range is 24h. The distribution of light
over a 24h period is represented on the bar. Therefore, you can visually find out when it is night time, astronomical twilight, nautical twilight, civil twilight, golden hour and daytime.

2. Sun and moon elevation path

It represents the elevation of the sun and moon through time.

3. Date and time

Selected date, time and time zone (GMT) information.

TIPS

- Tap on the centre of the time bar to change the date and time. In this screen, you can manually select your time zone. This is very useful if you are in an area where there is no network coverage.
- Double tap on the centre of the time bar to come back to the current date and time.
- Tap on the right hand side of the time bar to jump to the next important event (sunset, golden hour, blue hour, twilights, sunrise, moonrise, moonset).
- Tap on the left hand side of the time bar to jump backwards to the previous important event (sunset, golden hour, blue hour, twilights, sunrise, moonrise, moonset).
- Do a long press on the time bar to switch from a 24 hr. time range to a 1 hr. time range, and vice versa.
- Shake the device to re-centre the observer's pin on the map and go to current date and time.
- When there is no network coverage, the time zone (GMT) appears in red.

E. Bottom options

1. Find
2. AR
3. Night AR
4. Horizon
5. Load
6. Share
Planner - Save button

Improve the way you manage your photo plans and your secret locations. Once you have planned a photo, you can save the location, date and time as a "Plan" to be used in the future. In the same way, if you come across a beautiful location you wish to remember, you can save it as a Point of Interest (POI) and, this way, create your own database.

1. Cancel button
2. Save as Plan

Save the location, date and time of those original photos that you have thoughtfully designed. All the Plans will be stored in the option "Plans" of the menu "My Stuff". You can create a new Plan or overwrite an existing one.

3. Save as Point of Interest

Save unique locations (a secret waterfall, a beautiful natural stone arch...) to create your own database. All the Points of Interest will be stored in the option "Points of Interest" of the menu "My Stuff". You can create a new Point of Interest or overwrite an existing one.
Planner - Find

Sun/moon at azimuth

Find, in seconds, dates and times when the sun/moon will be at a desired azimuth (direction) for the selected date range and Observer’s pin position.

a. Top buttons
b. Date range selector
c. Azimuth selector

A. Top buttons

1. Back button
2. Search button

B. Date range selector

1. Date range button

Select the period of time within which you wish to look for positions of the sun/moon.
C. Azimuth selector

1. Selected azimuth

   It displays the selected azimuth. You can select the azimuth in four different ways by using the bottom options: 2D, Compass, AR and Numeric.

2. Content area

   This area is used by the 2D and Numeric tabs to introduce the desired azimuth.

3. 2D
4. Compass
5. Augmented Reality (AR)
6. Numeric
Sun/moon at azimuth - Search button

Once you've introduced the desired date range and the azimuth (direction) of the sun/moon, you just have to tap on the search button to find out dates and times when it happens.

1. Back button
2. Table of results

List of results for the selected azimuth, date range and Observer's pin position: date and time, elevation and apparent altitude of the sun/moon at the location of the sun/moon's pin.

3. Sun/moon picture

It tells you if the result will happen in daytime, golden hour, blue hour, nautical twilight, astronomical twilight or night-time. Furthermore, in the case of the moon, the picture shows you how you'd see the moon (phase and orientation) if you were placed in the location of the Observer's pin.

Sun in daytime  Sun in golden hour
Moon in daytime  Moon in golden hour
4. **Cancel button**

   Cancel search and go back to Planner main screen.

5. **Share button**

   Share your table of results on Facebook, Twitter or by e-mail. You can save it as an image too.

**TIPS**

- When you find a date that matches what you were looking for, just tap on it to send it to the planner for further study.
- You can sort the results by tapping on the top table options: "Date", "Elevation", "Altitude" and "Phase".
- If you want to capture the sun/moon when it is just above a building, you must follow these steps: place the sun/moon's pin in the location of the building and look for dates in the table of results in which the apparent height of the sun/moon is larger than the height of the building.
- Past results will appear under a grey filter.
Sun/moon at azimuth - 2D

Select the azimuth by dragging the sun/moon's pin or by dragging the horizontal azimuth slider on the map.

1. Observer's pin

The Observer's pin has been located in the Planner main screen. You cannot move it in this screen. To move it, please, go back to Planner main screen.

   Observer's pin

2. Sun/moon's pin

It represents the sun or the moon. You must place it in the location you would like the sun/moon to be.

   Sun's pin
   Moon's pin

3. Impossible azimuth area

The darker map area. It represents azimuths where it is impossible to find the sun/moon for the selected date range.

4. Azimuth slider

Select the azimuth by dragging the slider of the bar.

TIPS

- Tap on the observer's pin to see its altitude above the sea level.
- Tap on the Sun/moon's pin to see its altitude above the sea level. Furthermore, after the vertical slash, you find the relative altitude between the Observer's pin and the Sun/moon's pin (Sun/moon's altitude - Observer's altitude) and the elevation angle (º) of the Sun/moon's pin relative to the Observer's pin.
Imagine you wish to calculate when the moon will appear from behind a hill. You must proceed as follows: first, in the main screen of the Planner, place the Observer's pin in the location from where you want to take the photo. Then tap on the Find button and select "Moon" and then "at azimuth". Second, in the azimuth selector 2D option, place the Moon's pin in the location of the hill. Third, tap on the Moon's pin and keep in mind the relative elevation angle (º) between the Moon's pin and the Observer's pin. Fourth, tap on the search button. Fifth, sort the results by tapping on the top table options "Elevation-altitude". Finally, choose a date when the moon's elevation is just above the relative elevation between the Moon's pin and the Observer's pin.
Sun/moon at azimuth - Compass

When planning photos in situ or scouting a location, the compass is one of the fastest ways to select the azimuth.

1. **Cancel button**
   
   Cancel azimuth selection and go back to previous screen.

2. **Done button**
   
   Select the azimuth.

3. **Impossible azimuth area**
   
   The darker compass area. It represents azimuths where it is impossible to find the sun/moon for the selected date range.

4. **Azimuth info**
   
   The azimuth that you are pointing at.

**TIPS**

- You can also select the azimuth by tapping on the compass.
- iPod Touch users: the iPod Touch does not have magnetometer and the compass needs it to orient. Therefore, the compass option is not available.
Sun/moon at azimuth - Augmented Reality

When planning photos in situ or scouting a location, the AR view is one of the fastest ways to select the azimuth. Select it by tapping on the augmented reality screen.

1. **Cancel button**
   
   Cancel azimuth selection and go back to previous screen.

2. **Done button**
   
   Select the azimuth.

3. **AR view**
   
   Tap on the augmented reality view to place the sun/moon in the desired azimuth.

   ![AR View Diagram]

   **TIPS**

   - Make sure you are away from any electronic device or magnetic field because they may interfere with the sensors of the device. It is recommended to wait a few seconds to let the system become stable.
   - We recommend that you check on the azimuth selector (2D) map that the selected azimuth is the one you really wanted. If not, just adjust it on the map.
   - Quality of the information displayed in the AR view is good enough to work, but it strongly depends on the limitations of the sensors of your device (GPS, Accelerometer, Gyroscope). This is an issue we cannot control but, as technology advances, manufacturers improve the quality of sensors too.
iPod Touch users: the iPod Touch does not have magnetometer. Therefore, it is not possible to draw in augmented reality (AR) the information of the sun, moon, milky way, celestial equator and celestial poles. This is the reason the AR is not available.
Sun/moon at azimuth - Numeric

Introduce the azimuth numerically.

1. Azimuth field
2. Numeric keyboard
Sun/moon at azimuth & elevation

Find, in seconds, dates and times when the sun/moon will be at a desired position (azimuth and elevation) for the selected date range and Observer's pin position.

A. Top buttons

1. Back button
2. Search button

B. Date range selector

1. Date range button

Select the period of time within which you wish to look for positions of the sun/moon.
C. Azimuth selector

1. Selected azimuth

It displays the selected azimuth and error value. You can select the azimuth in four different ways by using the bottom options: 2D, Compass, AR and Numeric. Setting an error value different to zero increases the likelihood of finding a result. Change the error value by using the Numeric tab.

2. Content area

This area is used by the 2D and Numeric tabs to introduce the desired azimuth, and in the case of the Numeric tab you can introduce the error value too.

3. 2D
4. Compass
5. Augmented Reality (AR)
6. Numeric

D. Elevation selector
1. **Selected elevation**

   It displays the selected elevation and error value. You can Select the elevation in four different ways by using the bottom options: 2D, Inclinometer, AR and Numeric. Setting an error value different to zero increases the likelihood of finding a result. Change the error value by using the Numeric tab.

2. **Content area**

   This area is used by Numeric tab to introduce the desired elevation and error value.

3. **2D**
4. **Inclinometer**
5. **Augmented Reality (AR)**
6. **Numeric**
Sun/moon at azimuth & elevation - Search button

Once you've introduced the desired date range and the position (azimuth and elevation) of the sun/moon, you just have to tap on the search button to find out dates and times when it happens.

1. Back button
2. Table of results
   List of results for the selected azimuth, date range and Observer's pin position: date and time, elevation and apparent altitude of the sun/moon at the location of the sun/moon's pin.
3. Sun/moon picture
   It tells you if the result will happen in daytime, golden hour, blue hour, nautical twilight, astronomical twilight or night-time. Furthermore, in the case of the moon, the picture shows you how you'd see the moon (phase and orientation) if you were placed in the location of the Observer's pin.

Sun in daytime
Sun in golden hour
Moon in daytime
Moon in golden hour
4. **Cancel button**

Cancel search and go back to Planner main screen.

5. **Share button**

Share your table of results on Facebook, Twitter or by e-mail. You can save it as an image too.

**TIPS**

- When you find a date that matches what you were looking for, just tap on it to send it to the planner for further study.
- You can sort the results by tapping on the top table options: "Date", "Elevation", "Altitude" and "Phase".
- If you want to capture the sun/moon when it is just above a building, you must follow these steps: place the sun/moon's pin in the location of the building and look for dates in the table of results in which the apparent height of the sun/moon is larger than the height of the building.
- Past results will appear under a grey filter.
Sun/moon at azimuth & elevation - Azimuth - 2D

Select the azimuth by dragging the sun/moon's pin or by dragging the horizontal azimuth slider on the map.

1. Observer's pin

The Observer's pin has been located in the Planner main screen. You cannot move it in this screen. To move it, please, go back to Planner main screen.

2. Sun/moon's pin

It represents the sun or the moon. You must place it in the location you would like the sun/moon to be.

3. Azimuth error area

Area that represents the selected azimuth error value you have considered to be acceptable for your search. All results will have azimuths that belong to this area.

4. Impossible azimuth area

The darker map area. It represents azimuths where it is impossible to find the sun/moon for the selected date range.
5. **Azimuth slider**

Select the azimuth by dragging the slider of the bar.

**TIPS**

- Tap on the Observer's pin to see its altitude above the sea level.
- Tap on the Sun/moon's pin to see its altitude above the sea level. Furthermore, after the vertical slash, you find the relative altitude between the Observer's pin and the Sun/moon's pin (Sun/moon's altitude - Observer's altitude) and the elevation angle (º) of the Sun/moon's pin relative to the Observer's pin.
- Imagine you wish to calculate when the moon will appear from behind a mountain. You must proceed as follows: first, in the main screen of the Planner, place the Observer's pin in the location from where you want to take the photo. Then tap on the Find button and select "Moon" and then "at azimuth and elevation". Second, in the azimuth selector 2D option, place the Moon's pin in the location of the mountain. Third, tap on the Moon's pin and keep in mind the relative elevation angle (º) between the Moon's pin and the Observer's pin. Fourth, tap on the elevation selector and use any bottom option to introduce an elevation equal to the relative elevation angle (º) between the Moon's pin and the Observer's pin. Finally, tap on the search button and choose a the date that suits you.
Sun/moon at azimuth & elevation - Azimuth - Compass

When planning photos in situ or scouting a location, the compass is one of the fastest ways to select the azimuth.

1. Cancel button
   Cancel azimuth selection and go back to previous screen.

2. Done button
   Select the azimuth.

3. Impossible azimuth area
   The darker compass area. It represents azimuths where it is impossible to find the sun/moon for the selected date range.

4. Azimuth info
   The azimuth that you are pointing at.

TIPS

- You can also select the azimuth by tapping on the compass.
- iPod Touch users: the iPod Touch does not have magnetometer and the compass needs it to orient. Therefore, the compass option is not available.
Sun/moon at azimuth & elevation - Azimuth - AR

When planning photos in situ or scouting a location, the Augmented Reality (AR) view is one of the fastest ways to select the desired position (azimuth and elevation) of the sun/moon. Select it by tapping on the augmented reality screen. This option selects both azimuth and elevation.

1. **Cancel button**
   
   Cancel azimuth selection and go back to previous screen.

2. **Done button**
   
   Select the position (azimuth and elevation).

3. **AR view**
   
   Tap on the augmented reality view to place the sun/moon in the desired position (azimuth and elevation).

   ![AR View](image)

   **Sun**

   **Moon**

**TIPS**

- Make sure you are away from any electronic device or magnetic field because they may interfere with the sensors of the device. It is recommended to wait a few seconds to let the system become stable.
- We recommend that you check on the azimuth selector (2D) map that the selected azimuth is the one you really wanted. If not, just adjust it on the map.
- Quality of the information displayed in the AR view is good enough to work, but it strongly depends on the limitations of the sensors of your device (GPS,
Accelerometer, Gyroscope). This is an issue we cannot control but, as technology advances, manufacturers improve the quality of sensors too.

- iPod Touch users: the iPod Touch does not have magnetometer. Therefore, it is not possible to draw in augmented reality (AR) the information of the sun, moon, milky way, celestial equator and celestial poles. This is the reason the AR is not available.
Sun/moon at azimuth & elevation - Azimuth - Numeric

Introduce the azimuth and the azimuth error numerically.

1. **Azimuth field**
   
   Introduce the azimuth numerically.

2. **Azimuth error field**
   
   Set the errors you are prepared to tolerate in your search. PhotoPills will look for results with azimuth between these two values: (azimuth-error, azimuth+error).

3. **Numeric keyboard**
Sun/moon at azimuth & elevation - Elevation - 2D

Select the elevation by dragging the sun/moon represented on the picture.

1. **Sun/moon**
   It's a representation of the sun/moon. Drag it to select the desired elevation.
   - Sun
   - Moon

2. **Elevation error area**
   Area that represents the selected elevation error value you have considered to be acceptable for your search. All results will have elevations that belong to this area.

3. **Observer's pin**
   A representation of the Observer's pin.
   - Observer's pin

4. **Sun/moon's pin**
   A representation of the sun/moon's pin.
   - Sun's pin
   - Moon's pin

5. **Sun/moon apparent altitude**
   Altitude of the sun/moon at the location of the sun/moon's pin.
6. Impossible elevation area

The darker area on the picture. It represents elevations where it is impossible to find the sun/moon for the selected azimuth and date range.

TIPS

- If you want to capture the sun/moon when it is just above a building, you must follow these steps: place the sun/moon's pin in the location of the building on the 2D azimuth selector map, then tap on the 2D elevation selector button and set an elevation that gives you an apparent sun/moon altitude larger than the height of the building.
Sun/moon at azimuth & elevation - Elevation - Inclinometer

It is useful if you wish to introduce an elevation that has the same value than the slope of a surface. Just align your device to a nearby slope that you have a good side profile of and tap on the done button.

1. **Cancel button**
   
   Cancel elevation selection and go back to previous screen.

2. **Done button**
   
   Select the elevation.

3. **Sun/moon**
   
   It's a representation of the sun/moon.

   - Sun
   - Moon

4. **Elevation error area**
   
   Area that represents the selected elevation error value you have considered to be acceptable for your search. All results will have elevations that belong to this area.

5. **Observer's pin**
   
   A representation of the Observer's pin.

   - Observer's pin
6. **Sun/moon's pin**
   A representation of the sun/moon's pin.
   - Sun's pin
   - Moon's pin

7. **Sun/moon apparent altitude**
   Altitude of the sun/moon at the location of the sun/moon's pin.

8. **Impossible elevation area**
   The darker inclinometer area. It represents elevations where it is impossible to find the sun/moon for the selected azimuth and date range.

9. **Elevation info**
   The elevation you are pointing at.
Sun/moon at azimuth & elevation - Elevation - AR

When planning photos in situ or scouting a location, the Augmented Reality (AR) view is one of the fastest ways to select the desired position (azimuth and elevation) of the sun/moon. Select it by tapping on the augmented reality screen. This option selects both azimuth and elevation.

1. **Cancel button**
   
   Cancel azimuth selection and go back to previous screen.

2. **Done button**
   
   Select the position (azimuth and elevation).

3. **AR view**
   
   Tap on the augmented reality view to place the sun/moon in the desired position (azimuth and elevation).

TIPS

- Make sure you are away from any electronic device or magnetic field because they may interfere with the sensors of the device. It is recommended to wait a few seconds to let the system become stable.
- We recommend that you check on the azimuth selector (2D) map that the selected azimuth is the one you really wanted. If not, just adjust it on the map.
- Quality of the information displayed in the AR view is good enough to work, but it strongly depends on the limitations of the sensors of your device (GPS, Accelerometer, Gyroscope). This is an issue we cannot control but, as technology advances, manufacturers improve the quality of sensors too.
iPod Touch users: the iPod Touch does not have magnetometer. Therefore, it is not possible to draw in augmented reality (AR) the information of the sun, moon, milky way, celestial equator and celestial poles. This is the reason the AR is not available.
Sun/moon at azimuth & elevation - Elevation - Numeric

Introduce the elevation and elevation error numerically.

1. **Elevation field**
   
   Introduce the elevation numerically.

2. **Elevation error field**
   
   Set the errors you are prepared to tolerate in your search. PhotoPills will look for results with elevations between these two values: (elevation-error, elevation+error).

3. **Sun/moon apparent altitude field**
   
   Altitude of the sun/moon at the location of the sun/moon's pin.

4. **Numeric keyboard**

**TIPS**

- If you want to capture the sun/moon when it is just above a building, you must follow these steps: place the sun/moon's pin in the location of the building on the 2D azimuth selector map, then tap on the Numeric elevation selector button and set an apparent sun/moon altitude larger than the height of the building.
Planner - Augmented Reality (AR)

Plan your shots in situ and adjust your frame for the best composition before you shoot. Make sure that the sun/moon will be at the desired position. Reduce trial and error. Just locate yourself at the position of the Observer’s pin and visualize in augmented reality for the selected date and time: sun/moon position, sun/moon path, sunrise/moonrise directions, sunset/moonset directions.

A. Top button

1. Done button
   Go back to Planner main screen.

B. AR view
1. AR information

Sun path

Moon path

Horizon

Elevation and azimuthal lines

TIPS

- The information displayed on the AR view depends on the position of the Observer's pin. Make sure you are at the position of the Observer's pin when visualizing the augmented reality information.
- Make sure you are away from any electronic device or magnetic field because they may interfere with the sensors of the device. It is recommended to wait a few seconds to let the system become stable.
- Quality of the information displayed in the AR view is good enough to work, but it strongly depends on the limitations of the sensors of your device (GPS, Accelerometer, Gyroscope). This is an issue we cannot control but, as technology advances, manufacturers improve the quality of sensors too.
- iPod Touch users: the iPod Touch does not have magnetometer. Therefore, it is not possible to draw in augmented reality (AR) the information of the sun, moon, milky way, celestial ecuator and celestial poles. This is the reason the AR is not available.
Planner - Night AR

Plan your night shots in situ and adjust your frame for the best composition before you shoot. Reduce trial and error. Just locate yourself at the position of the Observer’s pin and visualize in augmented reality for the selected date and time: milky way, celestial equator, Polaris, north/south celestial pole, circumpolar stars path and sense of rotation, moon position, moon path, moonrise/set directions, right ascension and declination lines.

A. Top button

1. Done button

Go back to Planner main screen.

B. AR view
1. **AR information**

Milky way

Celestial equator

Moon path

Horizon

Right ascension and declination lines

North celestial pole

South celestial pole

**TIPS**

- The stars in movement show you the rotation sense around celestial poles.
- The information displayed on the AR view depends on the position of the Observer's pin. Make sure you are at the position of the Observer's pin when visualizing the augmented reality information.
- Make sure you are away from any electronic device or magnetic field because they may interfere with the sensors of the device. It is recommended to wait a few seconds to let the system become stable.
- Quality of the information displayed in the AR view is good enough to work, but it strongly depends on the limitations of the sensors of your device (GPS, Accelerometer, Gyroscope). This is an issue we cannot control but, as technology advances, manufacturers improve the quality of sensors too.
Planner - Horizon

Calculate the height above the horizon of the Observer's pin. When you are at the top of a mountain or on the roof of a tall building, at a considerable height above the horizon, you need to adjust the calculations of the sun/moon rise/set times. For example, if an Observer is located at the top of a mountain, at 2,000 feet of height above his horizon, he will see the sunrise earlier than other observer located at the horizon level. Therefore, time and azimuth must be adjusted to the Observer's height above the horizon.

a. Top buttons
b. On a mountain picture
c. On a building picture
d. Map

A. Top buttons

1. Back button
2. Done button

Once you've calculated the observer's height above the horizon, tap on this button to go back to the Planner main screen and see the adjusted sun/moon rise and set times.
B. On a mountain picture

1. **Observer's pin**

   The Observer's pin must be located on a mountain. Use the map of the Planner main screen or the map below this picture.

   ![Observer's pin](image)

2. **Observer's pin altitude**

   The height of the Observer's pin above sea level.

3. **Horizon's pin**

   It represents the horizon. You must situate this pin in the place where you visualize your horizon.

   ![Horizon's pin](image)

4. **Horizon's pin altitude**

   The height of the Horizon's pin above sea level.

5. **Height above the horizon**

   The vertical distance of an object or location above the horizon level. It is calculated as the difference between the Observer's pin and the Horizon's pin altitudes.

6. **Distance to the horizon**

   Distance between the Observer's pin and the Horizon's pin.
C. On a building picture

1. **Observer's pin**
   
   The Observer's pin must be placed in the location of the building. Use the map of the Planner main screen or the map below this picture.

2. **Observer's pin altitude**
   
   The height of the Observer's pin above sea level.

3. **Building height**
   
   Height of the observation deck or building floor from where you want to take the photo.

4. **Building altitude**
   
   The height of the building ground floor above sea level.

5. **Horizon's pin**
   
   It represents the horizon. You must situate this pin in the place where you visualize your horizon.

6. **Horizon's pin altitude**
   
   The height of the Horizon's pin above sea level.

7. **Height above the horizon**
   
   The vertical distance of an object or location above the horizon level. It is calculated as the difference between the Observer's pin and the Horizon's pin altitudes.

8. **Distance to the horizon**
   
   Distance between the Observer's pin and the Horizon's pin.
D. Map

1. Observer's pin

The Observer's pin must be placed in the location of the building or on a mountain. Use the map of the Planner main screen or this map.

![Observer's pin](image)

2. Horizon's pin

It represents the horizon. You must situate this pin in the place where you visualize your horizon.

![Horizon's pin](image)

**TIPS**

- This option must only be used to calculate the Height Above the Horizon of the Observer's Pin. Do not confuse it with the "Obstacles calculator".
- The Observer's pin must always be located at a higher elevation than the Horizon's pin, otherwise it makes no sense to use this option.
- It is recommended to adjust rise and set times for height above the horizon larger than 950 feet (290 m).
- If PhotoPills is unable to read the Altitude value from the server, the Altitude value will appear with this sign “--”. This may happen if an error occurs when PhotoPills tries to update the “Altitude” information or when there is no network coverage.
Load your Plannings and Locations from your database.

1. **Cancel button**
2. **Search Location**

   The fastest way to look for a location. Type the name of a location to start the search. Automatically, the resulting list of the search will show up. Tap on the location you desire to see it on the Planner.

3. **Load Planning**

   Tap on it to see your list of plannings and choose the one you want to send to the Planner. Load the location, date and time of those creative photos that you have already thoughtfully planned and you wish to check.

4. **Load Point of Interest**

   Load locations from your database to use them in your planning.

5. **Load (latitude,longitude)**

   Load a location by introducing the latitude and longitude in degrees (°).
Planner - Share

Meet up! Invite your friends to come with you to take the photos you've planned. Surprise your customers showing them how thoughtfully you have planned their photos. Share your photo plannings and locations on Facebook, Twitter and e-mail. Export them by e-mail in KML format. Save as an image.

1. Share on Facebook
2. Share on Twitter
3. Share and export by e-mail (KML)

Export your photo Plannings and Points of Interest by mail using the format used by Google Earth (KML). This way, if your colleague is a Photopiller, he will be able to import the Planning or Point of Interest, and play with it in the Planner. Once you have opened the e-mail, do a long press on the KML file until a window shows up. Choose “Open in PhotoPills”. The file will be stored in your planning list.

4. Save as an image
5. Cancel
All the information you need about the Sun, relative to your current location and for any date and time you choose. Share Sun information on Facebook, Twitter or by e-mail.

The first time you use it, PhotoPills needs time to calculate your location (GPS) to show you the correct information. Afterwards, PhotoPills begins using your last location and then updates it.

A. Information
1. **Home button**
2. **Rise/set information**

   Rise and set times for the selected date and your current location.

3. **Information table**

   Drag the screen towards the left to see the information table: sunrise, sunset, transit time, daylight, time to sunset, azimuth, elevation, distance to the Earth, shadow ratio, golden hour, blue hour and twilights.

**TIPS**

- Tap on the "Position" field of the information table to change the location.
- Tap on the "Date" field of the information table to change the date and time.
- Double tap on the picture of the sun or shake the device to come back to the current date and time.
- Tap on the right hand side of the picture of the sun to go to the following day.
- Tap on the left hand side to go backwards to the previous day.
- Drag the picture of the sun from up to down to go forwards in time. Drag it from down to up to go backwards in time.

**B. Calendar**

1. **Home button**
2. **Today button**

   Come back to the current date.

3. **Rise/set calendar**

   Calendar of sunrise and sunset times.
TIPS

- Drag the calendar towards the left to see the information table of the following month. Drag the calendar towards the right to see the information table of the previous month.
- Tap on a date to go to the Info tab and see the information related to that date.
- You can sort the sunrise and sunset table by tapping on the top table options "day", "Rises" and "Sets".
- Shake the device to come back to the current month.

C. AR

1. **Home button**
2. **AR view**

Plan your shots in situ and adjust your frame for the best composition before you shoot. Make sure that the sun is at the desired position. Reduce trial and error. Visualize in augmented reality the position of the sun and its path for the selected date and time, including sunrise and sunset directions. All the information is related to your current location.

Sun path

Horizon

Elevation and azimuthal lines
TIPS

- Make sure you are away from any electronic device or magnetic field because they may interfere with the sensors of the device. It is recommended to wait a few seconds to let the system become stable.
- Quality of the information displayed in the AR view is good enough to work, but it strongly depends on the limitations of the sensors of your device (GPS, Accelerometer, Gyroscope). This is an issue we cannot control but, as technology advances, manufacturers improve the quality of sensors too.

D. Seasons

1. **Home button**
   
   Come back to the current year

2. **Current year button**

3. **Solstices/equinoxes**

   Solstices and equinoxes date and time for the selected year and location.

TIPS

- Drag the table towards the left to see the information table of the following year. Drag it towards the right to see the information table of the previous year.
- Tap on a date to go to the Info tab and see the information related to that date.
- Shake the device to come back to the current year.
E. Action

1. **Send to Planner button**

   Send date and time to the Planner for further study.

2. **Share on Facebook**
3. **Share on Twitter**
4. **Share by e-mail**
5. **Save as an image**
6. **Cancel**
All the information you need about the Moon, relative to your current location and for any date and time you choose. Share Moon information on Facebook, Twitter or by e-mail. The first time you use it, PhotoPills needs time to calculate your location (GPS) to show you the correct information. Afterwards, PhotoPills begins using your last location and then updates it.

A. Information

1. Home button
2. Moon phase

Moon phase information and picture of the moon that shows how you would see the moon for the selected date, time and location.

Daytime  Night-time
Moonset in daytime  Moonset in night-time

3. Information table

Drag the screen towards the left to see the information table: moonrise, moonset, transit time, time to moonrise, azimuth, elevation, distance to the Earth, moon age and shadow ratio.

TIPS

- Tap on the "Position" field of the information table to change the location.
- Tap on the "Date" field of the information table to change the date and time.
- Double tap on the picture of the moon or shake the device to come back to the current date and time.
- Tap on the right hand side of the picture of the moon to go to the following day. Tap on the left hand side to go backwards to the previous day.
- Drag the picture of the moon from up to down to go forwards in time. Drag it from down to up to go backwards in time.

B. Calendar
1. **Home button**
2. **Today button**

Come back to the current date.

3. **Moon calendar**

Moon calendar for the selected month.

**TIPS**

- Drag the calendar towards the left to see the information of the following month. Drag it towards the right to see the information of the previous month.
- Tap on a date to go to the Info tab and see the information related to that date.
- Shake the device to come back to the current month.

**C. AR**

1. **Home button**
2. **AR view**

Plan your shots in situ and adjust your frame for the best composition before you shot. Make sure that the moon is at the desired position. Reduce trial and error. Visualize in augmented reality the position of the moon and its path for the selected date and time, including moonrise and moonset directions. All the information is related to your current location.

Moon path

Horizon
TIPS

- Make sure you are away from any electronic device or magnetic field because they may interfere with the sensors of the device. It is recommended to wait a few seconds to let the system become stable.
- Quality of the information displayed in the AR view is good enough to work, but it strongly depends on the limitations of the sensors of your device (GPS, Accelerometer, Gyroscope). This is an issue we cannot control but, as technology advances, manufacturers improve the quality of sensors too.
- iPod Touch users: the iPod Touch does not have magnetometer. Therefore, it is not possible to draw in augmented reality (AR) the information of the sun, moon, milky way, celestial equator and celestial poles. This is the reason the AR is not available.

D. Distances

1. Home button
2. Current year button

Come back to the current year.

3. Perigees/apogees

Perigees and apogees date, time and moon phase for the selected year and your current location. Find out when the moon is a super moon.
4. Moon picture

It tells you if the perigee/apogee will happen in daytime, golden hour, blue hour, nautical twilight, astronomical twilight or night-time. Furthermore, the picture shows you how you'd see the moon (phase and orientation) from your current position.

- Moon in daytime
- Moon in golden hour
- Moon in blue hour
- Moon in nautical twilight
- Moon in astronomical twilight
- Moon in night-time

TIPS

- Tap on a date to go to the Info tab and see the information related to that date.
- Drag the table towards the left to see the information table of the following year. Drag it towards the right to see the information table of the previous year.
- Shake the device to come back to the current year.
- You can sort the perigees/apogees table by tapping on the top table options "day", "Distances" and "Phase".

E. Action
1. **Send to Planner button**

Send date and time to the Planner for further study.

2. Share on Facebook
3. Share on Twitter
4. Share by e-mail
5. Save as an image
6. Cancel
Long Exposure Photography is something that can take your breath away when you get it right. Put all your energy in the creativity part, leave all calculations to PhotoPills. Calculate equivalent exposures. Created to help you with shooting long exposures with filters, in low light and at night.

A. Top button

1. Home button

B. Calculator
1. Calculating options

Choose the setting you wish to calculate: shutter speed, aperture or ISO.

2. Test settings

Introduce aperture, shutter speed and ISO that gives you a test photo correctly exposed.

3. Equivalent settings

Introduce the camera settings you wish to use to take the final photo. For example, if you have decided to calculate the shutter speed, these settings are aperture, ISO and filter. In this case, these settings will be used to calculate the shutter speed that gives you the same exposure value and, therefore, the photo will be exposed correctly.

4. Results

Calculated setting (shutter speed, aperture or ISO) and exposure value (EV).

C. Bottom options

1. Exposure values

Exposure values (EV) for ISO 100 related to different types of lighting situations.

2. Share

Share exposure calculations on Facebook, Twitter or by e-mail. Save your calculations as an image.
Depth of Field (DoF)

Classic DoF

Get the creative control on the design of your photos. Decide the zone of sharpness you need to tell the story you want and get your message across. Reduce trial and error, have the calculations done for the result you desire. Both settings to DoF and DoF to Settings. Learn and improve, quickly understand the relations among aperture, focal length, subject distance and DoF/hyperfocal distance.

A. Top button

1. Home button

B. Camera

1. Camera button
C. Calculator

1. Photo settings
   Introduce focal distance, aperture, subject distance and teleconverter factor to calculate DoF information.

2. Table of results
   Get the following DoF information: hyperfocal distance, hyperfocal distance near limit, DoF near limit, DoF far limit, total depth of field, depth of field in front and behind.

3. Visual results: DoF
   Visualize DoF information on a picture.

4. Visual results: Hyperfocal
   Visualize hyperfocal information on a picture
D. Bottom options

1. **Inverse**

2. **Advanced**
   It sends the camera settings to Advanced DoF calculator.

3. **To FoV**
   It sends the settings to the Classic FoV calculator.

4. **AR**
5. **Share**
Classic DoF - Camera button

Select a camera from a database or from your list of customized cameras.

1. **Back button**
2. **Add camera button**

If you don't find your camera in the database, you can create your own customized camera. Tap on this button and introduce: camera name and sensor information. The circle of confusion can be calculated or introduced numerically. The cameras you create will appear as "customized cameras" in the table of cameras.

3. **Camera search bar**

Quick camera search. For example, write D90 to find the camera Nikon D90.

4. **Camera table**

Your most recently used cameras, your customized cameras and a large database of cameras in alphabetical order.

**TIPS**

- To select a customized camera, you must tap on it and then tap on the select button from the camera information screen. From this screen, you can also eliminate the camera or change its settings.
Classic DoF - Inverse

Decide the zone of sharpness you need to tell the story you want and get your message across. Reduce trial and error, have the calculations done for the result you desire.

1. Calculating options

Choose the setting you wish to calculate: focal length, aperture or subject distance.

2. Photo settings

Depending on the setting you wish to calculate you must introduce the rest of the camera settings and DoF information. For example, if you have decided to calculate the focal length, you need to introduce the aperture, subject distance, teleconverer factor and desired DoF. In this case, these settings will be used to calculate the focal length that gives you the depth of field you wish to have in the photo.

3. Results

Like the Direct Classic DoF calculator, results are displayed in two different ways: in a table and on a picture (DoF and hyperfocal).

4. Direct

Go back to the Direct Classic DoF calculator (settings to DoF calculator).

5. Advanced inverse

It sends the camera settings to the Advanced Inverse DoF calculator.
Classic Dof - Augmented Reality

Once you've done all the DoF calculations that gives you the desired depth of field effect, use the AR view to visualize and measure in situ the following distances: subject distance, DoF near limit, DoF far limit and hyperfocal distance.

1. **Done button**
   
   Go back to the DoF calculator.

2. **AR information**
   
   - DoF near limit
   - Subject distance
   - DoF far limit
   - Hyperfocal distance

**TIPS**

- All lines are drawn on the ground. It is assumed that your device is situated 1.35 m over the ground level. This height can be customized from the PhotoPills Settings button located in "My Stuff" menu.
- You can use the ruler to measure distances. If you are using the Metric units system, each separation measures 0.5 m. If you are using the Imperial units system, each separation measures 1 foot.
- Make sure you are away from any electronic device or magnetic field because they may interfere with the sensors of the device. It is recommended to wait a few seconds to let the system become stable.
- Quality of the information displayed in the AR view is good enough to work, but it strongly depends on the limitations of the sensors of your device (GPS, Accelerometer, Gyroscope). This is an issue we cannot control but, as technology advances, manufacturers improve the quality of sensors too.
Classical DoF - Share

Share your DoF calculations on Facebook, Twitter or by e-mail. Save your calculations as an image.

1. Share on Facebook
2. Share on Twitter
3. Share by e-mail
4. Save as an image
5. Cancel
Advanced DoF

Get more control over what is "acceptably sharp". Take into account your camera sensor size, print size, viewing distance and visual acuity to adjust your camera CoC that will be used in your DoF calculations.

A. Top button

- Home button

B. CoC

1. CoC button
C. Calculator

1. Photo settings
   Introduce focal distance, aperture, subject distance and teleconverter factor to calculate DoF information.

2. Table of results
   Get the following DoF information: hyperfocal distance, hyperfocal distance near limit, DoF near limit, DoF far limit, total depth of field, depth of field in front and behind.

3. Visual results: DoF
   Visualize DoF information on a picture.

4. Visual results: Hyperfocal
   Visualize hyperfocal information on a picture.
D. Bottom options

1. **Inverse**

2. **Classic**
   It sends the camera settings to Classic DoF calculator

3. **To FoV**
   It sends the settings to the Classic FoV calculator.

4. **AR**
5. **Share**
Advanced DoF - CoC Calculator

Calculate the adjusted Circle of Confusion (CoC) taking into account your camera sensor size, print size, viewing distance and visual acuity.

1. Back button
2. Adjusted CoC

   Calculated Circle of Confusion that will be used in your DoF calculations.

3. CoC Settings

   Introduce your camera, print size, viewing distance and visual acuity.

4. Load default values

   Load the default CoC settings values: print size 8x10 inch (0.25mx0.17m), viewing distance of 1 foot (0.25 m) and manufacturer standard visual acuity.

TIPS

- If you use the default values, Advanced DoF and Classic DoF calculators give the same results.
Advanced DoF - Inverse

Decide the zone of sharpness you need to tell the story you want and get your message across. Reduce trial and error, have the calculations done for the result you desire.

1. Calculating options

Choose the setting you wish to calculate: focal length, aperture or subject distance.

2. Photo settings

Depending on the setting you wish to calculate you must introduce the rest of camera settings and DoF information. For example, if you have decided to calculate the focal length, you need to introduce the aperture, subject distance, teleconverter factor and desired DoF. In this case, these settings will be used to calculate the focal length that gives you the depth of field you wish to have in the photo.

3. Results

Like the Direct Advanced DoF calculator, results are displayed in two different ways: in a table and on a picture (DoF and hyperfocal).

4. Direct

Go back to the Direct Advanced DoF calculator (settings to DoF calculator).

5. Classic inverse

It sends the camera settings to the Classic Inverse DoF calculator.
Advanced DoF - Augmented Reality

Once you've done all the DoF calculations that gives you the desired depth of field effect, use the AR view to visualize and measure in situ the following distances: subject distance, DoF near limit, DoF far limit and hyperfocal distance.

1. **Done button**
   
   Go back to the DoF calculator.

2. **AR information**
   
   ![Diagram showing AR information]
   
   - DoF near limit
   - Subject distance
   - DoF far limit
   - Hyperfocal distance

**TIPS**

- All lines are drawn on the ground. It is assumed that your device is situated 1.35 m over the ground level. This height can be customized from the PhotoPills Settings button located in "My Stuff" menu.
- You can use the ruler to measure distances. If you are using the Metric units system, each separation measures 0.5 m. If you are using the Imperial units system, each separation measures 1 foot.
- Make sure you are away from any electronic device or magnetic field because they may interfere with the sensors of the device. It is recommended to wait a few seconds to let the system become stable.
- Quality of the information displayed in the AR view is good enough to work, but it strongly depends on the limitations of the sensors of your device (GPS, Accelerometer, Gyroscope). This is an issue we cannot control but, as technology advances, manufacturers improve the quality of sensors too.
Advanced DoF - Share

Share your DoF calculations on Facebook, Twitter or by e-mail. Save your calculations as an image.

1. Share on Facebook
2. Share on Twitter
3. Share by e-mail
4. Save as an image
5. Cancel
DoF Table

The fastest way to have your DoF and Hyperfocal calculations done. Visualize how depth of field changes with aperture and subject distance for a given focal length. Learn and improve. Quickly understand the relations between aperture, focal length, subject distance and DoF/hyperfocal distance.

A. Top button

1. Home button

B. Camera

1. Camera button
C. DoF table

1. **Focal length button**

   Introduce the focal length you wish to use.

2. **DoF options**

   Tap on it to switch between total DoF or DoF limits information table.

3. **Table of results**

   Browse the table to find out the combination of subject distance and aperture that gives you the sharpness you need in your photo. Find the hyperfocal distance in the first row.

D. Bottom options

1. **Visual**
2. **AR**
3. **Share**
DoF Table - Camera button

Select a camera from a database or from your list of customized cameras.

1. **Back button**
2. **Add camera button**

If you don't find your camera in the database, you can create your own customized camera. Tap on this button and introduce: camera name and sensor information. The circle of confusion can be calculated or introduced numerically. The cameras you create will appear as "customized cameras" in the table of cameras.

3. **Camera search bar**

Quick camera search. For example, write D90 to find the camera Nikon D90.

4. **Camera table**

Your most recently used cameras, your customized cameras and a large database of cameras in alphabetical order.

**TIPS**

- To select a customized camera, you must tap on it and then tap on the select button from the camera information screen. From this screen, you can also eliminate the camera or change its settings.
DoF Table - Visual

Select a cell from the table and tap on the Visual button to see the depth of field information on a drawing.

1. **Done button**
   
   Go back to the DoF table.

2. **DoF information**
3. **Hyperfocal information**
4. **Camera settings**

   Focal length and aperture used in the calculations.
DoF Table - Augmented Reality

Select a cell from the table and tap on the AR button to visualize and measure in situ the following distances: subject distance, DoF near limit, DoF far limit and hyperfocal distance.

1. Done button
Go back to DoF table.

2. AR information

- DoF near limit
- Subject distance
- DoF far limit
- Hyperfocal distance

TIPS

- All lines are drawn on the ground. It is assumed that your device is situated 1.35 m over the ground level. This height can be customized from the PhotoPills Settings button located in "My Stuff" menu.
- You can use the ruler to measure distances. If you are using the Metric units system, each separation measures 0.5 m. If you are using the Imperial units system, each separation measures 1 foot.
- Make sure you are away from any electronic device or magnetic field because they may interfere with the sensors of the device. It is recommended to wait a few seconds to let the system become stable.
- Quality of the information displayed in the AR view is good enough to work, but it strongly depends on the limitations of the sensors of your device (GPS, Accelerometer, Gyroscope). This is an issue we cannot control but, as technology advances, manufacturers improve the quality of sensors too.
DoF Table - Share

Share your DoF table in Facebook, Twitter or by e-mail. Save it as an image.

1. Share on Facebook
2. Share on Twitter
3. Share by e-mail
4. Save as an image
5. Cancel
Hyperfocal Table

The fastest way to have your Hyperfocal calculations done. Visualize how hyperfocal distance changes with aperture and focal length. Learn and improve. Quickly understand the relations between aperture, focal length and hyperfocal distance.

a. Top button
b. Camera
c. Hyperfocal Table
d. Bottom options

A. Top button

1. Home button

B. Camera

1. Camera button
C. Hyperfocal table

1. Table of results

Browse the table to find out the combination of focal length and aperture that gives you the sharpness you need in your photo.

D. Bottom options

1. Visual
2. AR
3. Share
Hyperfocal Table - Camera button

Select a camera from a database or from your list of customized cameras.

1. **Back button**
2. **Add camera button**

   If you don't find your camera in the database, you can create your own customized camera. Tap on this button and introduce: camera name and sensor information. The circle of confusion can be calculated or introduced numerically. The cameras you create will appear as "customized cameras" in the table of cameras.

3. **Camera search bar**

   Quick camera search. For example, write D90 to find the camera Nikon D90.

4. **Camera table**

   Your most recently used cameras, your customized cameras and a large database of cameras in alphabetical order.

**TIPS**

- To select a customized camera, you must tap on it and then tap on the select button from the camera information screen. From this screen, you can also eliminate the camera or change its settings.
Hyperfocal Table - Visual

Select a cell from the table and tap on the Visual button to see the hyperfocal distance on a drawing.

1. **Done button**
   
   Go back to Hyperfocal table.

2. **DoF information**
3. **Hyperfocal information**
4. **Camera settings**

   Focal length and aperture used in the calculations.
Hyperfocal Table - Augmented Reality

Select a cell from the table and tap on the AR button to visualize and measure in situ the hyperfocal distance.

1. **Done button**
   
   Go back to Hyperfocal table.

2. **AR information**

   ![Hyperfocal distance](image)

   **TIPS**

   - The hyperfocal distance is drawn on the ground. It is assumed that your device is situated 1.35 m over the ground level. This height can be customized from the PhotoPills Settings button located in "My Stuff" menu.
   - You can use the ruler to measure distances. If you are using the Metric units system, each separation measures 0.5 m. If you are using the Imperial units system, each separation measures 1 foot.
   - Make sure you are away from any electronic device or magnetic field because they may interfere with the sensors of the device. It is recommended to wait a few seconds to let the system become stable.
   - Quality of the information displayed in the AR view is good enough to work, but it strongly depends on the limitations of the sensors of your device (GPS, Accelerometer, Gyroscope). This is an issue we cannot control but, as technology advances, manufacturers improve the quality of sensors too.
Hyperfocal Table - Share

Share your Hyperfocal table in Facebook, Twitter or by e-mail. Save it as an image.

1. Share on Facebook
2. Share on Twitter
3. Share by e-mail
4. Save as an image
5. Cancel
Field of View (FoV)

Classic FoV

Digital directors viewfinder. Perfect for location scouting or making storyboards. It helps you to predetermine proper rectilinear lens selection and subject distance for the desired framing. Preview what would be captured in your frame. Reduce trial and error. Have the calculations done for the result you desire. Both settings to FoV and FoV to Settings. Learn and improve. Quickly understand the relations between camera sensor, focal length, subject distance and field of view.

A. Top button
   1. Home button

B. Camera
   1. Camera button
C. Calculator

1. **Photo settings**
   Introduce focal length, subject distance and camera orientation.

2. **Table of results**
   Get the following FoV information: horizontal, vertical and diagonal field and angle of view.

3. **Visual results**
   Visualize FoV information on a picture.

**TIPS**
- It only works for rectilinear lenses.

D. **Bottom options**

1. **Inverse**
2. **AR**
3. **Share**
Classic FoV - Camera button

Select a camera from a database or from your list of customized cameras.

1. **Back button**
2. **Add camera button**

   If you don't find your camera in the database, you can create your own customized camera. Tap on this button and introduce: camera name and sensor information. The circle of confusion can be calculated or introduced numerically. The cameras you create will appear as "customized cameras" in the table of cameras.

3. **Camera search bar**

   Quick camera search. For example, write D90 to find the camera Nikon D90.

4. **Camera table**

   Your most recently used cameras, your customized cameras and a large database of cameras in alphabetical order.

**TIPS**

- To select a customized camera, you must tap on it and then tap on the select button from the camera information screen. From this screen, you can also eliminate the camera or change its settings.
Classic FoV - Inverse

Decide the field of view you need to tell the story you want and get your message across. Reduce trial and error. Have the calculations done for the result you desire.

1. Calculating options

Choose the setting you wish to calculate: focal length or subject distance.

2. Photo settings

Depending on the setting you wish to calculate you must introduce the rest of camera settings and FoV information. For example, if you have decided to calculate the focal length, you need to introduce the subject distance, camera orientation and desired FoV. In this case, these settings will be used to calculate the focal length that gives you the field of view you wish.

3. Results

Like the Direct Classic FoV calculator, results are displayed in two different ways: in a table and on a picture.

4. Direct

Go back to the Direct Classic FoV calculator.
Classic FoV - Augmented Reality

Digital directors viewfinder. For a given camera, focal length, subject distance and camera orientation, you can visualize in augmented reality what you would capture in the photo. Tap on the screen and position your frame where you want. Reduce trial and error. Make sure you take the photo you want.

1. **Done button**
   Go back to the FoV calculator.

2. **AR information**
   Frame.

**TIPS**

- Make sure you are away from any electronic device or magnetic field because they may interfere with the sensors of the device. It is recommended to wait a few seconds to let the system become stable.
- Quality of the information displayed in the AR view is good enough to work, but it strongly depends on the limitations of the sensors of your device (GPS, Accelerometer, Gyroscope). This is an issue we cannot control but, as technology advances, manufacturers improve the quality of sensors too.
Classic FoV - Share

Share your FoV calculations in Facebook, Twitter or by e-mail. Save your calculations as an Image.

1. Share on Facebook
2. Share on Twitter
3. Share by e-mail
4. Save as an Image
5. Cancel
Subject distance

Make sure your subject fits in your frame. Calculate the minimum distance between your lens and the subject to capture it.

A. Top button

1. Home button

B. Camera

1. Camera button
C. Calculator

1. **Photo settings**
   
   Introduce focal length, subject dimensions and camera orientation.

2. **Visual results**

   Calculated minimum subject distance.

D. Bottom options

1. **To DoF**

   It sends the settings to the Classic DoF calculator.

2. **To FoV**

   It sends the settings to the Classic FoV calculator.

3. **AR**

4. **Share**
Subject distance - Camera button

Select a camera from a database or from your list of customized cameras.

1. **Back button**
2. **Add camera button**

If you don't find your camera in the database, you can create your own customized camera. Tap on this button and introduce: camera name and sensor information. The circle of confusion can be calculated or introduced numerically. The cameras you create will appear as "customized cameras" in the table of cameras.

3. **Camera search bar**

Quick camera search. For example, write D90 to find the camera Nikon D90.

4. **Camera table**

Your most recently used cameras, your customized cameras and a large database of cameras in alphabetical order.

**TIPS**

- To select a customized camera, you must tap on it and then tap on the select button from the camera information screen. From this screen, you can also eliminate the camera or change its settings.
Subject distance - Augmented Reality

Visualize and measure in situ the calculated minimum subject distance.

1. **Done button**
   Go back to Subject Distance calculator.

2. **AR information**
   - Subject distance

**TIPS**

- Subject distance is drawn on the ground. It is assumed that your device is situated 1.35 m over the ground level. This height can be customized from the PhotoPills Settings button located in "My Stuff" menu.
- You can use the ruler to measure distances. If you are using the Metric units system, each separation measures 0.5 m. If you are using the Imperial units system, each separation measures 1 foot.
- Make sure you are away from any electronic device or magnetic field because they may interfere with the sensors of the device. It is recommended to wait a few seconds to let the system become stable.
- Quality of the information displayed in the AR view is good enough to work, but it strongly depends on the limitations of the sensors of your device (GPS, Accelerometer, Gyroscope). This is an issue we cannot control but, as technology advances, manufacturers improve the quality of sensors too.
Subject distance - Share

Share your Subject Distance calculations on Facebook, Twitter or by e-mail. Save your calculations as an image.

1. Share on Facebook
2. Share on Twitter
3. Share by e-mail
4. Save as an image
5. Cancel
Focal length match

Compute the equivalent lens focal length to produce the same field of view between two cameras with different sensor sizes.

A. Top button

1. Home button

B. Calculator

1. Initial camera and focal length

Introduce the camera and focal length that give you the desired field of view.
2. Final camera and focal length

Introduce the camera you wish to use to calculate the equivalent focal length you need to produce the same field of view.

C. Bottom option

1. Share button

Share your Focal Length Match calculations in Facebook, Twitter or e-mail. Save your calculations as an image.
If you are a night photographer, you are going to love it. Plan your night shots in situ and adjust your frame for the best composition before you shoot. All the night information you need relative to your current location. You will be able to visualize in augmented reality for the current date and time: milky way, celestial equator, Polaris, north/south celestial pole, circumpolar stars path and sense of rotation, moon position, moon path, moonrise/set directions, right ascension and declinations lines.

A. Top buttons

1. Home button
2. Settings button

Use this button to change both date and position.
B. AR view

1. AR information

Milky way

Celestial equator

Moon path

Horizon

Right ascension and declination lines

North celestial pole

South celestial pole
TIPS

- Stars that are moving show you the sense of rotation about the celestial poles.
- Make sure you are away from any electronic device or magnetic field because they may interfere with the sensors of the device. It is recommended to wait a few seconds to let the system become stable.
- Quality of the information displayed in the AR view is good enough to work, but it strongly depends on the limitations of the sensors of your device (GPS, Accelerometer, Gyroscope). This is an issue we cannot control but, as technology advances, manufacturers improve the quality of sensors too.
- iPod Touch users: the iPod Touch does not have magnetometer. Therefore, it is not possible to draw in augmented reality (AR) the information of the sun, moon, milky way, celestial equator and celestial poles. This is the reason the AR is not available.
Star Trails

Long exposure photos of circumpolar stars are spectacular. Make your own simulations of star trails. Visualize how stars rotate and the angle they make in a given exposure time.

A. Top button

1. Home button

B. Calculator
1. **Star Trails settings**

   Introduce desired exposure time or rotation angle and the hemisphere, to visualize a simulation of the star trails.

2. **Star Trails picture**

   A simulation of the Star Trails.

**TIPS**

- Drag your finger drawing a circle on the simulation of the star trails to rotate the stars.
- Estimate exposure time of already taken photos. Rotate the stars until you get a similar picture as the one described in the photo to have an estimation of the exposure time.

**C. Bottom option**

1. **Share button**

   Share your Star Trails calculations in Facebook, Twitter or e-mail. Save your calculations as an image.
Spot Stars

Calculate the maximum exposure time to get stars as bright spots in your photos.

A. Top button

1. Home button

B. Camera

1. Camera button
C. Calculator

1. Photo settings

Introduce focal length and minimum declination of the stars that are captured in your frame to calculate the maximum exposure time to get stars as spots.

2. Results

The first maximum exposure time you get is more accurate (600 rule). It takes into account sensor size, focal length and minimum declination of the stars. The second one is less accurate (500 rule) but useful when you don't know the minimal star declination.

TIPS

- You can estimate the Minimum Declination of the Stars using PhotoPills Night AR or PhotoPills Planner Night AR.

D. Bottom option

1. Share button

Share your Spot Stars calculations in Facebook, Twitter or e-mail. Save your calculations as an image.
Spot Stars - Camera button

Select a camera from a database or from your list of customized cameras.

1. Back button
2. Add camera button

If you don’t find your camera in the database, you can create your own customized camera. Tap on this button and introduce: camera name and sensor information. The circle of confusion can be calculated or introduced numerically. The cameras you create will appear as “customized cameras” in the table of cameras.

3. Camera search bar

Quick camera search. For example, write D90 to find the camera Nikon D90.

4. Camera table

Your most recently used cameras, your customized cameras and a large database of cameras in alphabetical order.

TIPS

- To select a customized camera, you must tap on it and then tap on the select button from the camera information screen. From this screen, you can also eliminate the camera or change its settings.
Time lapse helps us understand the world by visually showing changes that we cannot normally perceive. Put all your efforts into the creative part. PhotoPills does all the maths and calculations for you.

A. Top button

1. Home button

B. Calculator
1. Calculating options

Choose the setting you wish to calculate: shooting interval, clip length or event duration.

2. Time lapse settings

Introduce the settings you wish to use to make the Time lapse. For example, if you have decided to calculate the shooting interval, these settings are: clip length, event duration, frames per second and image size (MB).

3. Results

Get the setting you wished to calculate, the number of photos you need to take and the total memory usage.

C. Bottom options

1. Interval table

Recommended shooting intervals for typical events.

2. Share

Share your Time lapse calculations in Facebook, Twitter or by e-mail. Save your calculations as an image.
Never miss an unmissable scene again! Manage your Plans in a comfortable way and get on the spot at the right time. Add photos and notes to better describe the photo. Share your Plans with your colleagues. Enjoy!

A. Top button
   1. Home button

B. Plans list
1. Plans

List of Plans you have created with the Planner (name, date and time). Drag the Plan towards the left to see the “Delete” red button. Tap on it to delete the Plan.

2. Plan Sheet button
Plans - Plan Sheet

Tap on one of your Plans to consult the location of the photo, the sun/moon conditions and the information you collected when doing the field work (photos and notes).

Map

1. Back button
   Go back to Plans.

2. Edit button
   Edit the name of the Plan. If you want to edit the location and date you must send it to the Planner using the action button.

3. Name of the Plan
4. Date and time of the Plan
5. Observer's location

Tap on the pin to see the latitude and longitude of the observer's location.
6. Sun and moon azimuth lines

Represent the direction of the sun and moon for the selected date, time and Observer's location.

- Sunrise
- Sunset
- Sun
- Moonrise
- Moonset
- Moon
- Shadow

**Gallery**

1. **Back button**
   
   Go back to Plans.

2. **Add photo button**

   Create a full gallery of descriptive images, record all the aspects you think may be useful in the creative process.

3. **Name of the Plan**
4. **Date and time of the Plan**
5. **Plan's photos**
Notes

1. **Back button**
   
   Go back to Plans.

2. **Name of the Plan**

3.

4. **Date and time of the Plan**

5. **Plan's notes**

   Directly type and edit your notes here. Add notes and useful information: detailed description of the photo you wish to take, equipment you need, how to get there, owner information, what to do next, etc.

**Action**
1. **Send to Planner button**

   Send the Plan to the Planner to edit it or for further study.

2. **Share on Facebook**

3. **Share on Twitter**

4. **Share and export by e-mail (KML)**

   Export your Plans by mail using the format used by Google Earth (KML). This way, if your colleague is a PhotoPiller, he will be able to import the Plan. Once you have opened the e-mail, do a long press on the KML file until a window shows up. Choose "Open in PhotoPills". The file will be stored in your plan list.

5. **Save as an image**

6. **Delete**

7. **Cancel**
Create your own database of Points of Interest (POI) to be used in your photos. Add photos and notes to describe them. Share your Locations with your colleagues. Furthermore, travel and discover new places with our database of more than 10,500 Points of Interest all around the world. Enjoy!

A. Top buttons

1. Home button
2. Add Point of Interest

B. Search bar

1. Search field

The fastest way to look for a location. Type the name of a location or the name of a Point of Interest to start the search. Automatically, the resulting list of the search will show up. Tap on the location you desire to see it on the map.
C. Map

1. Map

Browse the map to discover more than 10,500 Points of Interest all around the world. Your own Points of Interest are displayed on the map too. Zoom out to visualize how Points of Interest gather under the icon of a cube. Zoom in to visualize the location of each Point of Interest and its category.

2. GPS map button

Quickly center the map at your current position.

3. Compass map button

Auto rotate the map according to compass orientation. It helps to orientate yourself when doing the field work.

4. Expand map button

Work comfortably with a larger map screen.

5. POI Sheet Button
D. My list

1. Points of Interest

List of the Points of Interest you have created. Tap on a Point of Interest to see it on the map. Drag the POI towards the left to see the "Delete" red button. Tap on it to delete the POI.
Points of Interest - Add POI

Add new Points of Interest to your list.

1. **Back button**
   
   Go back to Points of Interest.

2. **Done button**
   
   Save the Point of Interest and go to the Point of Interest's information sheet to add photos and notes.

3. **Point of Interest's name**
   
   Type the name of the Point of Interest.

4. **Point of Interest's category**
   
   Choose among a large list of categories. If you don't find the one that suits your point, use the "other" category.

5. **Point of Interest's pin**
   
   Drag and drop it at the real location of the Point of Interest.
Points of Interest - POI Sheet

Tap on one of your Points of Interest to consult the information you have collected when doing the field work (photos and notes). Tap on one of the PhotoPills' Points of Interest to learn more about it; most of them have a link to Wikipedia.

Map

1. **Back button**

   Go back to Points of Interest.

2. **Edit button**

   Edit the Point of Interest's information: location, name and category.

3. **Point of Interest's name**
4. **Point of Interest's category**
5. **Point of Interest's location**

   Tap on the pin to see POI's latitude and longitude.
1. **Back button**
   
   Go back to Points of Interest.

2. **Add photo button**
   
   Create a full gallery of descriptive images, record all the aspects you think may be useful in the creative process.

3. **Point of Interest’s name**
4. **Point of Interest’s category**
5. **Point of Interest’s photos**
Notes

1. **Back button**
   Go back to Points of Interest.

2. **Point of Interest’s name**
3. **Point of Interest’s category**
4. **Point of Interest’s notes**
   
   Directly type and edit your notes here! Add notes and useful information: how to get there, owner information, the best moment to shoot, description of a possible photo, etc.
1. **Send to Planner button**

Send Point of Interest's location to the Planner for further analysis.

2. **Share on Facebook**
3. **Share on Twitter**
4. **Share and export by e-mail (KML)**

Export your Points of Interest by mail using the format used by Google Earth (KML). This way, if your colleague is a Photopiller, he will be able to import the Point of Interest. Once you have opened the e-mail, do a long press on the KML file until a window shows up. Choose "Open in PhotoPills". The file will be stored in your POI list.

5. **Save as an image**
6. **Delete**
7. **Cancel**
Personalize PhotoPills to your convenience.

A. Top button

1. Home button

B. Settings options
1. **Units**
   
   Choose between metric and imperial units system.

2. **Apertures**
   
   Set the apertures stops you wish to use in the calculations: full stops, halves stops and third stops.

3. **Camera**
   
   Set your default camera.

4. **Map type**
   
   Choose among 6 different map types: Standard, Satellite, Hybrid, OpenStreetMap, OpenCycleMap (classic) and OpenCycleMap (landscape).

5. **Your current position**
   
   Activate to show your current position on the map. It's the best way to visualize if you are right on the shooting spot of a saved plan.

6. **Help us to improve**
   
   Would you like us to continuously improve PhotoPills? You can easily help us with no effort. Just activate this option to share data on how you use the app. Data collection is anonymous. No personally identifiable information is included. Stay tuned for updates! Thanks.

7. **Device usage height**
   
   Enter the height at which you normally use the device in order to correctly represent the augmented reality (AR).

**TIPS**

- **Using Offline Maps.** If you think there will be no network coverage, to make a map available offline you must proceed as follows: first, before you go into the field, set one of the following map types: OpenStreetMap, OpenCycleMap (classic) or OpenCycleMap (landscape). Second, in the Planner, view the locations you want available offline by panning and zoom in and out to cover all the views you need. Notice that PhotoPills stores offline map tiles in Cache memory and, if there's problems of running out of space on your device, the maps views will be deleted.