

INSTALLATION OF *SHADOWS*

How to download *Shadows*?

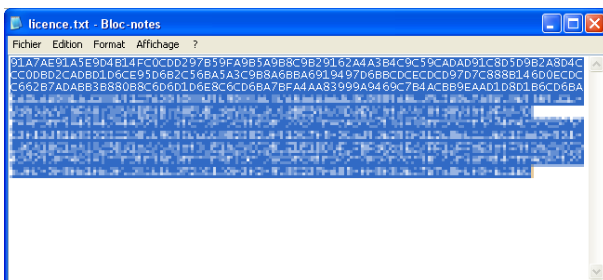
Go to the following web site: www.shadowspro.com and click on the **Download** page and download the program. *Shadows* may also be available on other web site but not always in its latest version.

How to install *Shadows*?

Double-click on the file you just downloaded, **shadows.exe**, and follow instructions (basically, click on next at all steps).

How to install a *Shadows Expert* or *Shadows Pro* license?

Shadows Expert or *Shadows Pro* licenses can be purchased from the web site and paid on-line. The license is an encrypted text file sent by E-mail by the author; it unlocks the advanced functions of *Shadows Expert* or *Shadows Pro* levels.

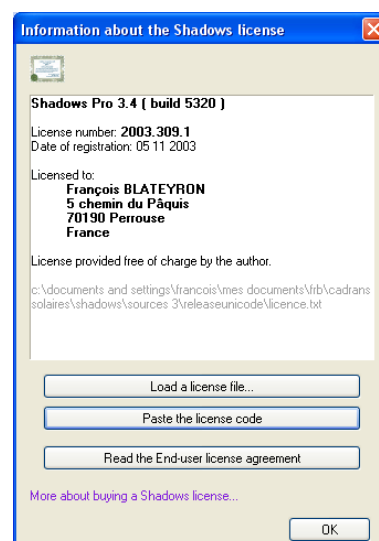
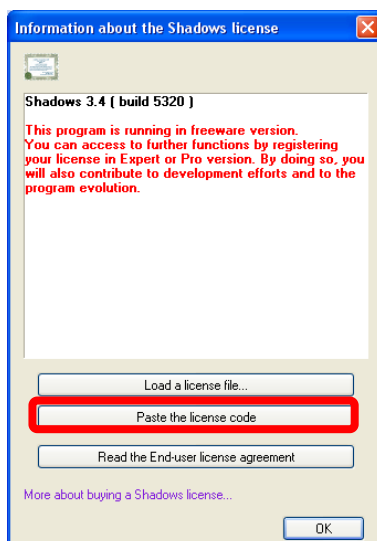


1. Open the text file that was attached with the E-mail you received after you ordered the license. Select all text with CTRL-A
Copy it with CTRL-C

2. Go to the **Help** menu and select the item **Information about the Shadows license...**

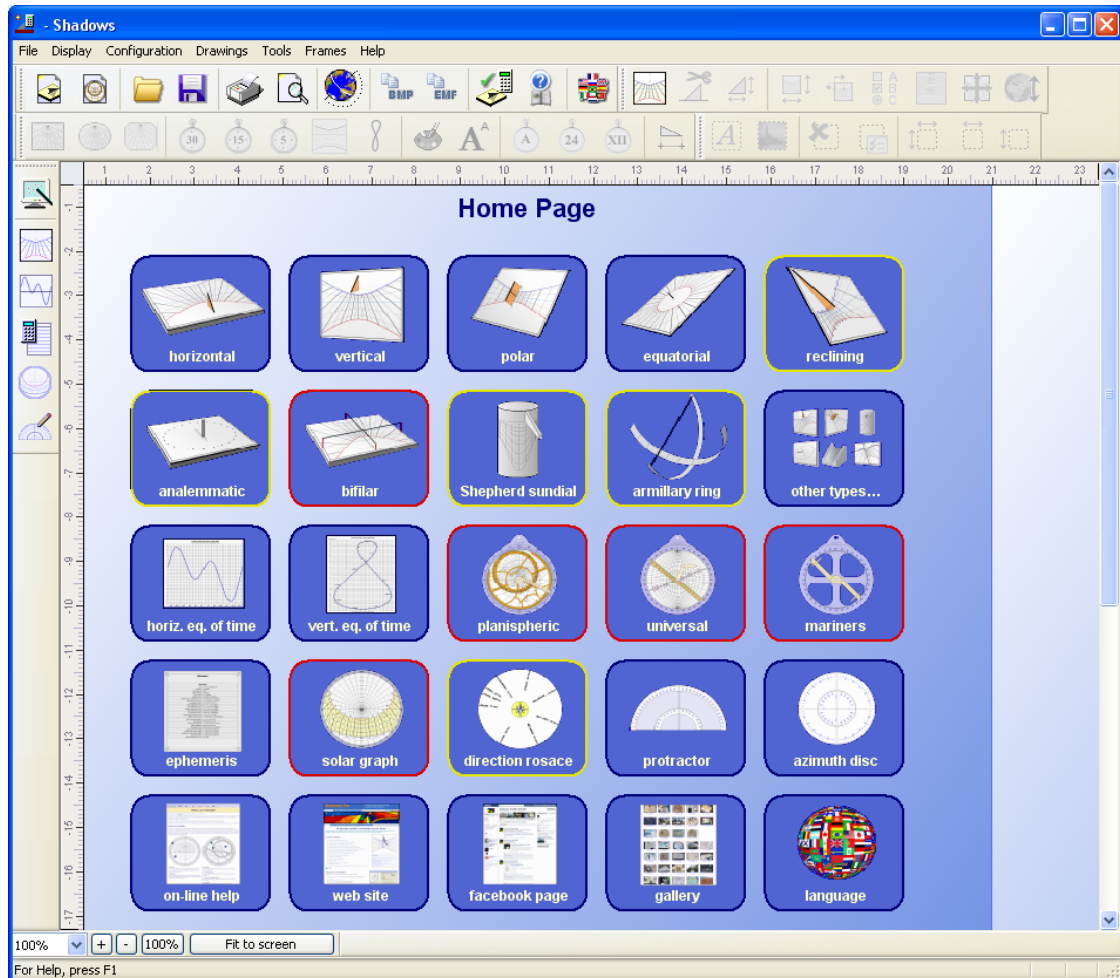
3. Click on the button **Paste the license code.**
Your name and address should immediately appear in the dialog, with the license level you selected.
Validate on OK.


You can now use the advanced functions of *Shadows Expert* or *Shadows Pro*.




STARTING WITH SHADOWS

When launching **Shadows 3.4**, you find a grid of buttons that offer an easy access to the main features of **Shadows**. Buttons with a yellow frame correspond to features of **Shadows Expert**, buttons with a red frame correspond to features of **Shadows Pro**.



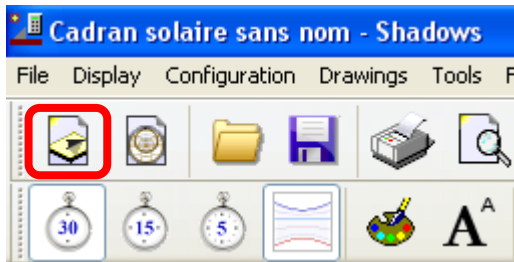
For a quick creation of a sundial, click on a model (e.g. vertical), then select the location in the dialog and validate. The sundial is drawn. You may change the orientation of the vertical sundial by clicking on the  icon and change the angle.

When a drawing or a graph is displayed in the main window, you can come back to the home page by clicking on the  button on the left side toolbar.

You may access to the gallery of sundials made by Shadows users and find ideas for your own sundial, by clicking on the **gallery** button. Share your experience with other users on the facebook page.

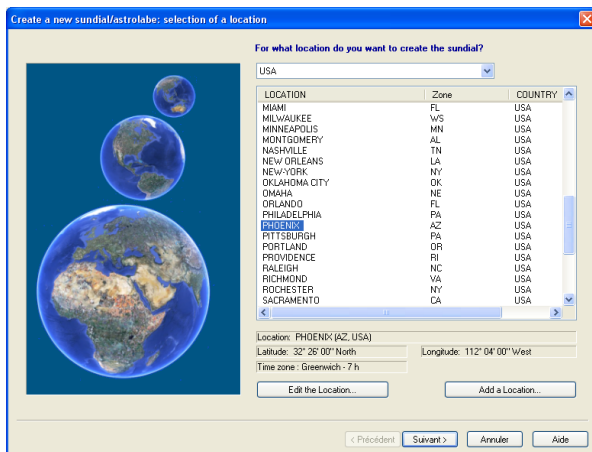
CREATE YOUR FIRST SUNDIAL

This example will allow you to design and decorate a vertical declining sundial.



Click on the icon **New sundial** on the left of the tool bar. You can alternatively click on the **File** menu and select **Create a sundial...**

This action opens a “wizard” that will guide you in three steps in the creation process of a sundial.

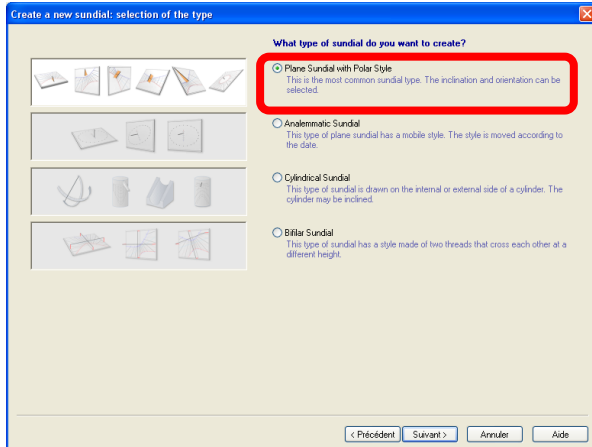


In the first screen, you have to select where you want to install the sundial. Each sundial must be designed for a particular location.

- Select the country in the selector above.
- Then select the city in the list below.

Shadows is delivered with a predefined list of more than 2800 locations from all around the world. If your city is not in the list you can create the location by clicking on the button **Add a location...**

Click on the **Next >** button.

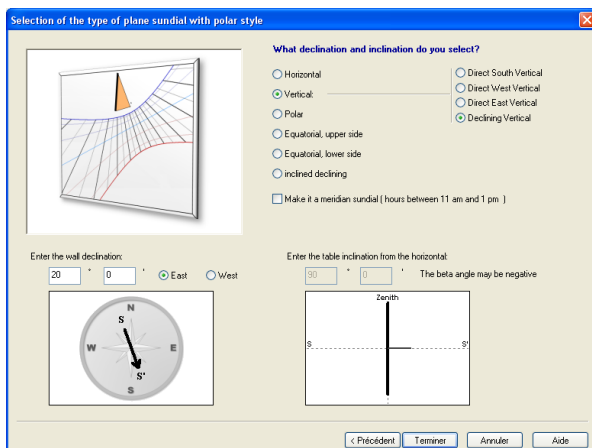


The second screen allows you to select the type of sundial you want to create.

A classical vertical sundial belongs in the category called **plane sundial with polar style**.

This is the default category which is available in the freeware version. Other categories are available to users of an Expert or a Pro license.

Click on the **Next >** button.

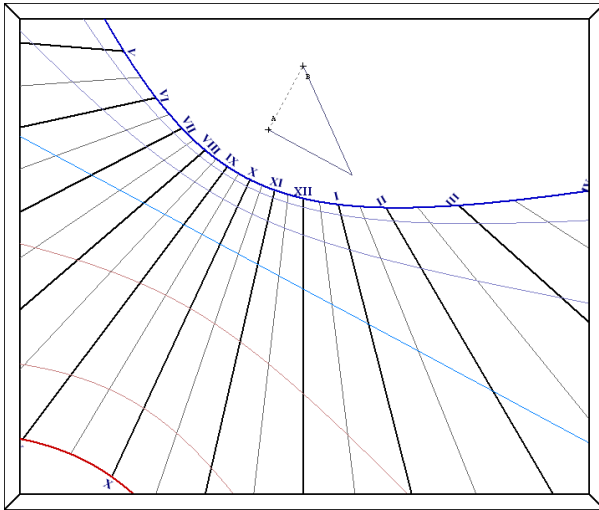


The final screen allows you to configure the sundial orientation.

Select **Vertical** in the left and **Declining Vertical** in the right list.

Then you need to select the wall declination by entering an angle measured from South towards East or West. Note that for users in the southern hemisphere, this angle is measured from North.

Click on the **Terminate** button.



Then the sundial is drawn on the main screen. The style position is marked with two points: A for the perpendicular style (gnomon) and B for the polar style. They are the two sides of the triangular style which is also represented folded on the sundial plate.

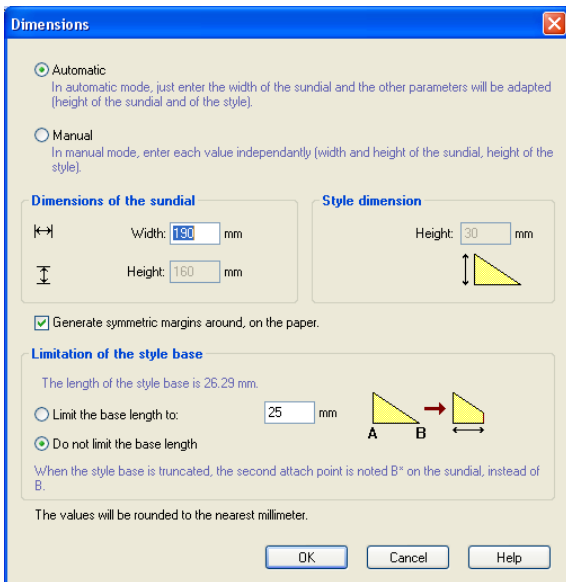
The drawing is using default settings but everything can be configured. Some options are available by clicking on icons of the tool bar, such as the number of hour lines, the display of declination arcs, the color of lines or the marking of hours.



Changes are reflected immediately on the drawings.

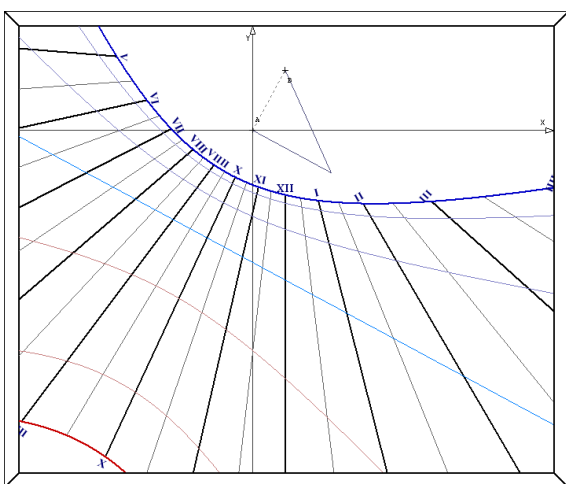
One of the first operations is usually to set the size of the sundial. Go to the **Configuration** menu and select

Dimensions..., or click on the **Dimensions...** icon on the tool bar: 



There is a simple mode that requires you only to select the width of the sundial. **Shadows** calculates the height of the sundial plate, and the height of the style accordingly. You may also select these parameters independently by clicking on the **Manual** button, and entering each value. The dimensions of the sundial do not affect the scale of drawing, but the frame limits the drawing to its interior. The height of the style is acting as a scale factor for the drawing of lines. Coordinates of all points are proportional to the height of the style.

In some case, the polar style is very long and the point B is outside the sundial. You may limit the length of the sundial base (distance between A and B). The style will be truncated in this case.

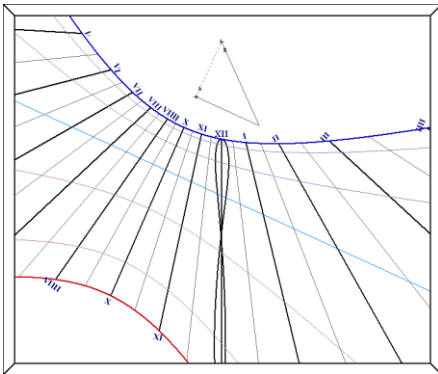


The center of the sundial is the point A. It is the origin of coordinates. The horizontal axis, x, goes positively towards the right direction. The vertical axis, y, goes positively upwards.

You can display the axis system from the **Drawings** menu.

Drawing options

Display the analemma curve on the noon line

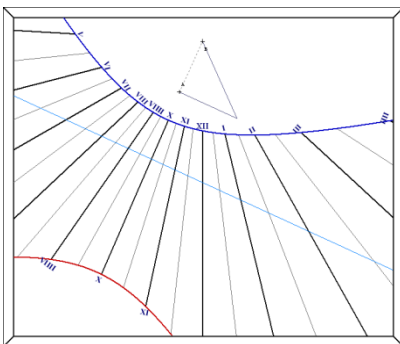


Go to the **Drawings** menu and select **Analemma options...** and select the first option **Analemma at noon**.

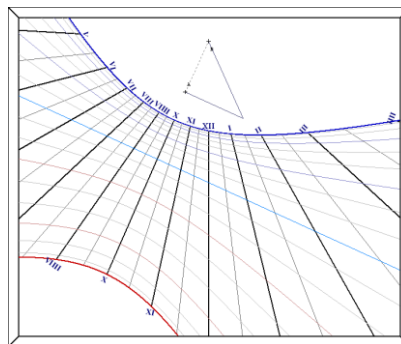
On large sundials, you may want to mark this curve with points drawn every five days, see the check box at the bottom of the dialog box.

Select options for declination arcs

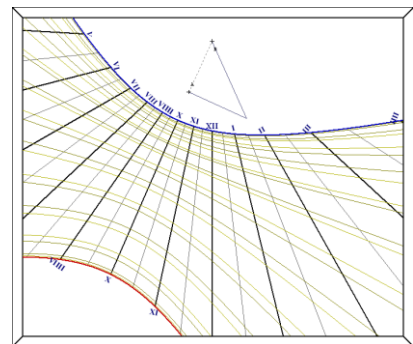
Go to the **Drawings** menu and select **Declination lines options...**



solstices and equinoctial line



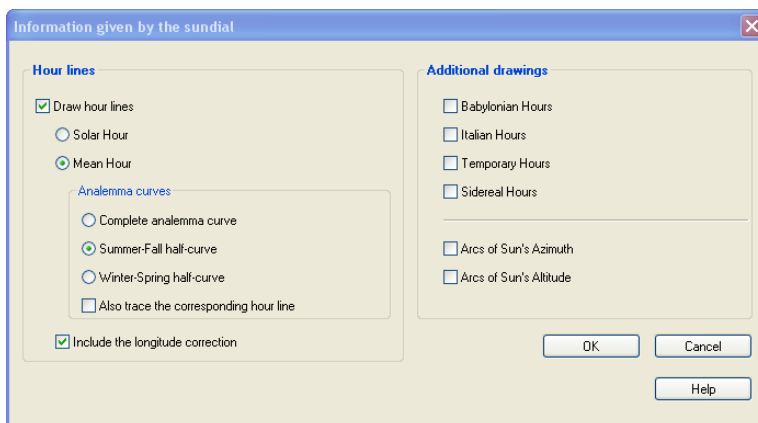
every decant change



every 15 days

Display Solar time or Mean time

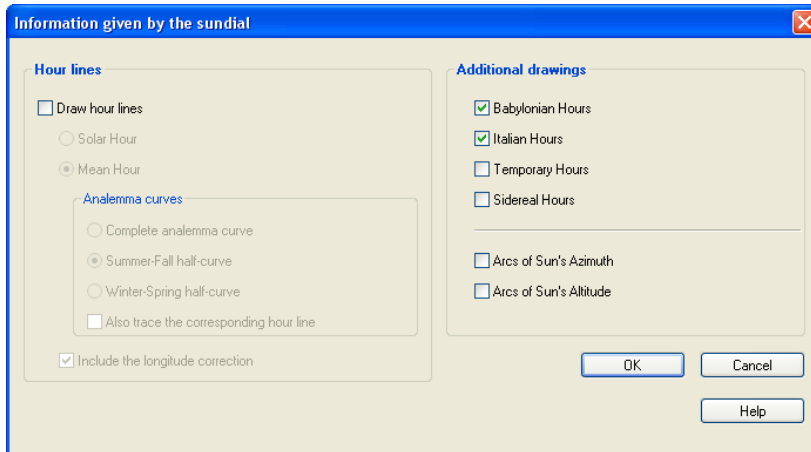
Solar time is a local time simply given by the hour angle of the Sun. You may want to draw the Solar time of the reference meridian of your time zone, instead of the one of your very location (i.e. you include the longitude correction into the drawing). To do so, go to the **Configuration** menu and select **Indications given by the sundial...**



Select **Mean hour** and either **Summer-Fall** or **Winter-Spring** curve to draw only half of the curve, otherwise it would be too difficult to read with the complete analemma. Uncheck also the option **Also trace the corresponding hour line**.

Display ancient hours or other types of lines

Some old sundials, especially in Europe (France, Italy, Germany), display ancient hour such as italian or babylonian hours. They correspond to 12 hours measured from the previous sunset (italian hours) or the from sunrise (babylonian hours).



Simply check the type of hours you want to draw on the sundial. They can all be superimposed at the same time, but it's better to keep it simple otherwise, people won't be able to read it.

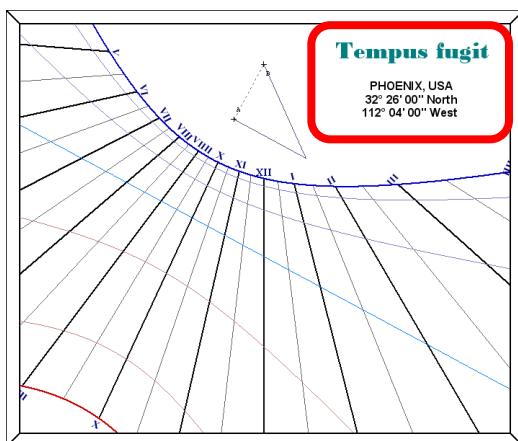
Decorating the sundial

Add a motto



From the frame tool bar, click on the **Text frame** icon. A dialog box opens.

In the right side of the dialog, click on **Add a motto**. Another dialog box opens with a list of predefined mottoes. Select the language then a motto and validate by **OK**.



You can set the text properties (font, size, color) from the **Text style** button.

When finished, validate by **OK**. Your text is displayed into a dotted frame that you can move and resize. To change its content, double-click on it.

You can also automatically add the location name and its geographical coordinates.

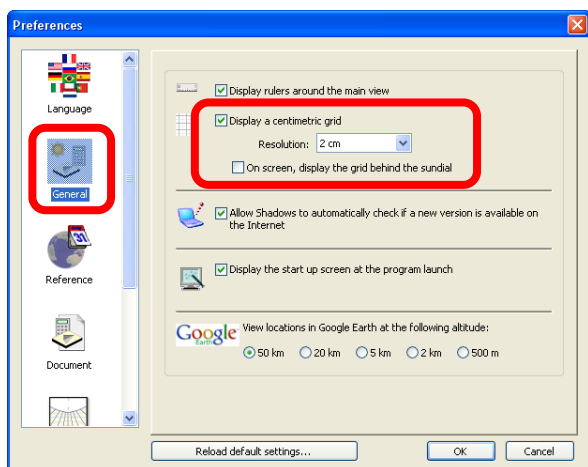
Add a decoration



You can also add decorations with bitmap images or vector graphics (clip arts). Click on the **Image frame** icon. Then select the file you want to include (select the file format in the list below). You can insert images and graphics in BMP, JPG, GIF, WMF or EMF file formats.

Using tiles to decorate the sundial

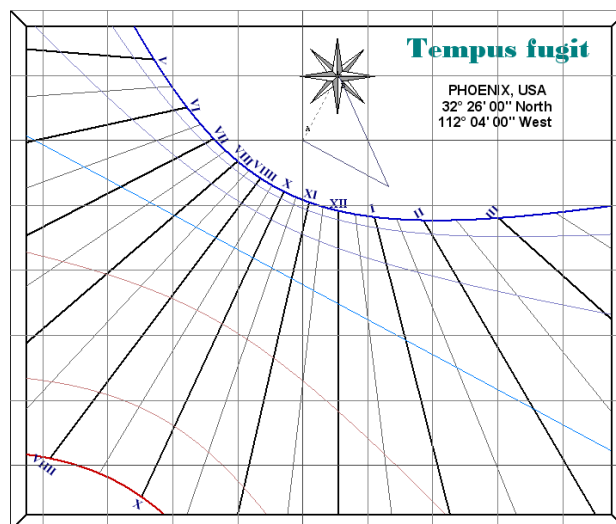
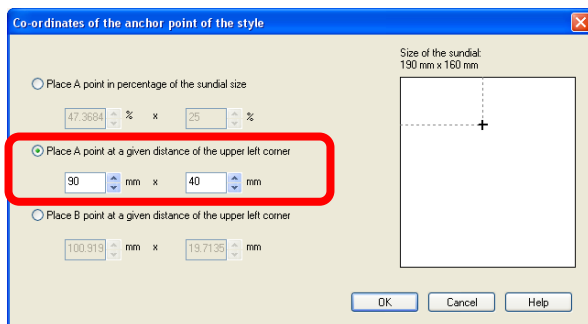
An easy solution to create a sundial is to use tiles and paint or engrave the drawings and decorations on each rectangle and assemble all of them on the wall or on the ground.



A function will help this operation. Go to the **File** menu and select **General Preferences**. In the dialog box, click on the **General** icon on the left list. Then check the box **Draw a centimetric grid** and select the size of the grid interval. You can select the size of your tile (e.g. 15 cm).

You may also want to set the position of point A relatively to the upper corner of the sundial, in order to optimize the drawing position on tiles.

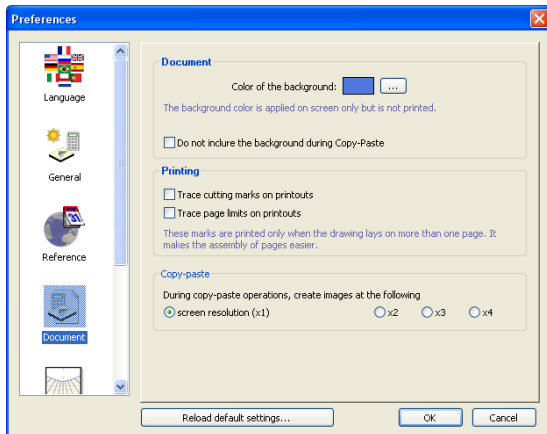
To do so, go to the **Configuration** menu and select **Style anchor**.



Producing the sundial

Print the sundial

If your sundial is larger than one page, it will be printed on several pages and you'll have to assemble them together to obtain the complete drawing. You may print alignment symbols to facilitate the assembly (go to **Preferences** and click on the **Document** icon).



Then check the option **Trace cutting marks on printouts**.

Red squares will be printed at each corner of pages and you'll have to assemble the pages so that the squares are aligned.

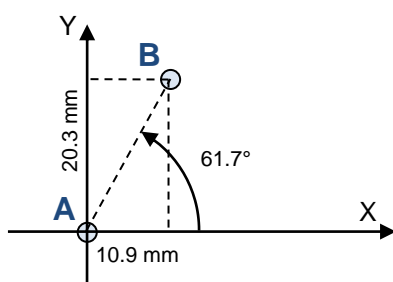
Once the drawing printed real scale, you can use it to prepare the drawing on the final material (wood, stone, marble, etc.)

Use the equinoctial ruler

As an alternative to printing the drawing, which may not be convenient for large sundials, you may use the equinoctial ruler to easily draw the hour lines.

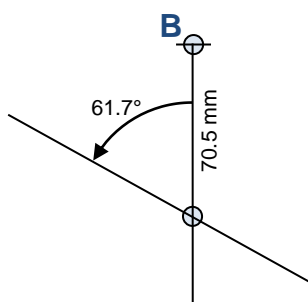
First print the ruler, by going to the **Configuration** menu. Select **Equinoctial ruler** and print it, then paste it on a cardboard or a wood

First decide where will be the center of the sundial (point A) and mark also point B using the information provided in the page **Schematics of the style** (**Configuration** menu).

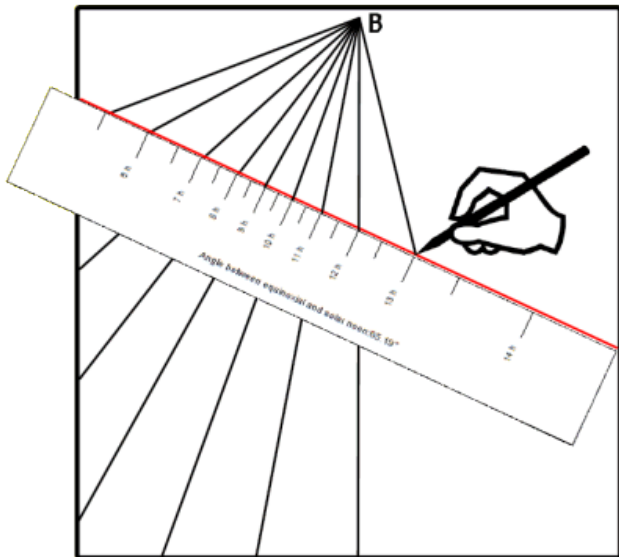


For example, it reads B(10.92, 20.29) : (23.04, 61.71°) which are the coordinates of point B from point A: 10.9 mm on the right, 20.3 mm above or in polar coordinates, 23 mm in the direction of 61.7° counted from the right axis (anticlockwise).

Then draw the noon line (usually the vertical line passing through point B).



Then go to the **Table of declination arcs** from **Configuration** menu. Look at the value **radius** for 12h on the equinox: for example 70.5 mm. It means that the equinoctial line intersects the noon line at 70.7 mm from point B. Just measure that distance with a standard ruler and mark the point. Then with a compass, measure 61.7° anticlockwise i.e. the same angle as for the sub-style angle (line passing through A and B). And draw a line



Then align the equinoctial ruler on the equinox with the 12h point on the noon line. Then simply mark a point for each hour.

Finally, you'll need to draw a line from point B and passing through these points.

Draw the declination arcs

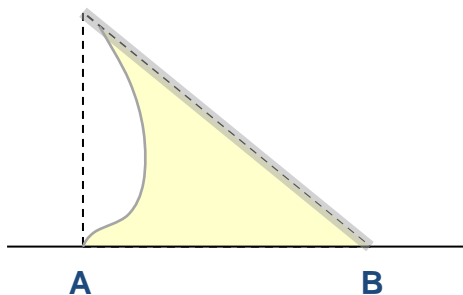
Using a similar technique, read the value **radius** for each hours in the **Table of declination arcs** and for the declination arc you want to draw. Then simply measure the distance from point B along the corresponding hour line and mark a point.

At the end, just draw an arc passing through all these points. And repeat the operation for all arcs you want to draw.

Prepare the style

There are two styles that we can consider. A gnomon attached on point A perpendicularly to the surface. An a polar style attached on point B. These two styles join together in point C to form a triangle.

You can print this triangle. Go to the **Configuration** menu and select **Drawing of the style**. If you print, you'll get the real dimensions of the triangle.



Miscellaneous

Measuring the declination of a wall

Shadows provides a tool to calculate the wall declination accurately. Go to the **Tools** menu and select **Calculate the declination of a wall...**

You need to do several observations and enter them in the dialog. The declination will be calculated and averaged for more accuracy.

Simulating the shadow of the style

You can display the shadow of the style for the current instant: Go to the **Tools** menu and select **View the style shadow**. You can change the type of style in same menu under **Style shape**.

You can also simulate the shadow for a given instant or date. Go to the **Tools** menu and select **Animate the style shadow**. Use the remote to animate the shadow and even save an AVI movie file.

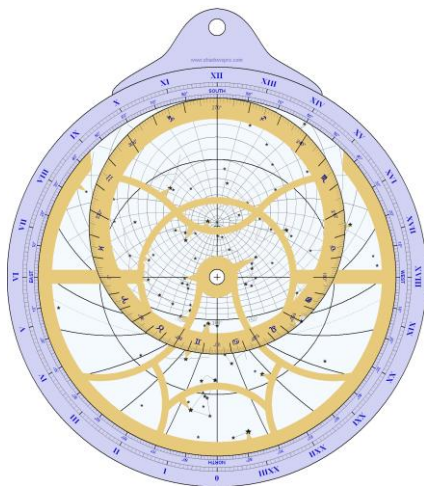
Designing other types of sundials

Shadows offers other types of sundials:

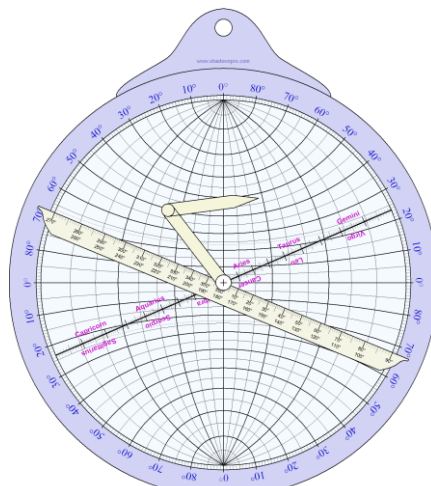
- **analemmatic sundials**: large ellipses where the style needs to be moved to a point depending on the date. This is the kind of sundial usually found in gardens where the style is replaced by the visitor raising a hand above to cast a shadow on the large ellipse drawn on the ground.
- **Bifilar sundials**: type of sundial where the style is made by two threads perpendicular to each other at different heights.
- **Cylindrical sundials**: for example the shepherd's dial, the equatorial ring of an armillary sphere, the polar cylinder or the vertical cylinder.

And astrolabes

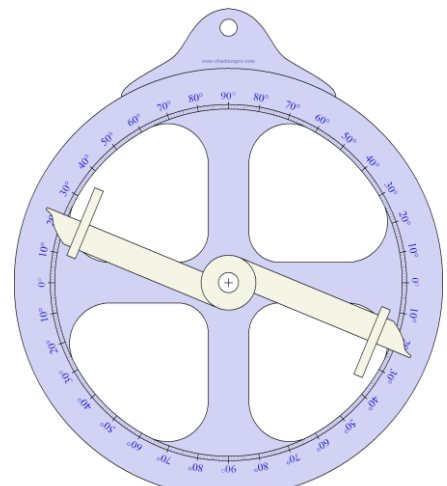
Shadows also offers three types of astrolabes:



planispheric astrolabe



universal astrolabe



mariners' astrolabe