

How to measure the wall declination
by means of the
Orologi Solari
program

... e allora ?

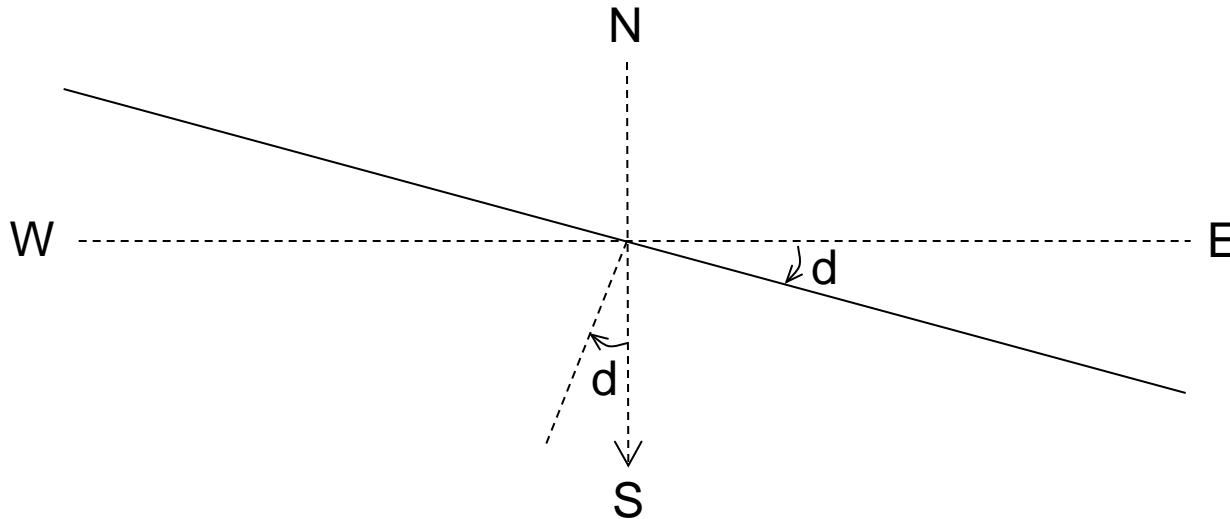
An important point in the design of a sundial is the measurement of the declination of the wall.

Orologi Solari can help to perform this measurement by means of two different methods:

- method of the horizontal table
- method of the dummy style

The following pages show how to use these two methods.

Declination of a wall is defined as the angle between the perpendicular to the wall and the south direction.



This angle is considered to be negative for a wall that is east declining, positive when west declining.

There are several different methods for declination measurement.

A widely used method is said "horizontal table method".

Put a small table against the wall and be sure that it is perfectly horizontal.

Put a plumb line against the table.

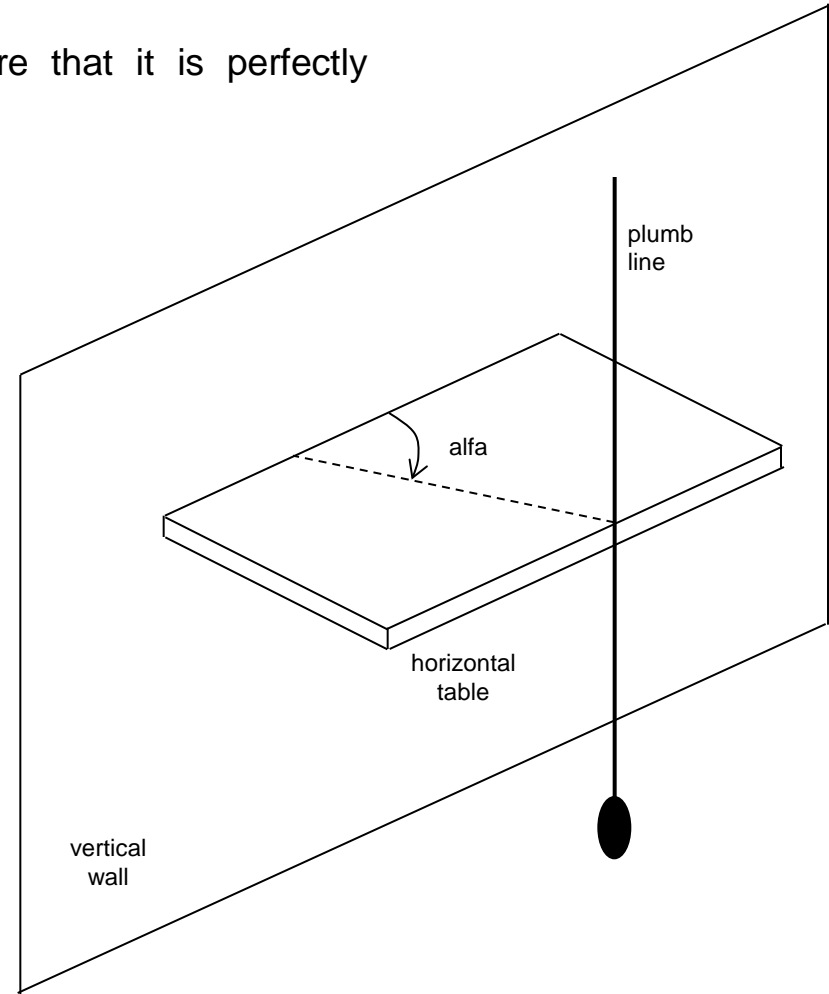
On a blank paper sheet laid on the table record the line of the wall and the trace of the plumb line shadow.

Take note of the exact time and date of the measurement.

By means of a protractor measure the angle **alfa** between the wall line and the shadow.

If the sun azimuth at the instant of the measurement is known, then it is possible to compute the declination of the wall.

Orologi Solari can perform the required calculations and provide the resulting value for the declination.



To perform the measurement an instrument similar to the the one shown here can be prepared.

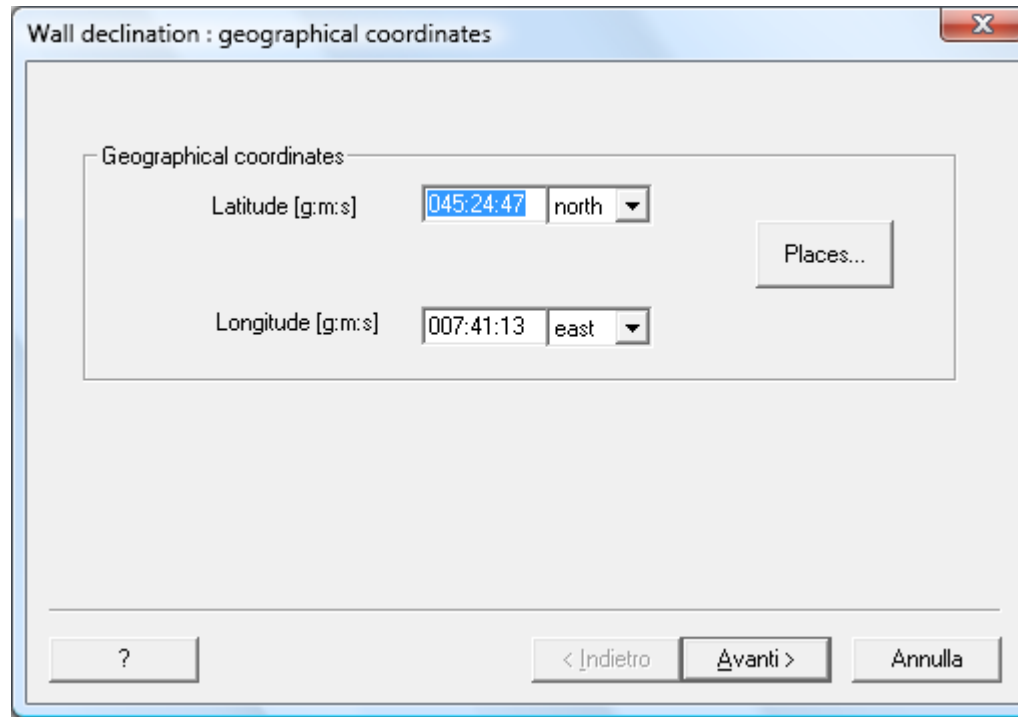


Follow the following steps to compute the declination with Orologi Solari.

Run the program, select “Tools” and “Wall declination”.

In the following window insert the geographical coordinates or select the place from the available list by clicking “Places”.

Click “Next”.



Wall declination : geographical coordinates

Geographical coordinates

Latitude [g:m:s] 045:24:47 north

Longitude [g:m:s] 007:41:13 east

Places...

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In the following window insert the exact time and date of the measurement.

Select the time zone applicable to the measurement (TMEC for Italy and Europe) and select the DST check box if daylight saving time is in effect.

Click "Next".

Wall declination : date and time

Insert the date and time when the measurement was taken.
Remember to check the optional box if the daylight saving time was applicable.

date time

giovedì 12 agosto 2010 15.09.28 daylight saving time

Time zone

GMT +1 (TMEC) for non-standard time zones :

+ minutes 0

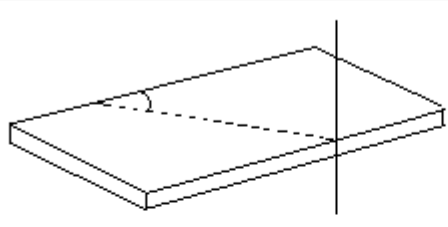
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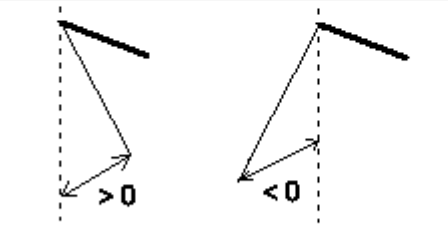
Select the check box corresponding to the “table method” (the upper one).

Insert the measured **alfa** angle between wall and plumb line shadow.

Click “Next”.

Wall declination : measurement





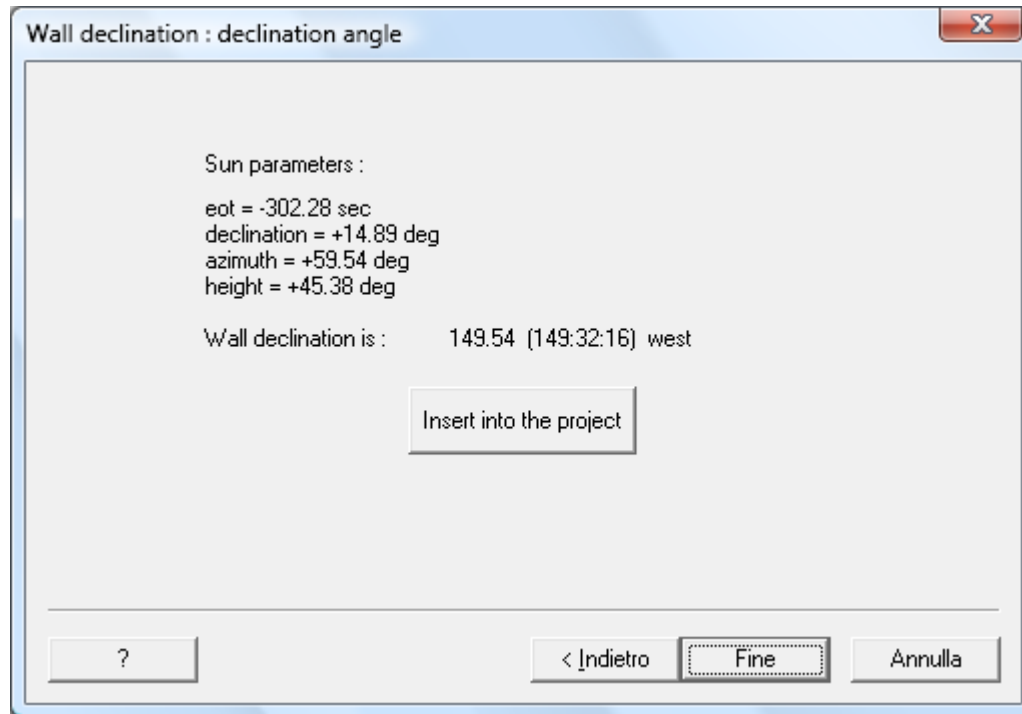
Insert measured angle (in decimal degrees) :

Insert measured distance :

and style length :

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The following window shows the sun parameters at the time of measurement together with the computed wall declination value.



The button "Insert into the project" can be used to set the geographical coordinates as inserted in the previous step and the computed wall declination in the dial parameters. The resulting dial is so designed.

The "End" button will take you back to the program main window.

A second method that is widely used is the so called "dummy style" method.

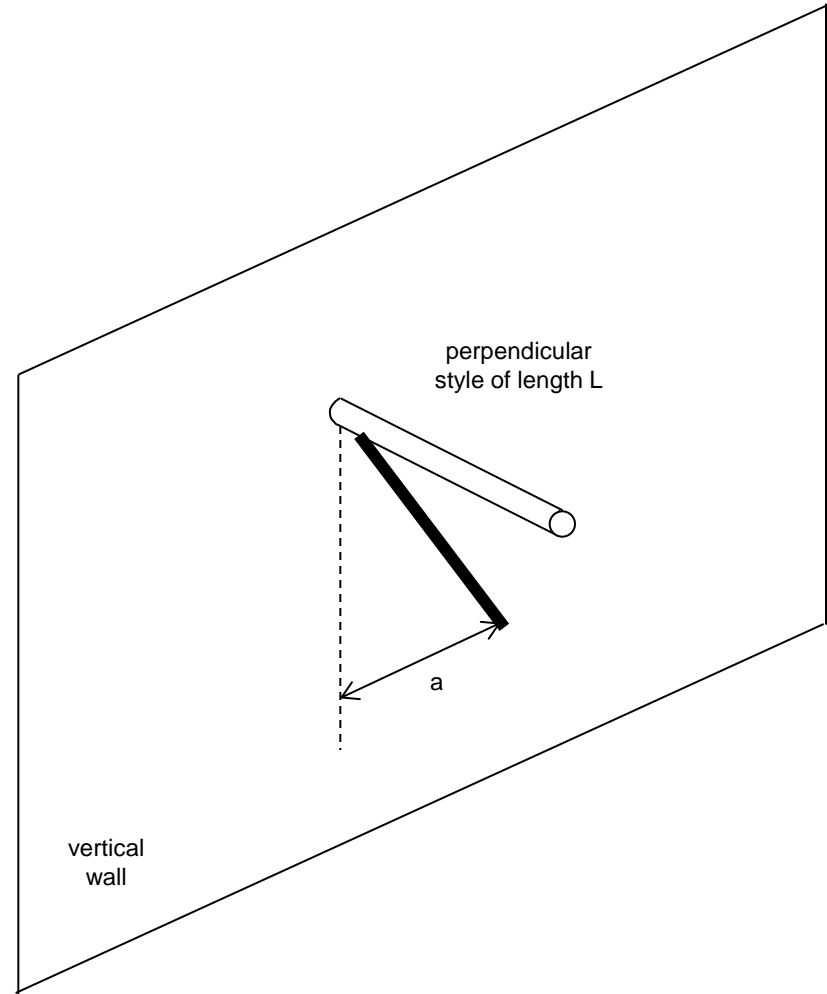
Place a style of length L perpendicular to the wall.

Measure the distance a between the tip of the style shadow and the vertical line from the style base.

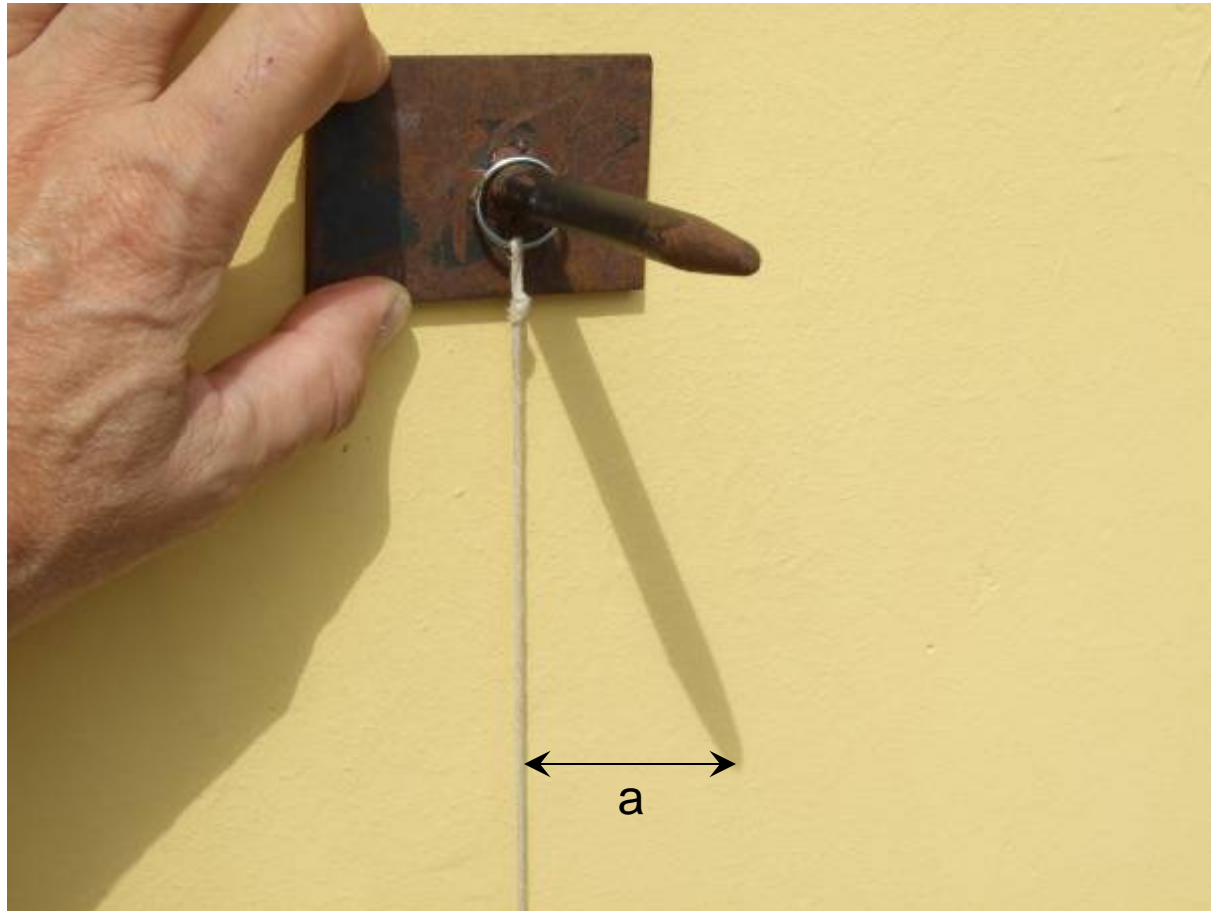
Take note of the exact measurement time and date.

If the sun azimuth at the instant of the measurement is known, then it is possible to compute the declination of the wall.

Orologi Solari can perform the required calculations and provide the resulting value for the declination.



To perform the measurement an instrument similar to the the one shown here can be prepared.



To compute the declination value with Orologi Solari execute the following steps.

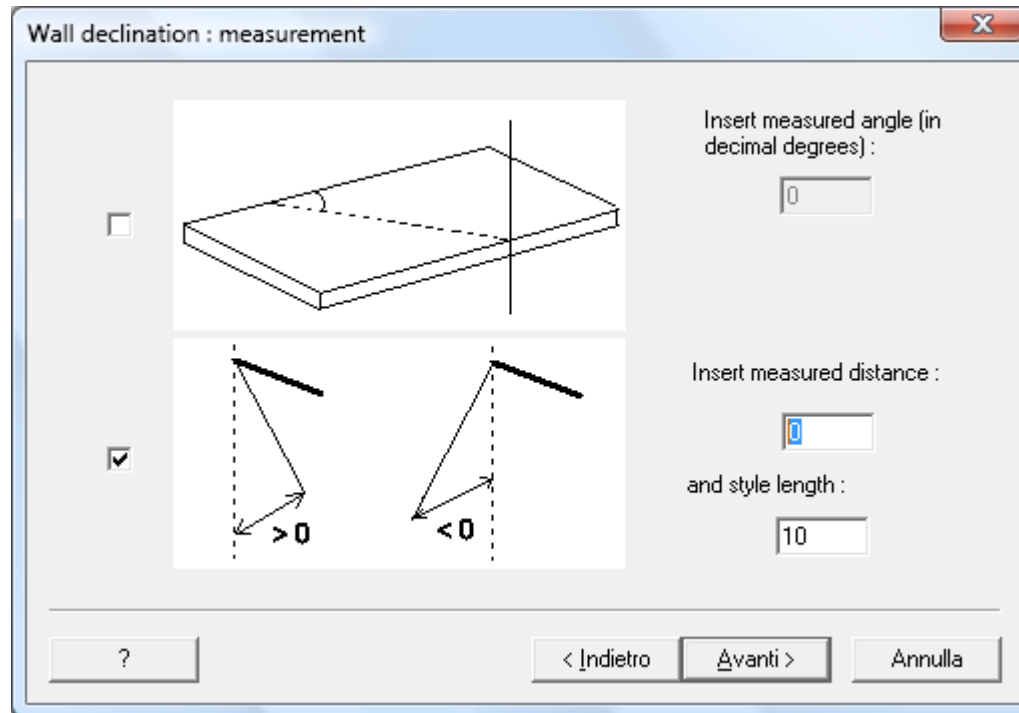
Run the program, select “Tools” and “Wall declination”.

Proceed as before in the first two windows.

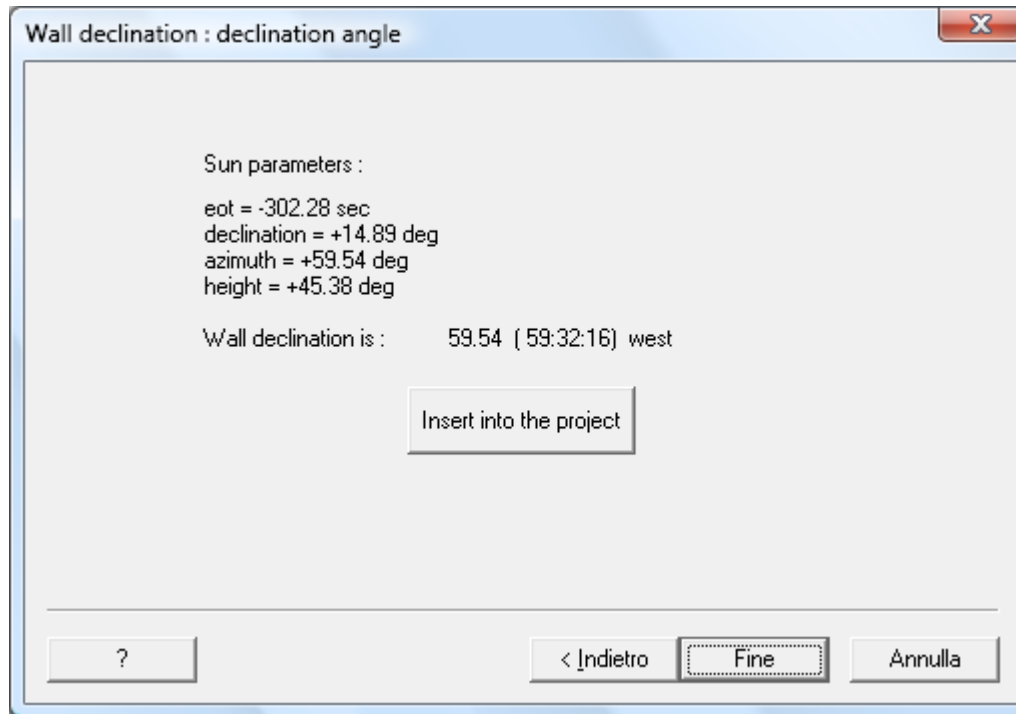
In the third window select the check box corresponding to the dummy style method (the second one).

Insert the value of the measured a distance (with the correct sign !) and the length **L** of the style.

Click “Next”.



The following window shows the sun parameters at the time of measurement together with the computed wall declination value.



The button "Insert into the project" can be used to set the geographical coordinates as inserted in the previous step and the computed wall declination in the dial parameters. The resulting dial is so designed.

The "End" button will take you back to the program main window.