Application Note:

Align with Compass/Align with Target

Abstract

The Solmetric SunEye™ is a handheld electronic tool to measure solar access and shade. The normal way of aligning the SunEye is to align it using the compass to point South (or North in the Southern Hemisphere). In some cases, such as on metal rooftops, the compass in the SunEye can be affected and erratic or incorrect compass readings may result. In this situation, it is no longer possible to use the compass to align the SunEye. "Align with Target" mode provides an alternative alignment to a reference azimuth using other visual information available at the site.

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Aligning the SunEye Solar Site Assessment Tool

The normal way of aligning the SunEye is to align it using the compass to point South (or North in the Southern Hemisphere). In some cases, such as metal rooftops, the compass in the SunEye can be affected and erratic or incorrect compass readings may result. In this situation, it is no longer possible to use the compass to align the SunEye. "Align with Target" mode provides an alternative alignment to a reference azimuth using other visual information available at the site. The targets could be a distant tree or pole whose direction is known, or a rooftop reference such as the seams or tiles on a roof surface. The azimuth of the target is not necessarily South (or North in the Southern Hemisphere).

To use "Align with Target"

1. In the preview mode, tap the arrow in the far upper left corner, and select "Align with Target" from the drop down menu.
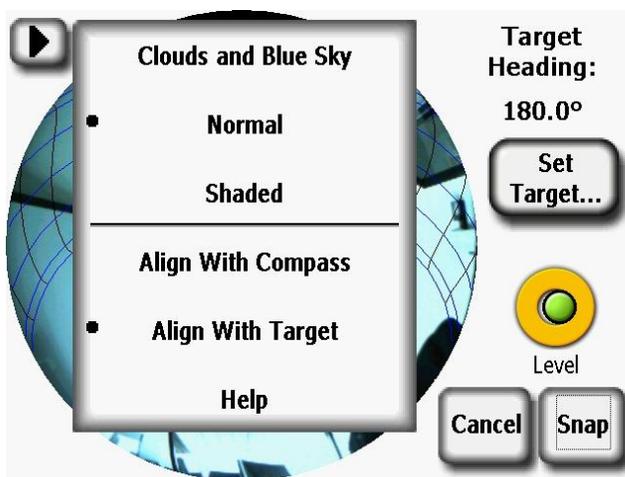

Figure 2-26. Align with Target Screen

2. Set the target. Tap Set Target...to enter the Set Target menu.
   - To aim and set the target using the compass, select "Use Compass", align with the reference, and tap "Set Target" to return to preview mode. Note that for this to function properly, the compass must be operating correctly and not be affected by the nearby metal.

Figure 2-27. Set Target Screen Using Compass

- To enter a known reference azimuth as the Target, tap "Manual Entry" and tap in the numeric box and enter the azimuth in degrees. Tap "Set Target" to accept the value and return to preview mode.
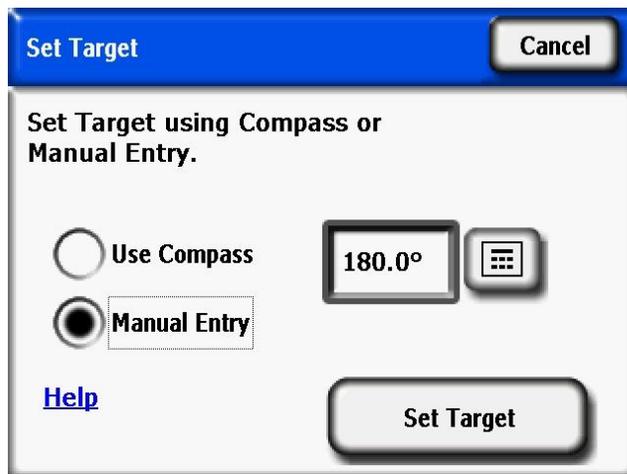

Figure 2-28. Set Target with Manual Entry

3. Note that the sun paths are now in a fixed position and do not move when the instrument is tilted or rotated, as they do when in "Align with Compass" mode. Also note that the Compass is no longer displayed in the preview, because it is now assumed to be invalid.
4. Take the skyline by aligning the SunEye device with the Target and holding it level. The screen will have a reference line as an aid to point the device at the Target's azimuth. The center top of the screen is pointing to the Target azimuth.
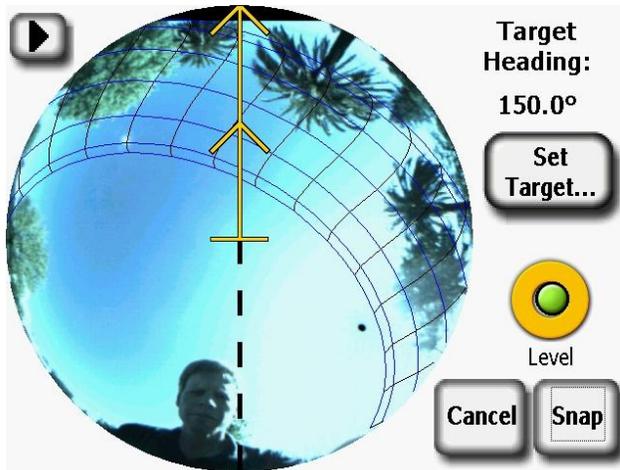
Figure 2-29. Set Target Skyline Screen

NOTE: It may be more difficult for the user to stay out of the sun paths in Align to Target mode than in Align to Compass mode. The center top of the screen is now the target, and the sun paths to the South (or North in the Southern Hemisphere) may be displayed on the SunEye at an angle relative to the Target. The user may need to adjust position to stay out of the sun paths while aligning the SunEye for the Skyline. For this reason, the Target azimuth should be within +/- 45 degrees of South (or North for the Southern Hemisphere).

NOTE: When viewing the results, notice that the Skylines may appear rotated so that the center top of the Annual Sunpaths view is the Target azimuth. However, this should not affect the solar access calculations. See Figure 2-30 below.
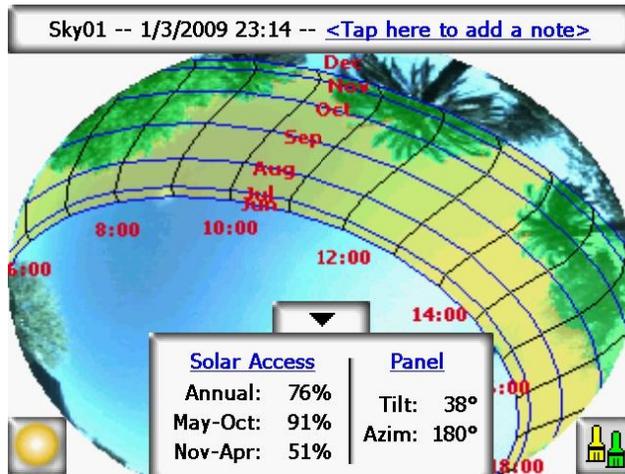

Figure 2-30. Rotated Skyline Using Target Mode

Where to go for additional information:

Additional information is available from the sources listed below:

- Solmetric Corporation website www.solmetric.com.

- Solmetric SunEye User's Guide, available at www.solmetric.com/support-info.html.

- National Renewable Energy Laboratory, TMY3. http://rredc.nrel.gov/solar/old_data/nsrdb/1991-2005/tmy3/.

- University of Oregon Solar Radiation Monitoring Laboratory, Sun Chart Program at http://solardat.uoregon.edu/SunChartProgram.html and Polar Sun Chart Program at http://solardat.uoregon.edu/PolarSunChartProgram.html.

- Photovoltaic Performance Calculator PVWATTS. By National Renewable Energy Laboratory, http://rredc.nrel.gov/solar/codes_algs/PVWATTS/.

- App Note-Using Solmetric SunEye in California Solar Electric Programs-6-May-2010, available at www.solmetric.com/newsletters.html.

- Solar Site Evaluation: Tools and Techniques to Quantify and Optimize ProductionS, By Mark Galli and Peter Hoberg, Solar Pro Magazine Dec-2008-Jan-2009