Solatube® Brighten Up® Series
Solatube® 160 DS / 290 DS Solar-Powered Daylight Dimmer
Installation Instructions

Parts List

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Required Tools:

- Keyhole Saw
- Caulking Gun
- Saber or Reciprocating Saw
- Screw Gun with Phillips Head
- Hammer
- Lumber Crayon
- Flat Bar
- Magnetic Compass
- Utility Knife
- Required Safety Equipment
- Tape Measure
- Battery 9V
- Drill Bit 1/8 in. (3mm)
- Drill Bit 3/8 in. (9.5mm)

Scan The Code And Watch Our Installation Video.
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WARNING

Do not proceed with the installation until you have read the entire instructions, including these warnings. (Use of materials or methods not authorized by Solatube International will result in an invalid warranty.)

Solatube International, Inc. (seller) assumes no responsibility or obligation whatsoever for the failure of an architect, contractor, installer, or building owner to comply with all applicable laws, ordinances, building codes, electrical codes, energy codes, fire and safety codes and requirements, roof warranties and adequate safety precautions. Installation of this product should be attempted only by individuals skilled in the use of the tools and equipment necessary for installation. Protect yourself and all persons and property during installation. If you have any doubt concerning your competence or expertise, consult a qualified expert before proceeding.

Install at your own risk!

Solatube product installations may be dangerous and include the potential for death, personal injury and property damage. The hazardous conditions include but are not limited to the following:

- **During installation,** the Solatube Daylighting System’s reflective tubes may focus sunlight, causing intense heat or fire. Remove protective film only after the parts have been installed. Prior to and during installation, do not leave tubes in contact with combustible materials or unattended, especially near direct sunlight. Avoid skin burns.
- **Do not leave debris from installation process unattended.** Scrap from tubing and foil tape are highly reflective and if left unattended can focus sunlight and can cause intense heat or fire. Clean up all unused material and trash and store or discard in proper covered locations.
- Solatube Daylighting System and Solar Star products may have sharp edges. Always wear leather or canvas gloves while handling and installing products.
- Solatube product installations require climbing and working at dangerous heights, including on ladders, scaffolding, roofs and in attic spaces. Risk of death, personal injury and property damage may result from a fall, or from falling objects. Use extreme caution to minimize risk of accidental injury, including, but not limited to the following procedures:
  - Clear area below your work space of all people, animals and other items.
  - Avoid working on surfaces that are slippery or wet.
  - Use foot-wear with excellent traction.
  - Use only strong, well supported ladders.
  - Work only in calm dry weather.
  - When in the attic, ensure that your weight is supported at all times with structurally sound framing; drywall material is not designed to carry a person’s weight.
- To reduce the risk of fire, electric shock, and personal injury, basic safety precautions should always be followed when using electric tools, including always wearing safety goggles or other suitable eye protection, and ensuring work area is clear of all electrical wires, gas pipes, water pipes, and other obstacles.
- When working in the attic or other dusty areas, use of a mask or respirator is recommended to avoid lung irritation. Attic spaces may be dark, confined, and subject to extreme temperatures. Beware of sharp protruding objects. Do not attempt installation without having someone within range of your voice or close enough to come to your aid if necessary.
- Solatube products are not designed to withstand the weight of a person, tools or other objects. Walking or placing objects on products.
- Additional support is recommended for long vertical and all horizontal tube runs. Review local building requirements and consult with appropriate building code official for proper material and placement of additional support. Avoid galvanic reaction (corrosion) if dissimilar metals are used.

### Electrical Components

- Before installing, servicing, or cleaning unit, switch power off at service panel and lock service panel to prevent power from becoming switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device such as a tag to the service panel.

### Re-Roofing

- Solatube products require special care if removed for re-roofing. In order to ensure proper removal and re-installation, please contact your Solatube International representative.

### Please refer to the installation tips for the appropriate product below:

#### Daylighting Systems Installation Tips

These instructions are a step-by-step guide for the installation of a Solatube Daylighting System in the following conditions. For other roof types, please contact your Solatube International representative for additional information.

**Built Up Flat Roof** - **Single Ply/Membrane** - **Asphalt Shingle** - **Low/No Pitched** - **Pitched** - **Prefabricated Curbs** - **Metal Roof Panels**
Daylighting Systems Installation Tips (Continued)

- Allow at least 2-3 hours for the installation, particularly if this is your first installation.
- During the day, turn off all the lights in the room to see how much natural light comes in through the windows, and determine the best position for the Solatube Daylighting System. To light a specific area, place the system over the area, not in the center of the room. This will prevent the desired area from being shaded by tall objects in the room.
- Measure the distance between the roof and the ceiling. If you don’t have enough tubing, contact your Solatube International representative for additional tubing.
- Avoid roof locations shaded by trees, ridges and chimneys, or near water channels or valleys. Also avoid roof areas with obstructions such as fire sprinklers, HVAC equipment, gas, water or drain pipes, air ducts or flues and make sure that the roof is adequate to endure an installation without damaging its waterproofing properties or weakening the building structure.
- All adhesives, seals and tapes are recommended to be applied to a clean and dry surface at a minimum of 70°F (21°C) for maximum performance.
- Foil tape contains a pressure sensitive adhesive and pressure must be applied at all seams for proper bonding. Foil tape is not intended for use as structural support of the extension tubes. For structural integrity use manufacturer supplied fasteners on all overlapping extension tube joints.
- Uninstalled product that is stored and exposed to excessive heat and or humidity can experience damage. Store product prior to installation in a cool dry place.

Solar-Powered Daylight Dimmer Installation Tips

- Install Solatube Solar-Powered Daylight Dimmer only on a properly aligned Solatube Daylighting System.
- Always mount the solar panel on the downslope of the flashing.
- If the remote is not working, check the batteries to see if they have slipped out of the proper alignment or if the batteries need to be replaced.
- Replace batteries with CR2032 Coin Cell batteries.
- Note— The Solar-Powered Daylight will only operate when there is enough daylight to produce energy. The Solar-Powered Daylight Dimmer will not operate in the evening when there is no daylight to produce energy production.
The following instructions are for installation of the solar panel on the Solatube 160 DS and 290 DS models only. Please see Solatube® Brighten Up® Series Installation Instructions (P/N: 951780)

1. Assemble the 160 DS / 290 DS Solar Panel Assembly
   - Slide panel mount into solar panel
   - Press panel mount into solar panel until it snaps into place
   - Solar panel assembly is ready for installation to flashing

2. Place Solar Panel onto Flashing
   - Always mount the solar panel on the downslope of the flashing

3. Secure Solar Panel to Flashing with one Clip
4. Hold Panel in Place and Fasten Through Opening
5. Remove Clip and Fasten Remaining Opening
6. Place Top Tube into Flashing
7. Align Top Tube Angle with Ceiling Opening
8. Remove and Tape Top Tube
   Tape all seams.
9. Fasten Top Tube to Flashing

Note: Return to ground floor to continue the installation process. See page 11.
The following instructions are for installation of the solar panel on the Solatube 290 DS Low Profile only. Solatube® 290 DS Low Profile Installation Instructions (P/N: 951883) for complete flashing and top assembly instructions.

10 Assemble the 290 DS Low Profile Solar Panel Assembly

Slide panel mount into solar panel

290 DS Low Profile panel mount

Solar panel

Press panel mount into solar panel until it snaps into place

Solar panel assembly is ready for installation to flashing

11 Place Solar Panel onto Frame Assembly

Always mount the solar panel on the downslope of the connector flange

12 Fasten Solar Panel to Frame Assembly
13. Remove Foam from Weep Hole
Keep foam for later step


15. Pull Cable Through Top of Frame Assembly
Secure wire in weep hole with attached rubber grommet.

16. Insert Top Tube

17. Align Top Angle with Ceiling Opening

18. Remove and Tape Top Tube
Tape all seams.
19 Insert Top Tube and Drill Hole for Solar Panel Cable
Drill hole in tube using 3/8” drill bit just below tube belt

20 Insert Cable into Hole

21 Secure Cable to Outside of Tube with Foil Tape
Cover remaining opening of hole with foil tape.

22 Insert Top Tube into Frame Assembly

23 Align Cable to Fit Between Tabs of Tube Belt
Re-Insert foam into weep hole
24 Install Raybender Slim and Place Sash to Frame Assembly

25 Fasten Sash to Frame Assembly
Start screws by hand.
Caution: Do not overtighten sash screws.

Note: Return to ground floor to continue the installation process. See page 11.
**NOTE:** Return to the Ground Floor and Complete the Following Steps
The following steps are for all models. 160/290 DS shown.

**26 Measure tube run**
Measure distance from ceiling to top tube. Add additional 1 1/4 in. (32mm) overlap into top tube to total length.

**Note:** The Solar-Powered Daylight Dimmer has a stop that will only allow for a maximum overlap of 1 1/4 in. (32mm) into the Top Tube.

**Solar-Powered Daylight Dimmer Stop**

**Note:** The Solar-Powered Daylight Dimmer has a stop that will only allow for a maximum overlap of 1 1/4 in. (32mm) into the Top Tube.
Assemble Tube Run
Include 1 1/4 in. (32mm) overlap into top tube.

Remove protective liner

Use notches to create a tapered tube.

Apply pressure to tape for proper bonding

Minimum overlap at each tube seams 1 1/2 in (38 mm)

Apply foil tape to temporarily secure tube assembly

Insert Assembly into Ceiling and Adjust Angle

Adjust tube angle to align with top tube and insert completely into top tube to ensure proper fitment

Insert tube assembly into ceiling opening

Remove assembly being careful to not change angle of tube
29 Fasten all tubes with Foil Tape and Tube Screws

Tape Bottom Tube Angle and Adjust Length of Assembly

- Carefully push extension tube 3 in (76mm) into bottom tube and tape seam
- Use razor knife to cut tape at tube seam
- Apply Expansion Joint Seal at top of tube section

30 Apply Expansion Joint Seal to Top Section of Daylight Dimmer and Fasten Daylight Dimmer to Top of Tube Assembly

- Fasten All Tubes with Foil Tape and Tube Screws.

NOTE: For ease of installation align and position junction box so that it will face away from rafters and face upslope of roof deck.
31 Use a 9V Battery (Not Provided) to Power the Daylight Dimmer
Ensure to place positive (+) and negative (-) terminals to like terminals on junction box.
**NOTE:** Hold battery on terminals for 30 seconds to place Daylight Dimmer into installation mode.
The Daylight Dimmer will stay in installation mode for two (2) hours.

32 Locate Clear Plastic Battery Protector on the Back Side of the Remote and Pull to Remove
Press and hold remote (blue light will appear when functioning) until
the dampers of the Daylight Dimmer have reached full open position.

Note: If installing multiple Daylight Dimmers with one remote, skip to steps 46 and 47 before moving to step 33.

33 Install Completed Tube Run Into Ceiling
If Daylight Dimmer cannot be installed through the ceiling see step 48 for alternate installation method
34 Install Completed Tube Run Into Top Tube

NOTE: For ease of installation align and position junction box so that it is facing away from rafters and facing upslope of roof deck.

The following steps are for 160/290 DS rooftop wire connection.

NOTE: Return to the roof to complete wire connection

35 Use Small Screw Driver to Push Out One of the Weep Hole Screens and Insert Solar Panel Cable Through Weep Opening

Pull solar panel cable through open weep hole and ensure rubber grommet is firmly inserted into the weep hole.
36 Connect Daylight Dimmer Cable to Solar Panel Cable
Secure Connected Cable by Placing Behind Tube Clip

Tuck Daylight Dimmer cable under top edge of Dome Ring and install Shock Inner Dome.

Secure cable behind tube clip

37 Dome Installation
Reflective side of LightTracker™ Reflector faces South in Northern Hemisphere (North in Southern Hemisphere).
Align and snap dome into place engaging all four snaps.

Remove protective liner

38 If Shock Inner Dome is being used follow these steps.
Tuck Daylight Dimmer cable under top edge of Dome Ring and install Shock Inner Dome.

39 Snap Shock Inner Dome Onto Dome Ring

40 Return to the Ground Floor and Test Solar-Powered Daylight Dimmer.
Press and hold center of remote until Daylight Dimmer dampers reach desired location.
The following steps are for the 290 DS Low Profile Rooftop wire connection. 

**Note:** Return to the roof to complete wire connection.

### 41 Remove Sash and Raybender Slim from Frame Assembly

1. **a**
2. **b**
3. **c**

### 42 Connect Daylight Dimmer Cable to Solar Panel Cable

- **a** Daylight dimmer cable
- **b** Solar panel cable

### 43 Re-Install Raybender Slim and Fasten Sash to Frame Assembly

- **a**

Align logo and arrows to face South in the Northern Hemisphere (North in the Southern Hemisphere).

Return to the Ground Floor and Test Solar-Powered Daylight Dimmer. Press and hold center of remote until Daylight Dimmer dampers reach desired location.
Optional Instructions

44 If Desired, the Remote can be Attached to the Wall
Remove back plate from remote and fasten plate to desired wall location, then snap remote onto mounted wall plate.

45 Optional Step
The Solar-Powered Daylight Dimmer has an optional feature to close the dampers automatically at night. If this feature is desired, remove the junction box cover and then remove the jumper as shown below. This will activate the auto close feature.

Please note that this feature will only close the Daylight Dimmer at night. You must reopen the Daylight Dimmer using the remote during sunlight hours when desired.

Please also note that the Solar-Powered Daylight Dimmer will not operate at night. The Solar-Powered Daylight Dimmer will only operate when there is enough daylight to produce energy. The Solar-Powered Daylight Dimmer will not operate in the evening when there is no daylight to produce energy production.
Optional Steps
These instructions are intended to be used to pair a new remote with the Solar-Powered Daylight Dimmer if the remote has been damaged or lost.

To unpair/erase saved remotes press and hold the button on the PCB board. Release button when the LED light above the button turns solid green. Unpairing is successful once the LED starts to blink.

Pair a new remote
1. Press button on PCB board once quickly.
2. The LED will blink rapidly.
3. Press center of new remote and the blue light will illuminate.
4. Press button on PCB board once to remove from pairing mode.
5. New remote is now paired

Multiple Solar-Powered Daylight Dimmer Applications

Multiple Solar-Powered Daylight Dimmers, up to 10, can be operated by one remote. Use above instructions to unpair all remotes and pair all Daylight Dimmers with one (1) remote.

Multiple Daylight Dimmers operated by one (1) remote can become out of sync and open and close at separate times.
- The Daylight Dimmers can easily be re-synced by pressing and holding the remote until one of the dimmers reaches the full closed position.
- Continue to hold the remote until all of the Daylight Dimmers reach the full closed position. Release finger and dimmers will now be in sync.

Note: The Solar-Powered Daylight Dimmer has a 10 minute delay at the full closed position when the remote is pressed and held. This feature is designed to re-sync the Daylight Dimmers. The delay will reset once your finger has released from the remote and the remote can be used to open and close the Daylight Dimmers immediately.
**Alternate Installation** (for 160/290 DS and 290 DS Low Profile) (160/290 DS shown)

If Daylight Dimmer cannot be installed through the ceiling it will be necessary to complete the installation from inside the attic space.

1. Insert Daylight Dimmer assembly into Top Tube
2. While holding Daylight Dimmer in place, apply tape to two (2) sides of Daylight Dimmer and Top Tube to temporarily hold in place.

3. Insert Remaining Tube Run into bottom of Daylight Dimmer
4. Fasten Tube Run to Daylight Dimmer
   - Once fastened remove the Two (2) temporary strips of tape
5. Tape bottom half of Daylight Dimmer to Tube Assembly
   - From ground floor fasten assembly to ceiling

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For the most current Installation Instructions, please visit www.solatube.com/instructions

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Alternate Installation (for 160/290 DS and 290 DS Low Profile) (160/290 DS shown)
For long tube runs, it may be necessary to install the Daylight Dimmer further down in the tube run.

52 Install Daylight Dimmer in Desired Location of Tube Run
Note: Multiple extension cables can be connected together.

53 Attach Extension Cable
Attach extension cable at roof level and secure with cable clamp just below connection.

54 Allow Extension Cable to Hang Down Through Top Tube

55 Install Completed Tube Run into Top Tube
Allow Extension Cable to hang outside of tube.

For the most current Installation Instructions, please visit www.solatube.com/instructions
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Part No. 951875 v1.2
Attach Extension Cable to Daylight Dimmer From Inside Attic
Connect cables and secure cables to outside of tube with cable clamp just below connection.

Note
For all installation that include the Light Add-On Kit:
Ensure the Light Add-On Kit is installed into the bottom tube and always below the Solar-Powered Daylight Dimmer.

Always install the Light Add-On Kit below the Daylight Dimmer