

Solatube[®] Smart LED Lighting System Installation Instructions

Primary Unit

For Secondary Unit, see back of this page.



Par	Parts List*		
	Dome with Raybender® 3000 Technology	(1)	
1	a. Shock Inner Dome*†		
2	Roof Flashing (pitched or no pitch)	(1)	
3	Top Tube Assembly including: Dome Ring, Dome Ring Seal, Spectralight® Infinity Top Tube with Angle Adapter.	(1)	
4	Spectralight® Infinity 16 in (400 mm) Extension Tube (not included in some kits, see label on box)	(2)	
5	Primary Luminaire Assembly including: Spectralight® Infinity Bottom Tube with Angle Adapter, Amplifier, Light Sensor, LEDs (4)	(1)	
6	Effect Lens	(1)	
7	Diffuser	(1)	
	Seal and Fasteners		
	a. Dome Ring Screws - #8 X 1 in (25 mm)	(5)	
	b. LightTracker™ Reflector	(1)	
	c. Flashing Screws - #10 X 2 in (51 mm)	(8)	
•	d. Roof Sealant	(1)	
8	e. Expansion Joint Seal	(1)	
	f. Tube Screws - #8 X 9/16 in (14 mm)	(10)	
	g. Foil Tape - 2 in (51 mm) X 18 ft (5.5 m) roll	(1)	
	h. Drywall Screws - #6 X 1 5/8 in (40 mm)	(4)	
	a. Junction Box Assembly including DC Driver	(1)	
9	b. 1/2" NMC Connector	(1)	
9	c. Junction Box Screws—1.5 in (38 mm)	(4)	
	d. Wire Connecting Nut (yellow)	(2)	

Required Tools:

Keyhole Saw	Lumber Crayon
Saber or Reciprocating Saw	Magnetic Compass
Hammer	Voltage Tester
Flat Bar	Wire Strippers
Utility Knife	Lineman's Pliers
Tape Measure	Long Nose Pliers
Caulking Gun	Screw Driver Phillips & Flat Head
Screw Gun with Phillips Head	Required Safety Equipment
*Components shown not included	in all kits, see label on box.

*†High Velocity Hurricane Zones: Shock Inner Dome must be installed with dome. To meet HVHZ requirements, use a six inch no pitch flashing or a pitched flashing with a four inch turret extension.

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Solatube[®] Smart LED Lighting System Installation Instructions

Secondary Unit



Par	ts List*	Quantity
	Dome with Raybender® 3000 Technology	(1)
1	a. Shock Inner Dome*†	
2	Roof Flashing (pitched or no pitch)	(1)
3	Top Tube Assembly including: Dome Ring, Dome Ring Seal, Spectralight® Infinity Top Tube with Angle Adapter.	(1)
4	Spectralight® Infinity 16 in (400 mm) Extension Tube (not included in some kits, see label on box)	(2)
5	Secondary Luminaire Assembly including: Spectralight® Infinity Bottom Tube with Angle Adapter, Amplifier, LEDs (4), Secondary Unit Con- nector Wire	(1)
6	Effect Lens	(1)
7	Diffuser	(1)
	Seal and Fasteners	
	a. Dome Ring Screws - #8 X 1 in (25 mm)	(5)
	b. LightTracker™ Reflector	(1)
	c. Flashing Screws - #10 X 2 in (51 mm)	(8)
~	d. Roof Sealant	(1)
8	e. Expansion Joint Seal	(1)
	f. Tube Screws - #8 X 9/16 in (14 mm)	(10)
	g. Foil Tape - 2 in (51 mm) X 18 ft (5.5 m) roll	(1)
	h. Drywall Screws - #6 X 1 5/8 in (40 mm)	(4)

*Components shown not included in all kits, see label on box.

*⁺High Velocity Hurricane Zones: Shock Inner Dome must be installed with dome. To meet HVHZ requirements, use a six inch no pitch flashing or a pitched flashing with a four inch turret extension.

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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.
- 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 the system could cause personal injury and property damage. If the product is damaged, the structural capacity may be weakened; therefore the system should be repaired immediately. For safe installation and use, do not deviate from these installation instructions.
- 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

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

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.



Install Solatube Daylight Dimmer only on a properly aligned Solatube Daylighting System.

Use only UL recognized components approved for this listing.

Smart LED Installation Tips

500000 Series – Solatube Recessed Smart LED						
Configuration	Suitable for Operation in Ambient Temperature not Exceeding	Input Volt- age	Frequency	Max. Current	Output Voltage	Max. Wattage
Primary Only (Part No. 500000)	50°C	100-240 V	50-60 Hz	0.27 A	26 Vdc	17 W
Primary (Part No. 500000) with Sec- ondary (Part No. 500005)	45°C	100-240 V	50-60 Hz	0.55 A	26 Vdc	32 W

- This product is to be installed by gualified electricians only. Disconnect power before installation.
- The Solatube Smart LED is only intended for installation with the Class 2 driver supplied with the product.
- The maximum number of luminaires that can be connected to the Class 2 driver is one Primary Smart LED and one Secondary Smart LED.
- Minimum height from the base of the Luminaire assembly to the roof line of the Dome assembly shall be no less than 16 inches.
- Type IC Recessed—Inherently Protected (insulation may contact housing).
- Access above ceiling required.
- Not for use in fire rated installations.
- For use in one or two family dwellings only.
- Not for use in environmental air handling spaces.
- The Dome assembly is Suitable for Wet Locations.
- The Diffuser assembly is Suitable for Damp Locations.
- For supply connections use wires rated for at least 70°C
- Not for use with dimmers (e.g. dimming switches)
- Use only with Solatube Classic Vusion (L4), OptiView (L11), JustFrost (L9), TierDrop (L10), AuroraGlo (L13), VividShade (L12), Quadrafrost (L14)) Trims.

Caution

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■ Risk of fire and electrical shock. Most dwellings built before 1985 have supply wire rated 60° C.

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Solatube Smart LED System Operation

This section describes the behavior of the Solatube Smart LED Daylight Sensor and the optional Occupancy Sensor. The Solatube Smart LED System comes equipped standard with a Daylight Sensor, and optional Occupancy Sensor.

Solatube Smart LED System and Wall Switch Functionality

- The wall switch must be in the "on" position for the LEDs to function.
- The wall switch in the "off" position will override both sensors, preventing the LEDs from turning on.
- Solatube Smart LED System with Daylight Sensor only
 - The Daylight Sensor is a standard feature in all models that continuously monitors light levels. When the wall switch is in the "on" position, the LEDs will turn on immediately when daylight levels are insufficient. The Daylight Sensor will continue checking light levels until daylight levels remain sufficient for a period of 5 minutes. After the 5 minute period, the LEDs will turn off. The Daylight Sensor continues monitoring light levels unless the wall switch is in the "off" position.

Solatube Smart LED System with Daylight Sensor and Occupancy Sensor

- When installed with the optional Occupancy Sensor the LEDs will not turn on unless the following three conditions are all met: The wall switch is in the "on" position.
- The Occupancy Sensor detects an occupant within its range.
- The Daylight Sensor detects insufficient light levels.
- Example 1: If the Daylight Sensor detects insufficient light but the Occupancy Sensor does not detect an occupant in its range the LEDs will not come on.
- Example 2: If the Occupancy Sensor detects an occupant but the Daylight Sensor detects sufficient light levels the LEDs will not come on.
- Once the LEDs have been turned on, both the Daylight Sensor and Occupancy Sensor will continue to monitor their individual functions until one of them detects a change such as increased light level or the occupant leaves. Either one of these changes must remain constant for 5 minutes for the LEDs to turn off. The cycle starts over at that time.
- Both sensors must detect a change to turn the LEDs on, but only one sensor needs to detect a change to turn them off.



Solatube Smart LED System Check with Daylight Sensor Only

The following system checks should be performed to verify proper functionality of the system. If any failures occur during the system check verify all electrical connections and repeat system check.



When testing the Solatube Smart LED System use care to prevent damage to the Daylight Sensor and the Light Optimization Lens. Use caution when handling Amplifier to prevent damage to reflective material. Do not use tape or adhesives to cover the Daylight Sensor to prevent damage.

- Once installed follow the directions below according to the outside light conditions.
- For bright, sunny conditions (LEDs off) cover the Daylight Sensor with the Daylight Sensor Cover to trigger LEDs. See example shown on next page.
- Remove the Daylight Sensor Cover and wait for approximately 5 minutes. If daylight levels remain sufficient during this period the LEDs will turn off.
- For cloudy, overcast conditions (LEDs on) shine a bright light onto the top of the Daylight Sensor for approximately 5 minutes and the LEDs will turn off.

Solatube Smart LED System Check with Daylight Sensor & Occupancy Sensor

For optimum Occupancy Sensor functionality perform the following system check in the order specified.

- Step 1: Test Occupancy Sensor (Occupied Space)
 - Ensure the wall switch is in the off position.
 - Leave the provided Daylight Sensor Cover in place.
 - Switch the wall switch to the "on" position and walk into the range of the occupancy sensor.
 - The LEDs will turn on.
- Step 1a: Test Occupancy Sensor (Unoccupied Space)
 - Exit space and stay out of the range of the occupancy sensor for approximately 5 minutes.
 - The LEDs will turn off.
- Step 2: Test Daylight Sensor

- Wall switch remains in "on" position.
- Walk into the range of the occupancy sensor.
- The LEDs will turn on.
 - Remove Daylight Sensor Cover.
 - If bright, sunny conditions are present the LEDs will turn off in approximately 5 minutes.
 - If cloudy, overcast conditions are present shine a bright light onto the top of the Daylight Sensor for approximately 5 minutes.



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













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See Warning Section to Perform System Check

Smart LED Occupancy Sensor Installation Instructions Appendix

Par	ts List		
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Occupancy Sensor

Quantity

(1)

 * Max install distance from Occupancy Sensor to Primary Luminaire Housing is 10 ft (3m)

For ease of connection, install Occupancy Sensor prior to installing tube run.



Additional Materials and Tools	Quantity
1 Paddle Bit 13/16 in (20 mm)	(1)





* See Solatube Smart LED Warning section for detailed system check and Best Practices section for installing and positioning the Occupancy Sensor.

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

Smart LED Occupancy Sensor Installation Instructions Appendix

The ideal location for the Solatube Smart LED System Occupancy Sensor is in a ceiling area that provides a full view of the space with an unobstructed path to the entrance way(s), but out of view from hallway or adjacent room traffic. The sensor should be positioned well away (about 6 feet) from HVAC registers to prevent false triggering.

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Zanaa	Bathrooms Closets	Locate directly inside and above the door header or position where the Sensor cannot "see" out through an open doorway.
Open Zones	Hallways Stair Landings	Centrally locate to see in both directions (ie: top & bottom of stairs or both ends of hall) but positioned where the sensor cannot "see" movement in adjacent zones such as living
201163	Entry Ways	rooms.
Teels	Offices	Locate within 4-feet above normal Work Position (ie: desk top,
Task Areas	Living / Recreation Rooms	kitchen sink) but positioned where the Sensor is unlikely to
	Kitchens	"see" out through an open doorway; or in an "open kitchen"
	Bedrooms	where the sensor cannot "see" movement in adjacent zones.

Ceiling Height	X Range	Y Range
8 ft *	13 ft	9.5 ft
9 ft	13 ft	9.5 ft
10 ft	16.5 ft	13 ft
12 ft	13 ft	13 ft

Max depth reading from center of Occupancy Sensor to floor directly below is 16 ft.

* 8 ft Ceiling shown in diagram below.

Occupancy Sensor detection area with sensor installed in 8 ft. ceiling.



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Smart LED Occupancy Sensor Installation Instructions Appendix



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Universal Tile Flashing Installation Instructions Appendix (with Base Flashing)

Parts List		Quantity
1	Tile Flashing (Pitched or No Pitch version)	(1)
2	Base Flashing (Pitched or No Pitch version)	(1)
2	Aluminum "L" bracket	(4)
3	#8 X 1/4 in (6 mm) screws	(8)

Note: These instructions are for non-HVHZ areas only. Contact a Solatube International representative for recommendations in HVHZ areas.

Caution: The use of Portland Cement based mastic, grout, or alkaline materials will cause damage to the aluminum flashing.











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



Flat Roof Installation Instructions Appendix

Parts List		Quantity
1	Roof Flashing (no pitch)	(1)
2	Flashing Screws - #10 X 2 in (51 mm)	(8)

Add	itional Materials and Tools	Quantity
1	Straight Edge	(1)
2	Roof Sealant	(1)



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



Flashing Insulator Installation Instructions Appendix

Parts List		Quantity
1	Flashing Insulator	(1)
2	Foil Tape	(8)

Warning: Do not expose Flashing Insulator to direct flame.



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Additional Materials and Tools	Quantity
None	

Turret Extension Installation Instructions Appendix

Par	ts List	Quantity
1	Turret Extension 2 in (50 mm) or 4 in (100 mm)	(1)
2	1/4 in (6 mm) screws	(4)

Additional Materials and Tools		Quantity
1	Roof Sealant	(1)



Dome Edge Protection Band Installation Instructions Appendix



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0-90 Degree Extension Tube Installation Instructions Appendix

Parts List		Quantity
1	0-90 Degree Extension Tube	(1)
2	Tube Screws - #8 X 3/4 in (10 mm)	(4)
3	Foil Tape - 2 in (51 mm) X 6 ft (2 m)	(4)

Additional Materials and Tools Quantity
None



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

Solatube[®] Smart LED Accessories

Add more function by upgrading your Solatube Smart LED with any of these great accessories.



Daylight Dimmer

Because you don't need 100% of the light 100% of the time, the innovative Solatube Daylight Dimmer easily controls the amount of daylight entering a room with the convenience of a switch. Our patented variable butterfly baffle controls the light output.



Metal Roof Installation Kit

Order this kit for installation of a Solatube 160 DS or 290 DS flashing onto a standing seam metal roof.



Universal Tile Flashing (for applications without base flashing) The Universal Tile Flashing integrates seamlessly with most tile profiles. The malleable flashing skirt, available with a pitched or no pitch turret, easily adapts to the shape of the tile.



Dome Upgrade Kit

Upgrade an older Solatube product to take advantage of Solatube's patented Raybender™ 3000 Technology. The dome upgrade kit is installed without removing previous flashing or tubing.



Re-Roofing Recommendations

Solatube products require special care if removed for re-roofing. Refer to the Solatube Re-Roofing Recommendations to ensure proper removal and re-installation.

Not all items available for all markets. Contact your Solatube International representative for availability.

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

<u>Notes</u>



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