solaredge

architects of energy™

SolarEdge AC/DC Safety Switch

Version 1.0

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Important Notice

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Important Safety Instructions

Save these instructions.

SAFETY NOTE:

The Inverter is ungrounded at its DC inputs.

In the USA, the installation must comply with section NEC 690.35.

In Canada, the installation must comply with the Canadian Electrical Code.

WARNING!

ELECTRIC SHOCK HAZARD! The DC conductors of this photovoltaic system are ungrounded and may be energized at all times.

RISQUE DE CHOC ÉLECTRIQUE! Les conducteurs de DC de ce système photovoltaïque sont sans mise à la terre et peuvent activer à tout moment.

WARNING!

Do not remove the Inverter cover before five minutes have elapsed after disconnecting all sources of power. Otherwise, there is a risk of electric shock form energy stored in the capacitor.

Ne pas ouvrir le couvercle de l'onduleur avant que cinq minutes ne se soient ecoulées après coupure de toutes les sources de puissance. Sinon, il y a un risque de choc électrique provenant de l'énergie stockée dans le capaciteur.

WARNING!

Use No. 10 AWG, 75° or 90° copper PV wire only.

Utiliser seulement des câbles PV No. 10 AWG, 75° ou 90°.

IMPORTANT:

The wiring methods that must be used in this installation, and which are described below, must be in accordance with the National Electrical Code and ANSI/NFPA 70.

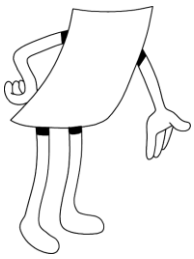
Les méthodes de câblages qui doivent être employées dans cette installation, et qui sont décrites ci-dessous, doivent être conformes aux standards NEC et ANSI/NFPA 70.

IMPORTANT:

Tightening torque of terminal blocks is 1.2-1.5 Nm. (0.88-1.1 pound-foot).

IMPORTANT:

Maximum allowed ambient temperature for the Inverter in +50°C. Do not mount in direct sunlight in high ambient temperatures.



Chapter 1

Introduction

About This Chapter

This chapter introduces the SolarEdge AC/DC Safety Switch and describes its package contents.

This chapter contains the following sections:

What is the AC/DC Safety Switch?

The AC/DC Safety Switch is a manually operated switch for disconnecting the AC and DC power of a SolarEdge Inverter in a SolarEdge power harvesting system.

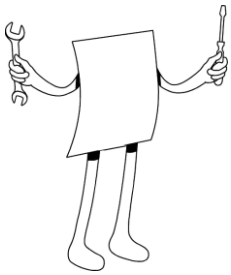
The AC/DC Safety Switch is installed on the bottom of each Inverter. AC and DC cables run through it and connect to the Inverter.

The AC/DC Safety Switch opens all ungrounded conductors of the circuit to which it is connected in compliance with the National Electric Code, and specifically NEC690.35, which addresses ungrounded PV arrays. The AC/DC Safety Switch is rated to the operating condition of the Inverter (32A, 600VDC and 32A 240/20VAC).

Package Contents

The following describes the contents of the AC/DC Safety Switch package:

- AC/DC Safety Switch.
- Front Cover of the AC/DC Safety Switch.
- AC/DC Safety Switch mounting bracket.
- Paper template with a drawing that indicates the places to drill the mounting holes on the wall.
- Four flat head screws for fastening the AC/DC Safety Switch to the wall-mounting bracket.
- Two washers for connecting the Safety Switch to the Inverter



Chapter 2

Setting Up the AC/DC Safety Switch

About This Chapter

This chapter describes how to install and connect the AC/DC Safety Switch.

This chapter contains the following sections:

Mounting the Switch

The AC/DC Safety Switch is mounted after the Inverter has been mounted, as described in the SolarEdge Installation Guide.

1 Attach the AC/DC Safety Switch to its mounting bracket using the four provided flat head mounting screws, as shown below:

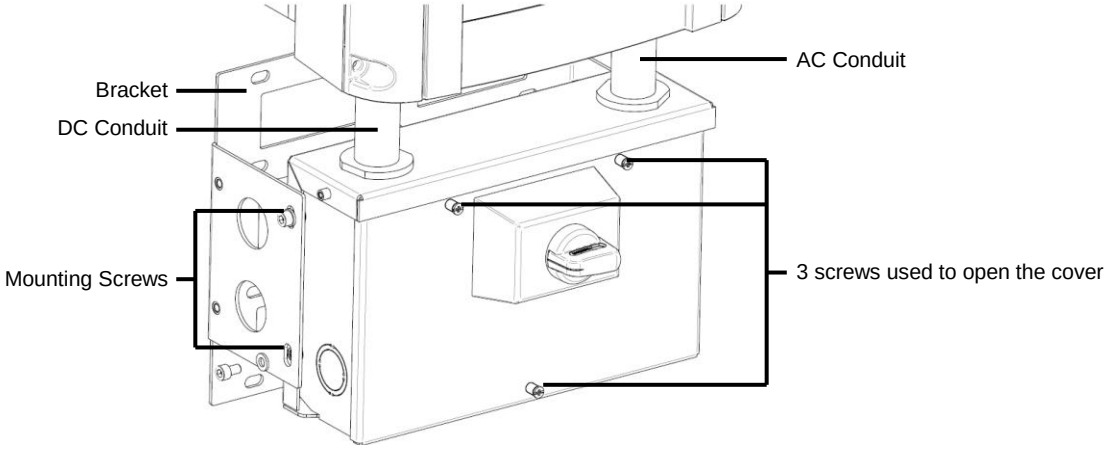


Figure 1: Attaching the AC/DC Safety Switch to its Mounting Bracket

2 To determine the location where to drill the holes for the mounting bracket, position the bracket against the wall or pole and push the conduits into the Inverter inputs. Use a pencil to mark the positions where the bracket will be screwed into the wall or pole.

Alternatively, you can use the supplied paper template to mark the positions of the holes. The paper template has a drawing that indicates the positions where to drill. Place the top of the paper aligned with the bottom of the Inverter mounting bracket.

NOTES:

- The conduits, hubs and fittings that are used must be suited for field wiring systems.
- The hubs and other fittings that are used must comply with UL514B.
- The conduits, hubs and fittings that are used must have any one of the following NEMA ratings: 3, 3R, 3RX, 3S, 3SX, 3X, 4X, 4, 6 and 6P for a unit NEMA 3R rating.

3. Drill the holes in the marked positions.
4. Open the cover of the Inverter, as described in the *SolarEdge Installation Guide*.
5. From the inside of the Inverter, grab the AC and DC wires extending from the AC/DC Safety Switch conduits. Make sure that they are inside the Inverter, so that they can later be connected in subsequent steps to the Inverter, as shown below:

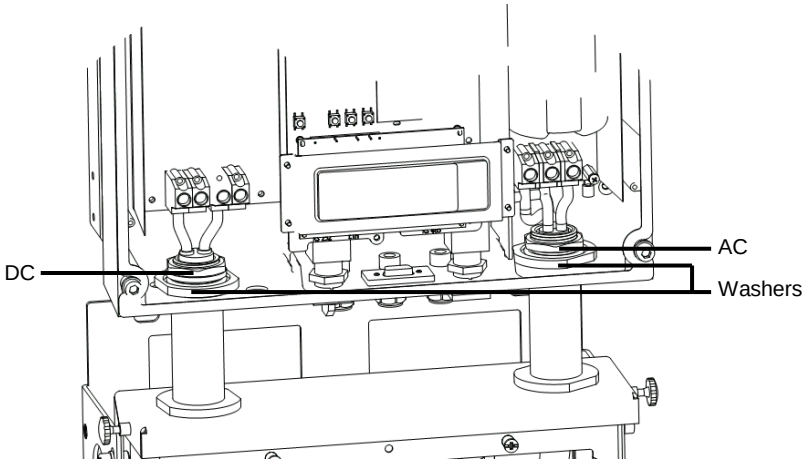


Figure 2: Inserting the AC and DC Conduits

6. Secure the two washers in order to hold both DC and AC conduits in place.
7. Screw the bracket to the wall or pole.

Connecting the Switch to the Inverter

To connect the AC/DC Safety Switch to the Inverter:

1. **Connect the DC**, as follows:
   - Connect the DC+ of the Inverter input to the red wire.
   - Connect the DC- of the Inverter input to the black wire.
2. **Connect the AC,** as follows:
   - Connect the red wire to Line 1 (L1) in the Inverter.
   - Connect the black wire to Line 2 (L2) in the Inverter.
   - Connect the white wire to the Neutral (N) in the Inverter.
   - Connect the green/yellow wire to the grounding terminal ⏚.
3. Tighten the screws of each wire terminal according to the following torque. The tightening moment is 1.2-1.5 Nm.(0.88-1.1 pound-foot).
4. Verify that there are no whiskers in each terminal connector and that the unused ports of the terminals are sealed.
5. Close the Inverter cover, as described in the *SolarEdge Installation Guide*.

Connecting the Switch to the External DC and AC Wires

Opening the Switch Cover

► To open the AC/DC Safety Switch:

1. Move the switch to the OFF position
2. Open the three screws on the front cover of the AC/DC Safety Switch, as shown below:

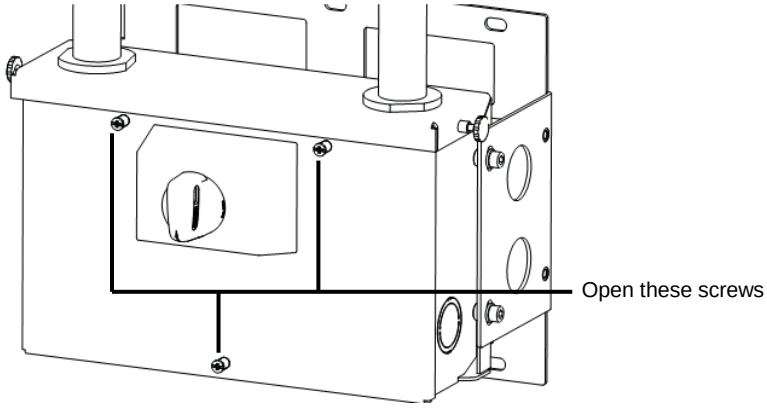


Figure 3: Opening the AC/DC Safety Switch Cover

3 Remove the AC/DC Safety Switch cover.

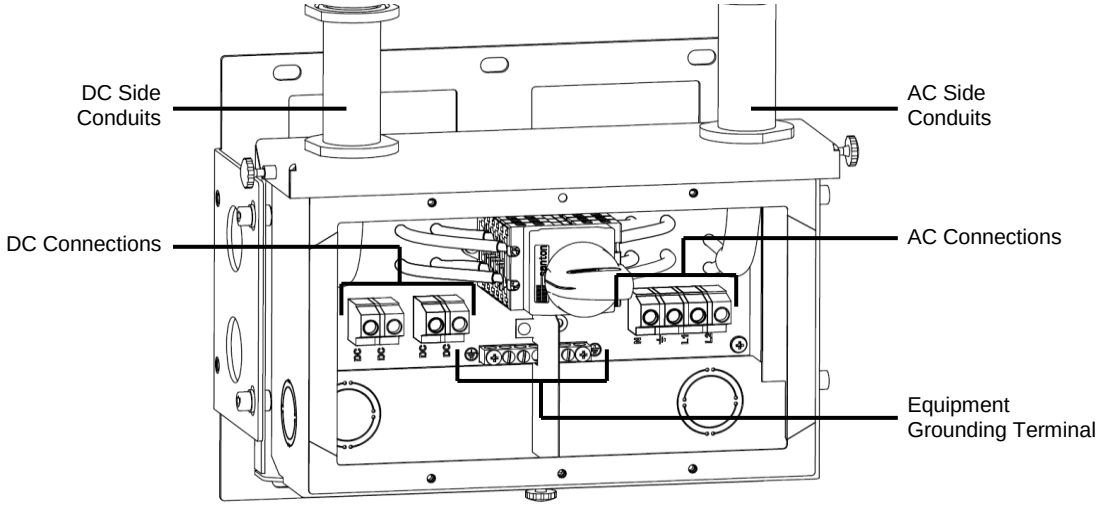


Figure 4: Inside the AC/DC Safety Switch

Connecting the AC

Use any of the AC side conduit inputs. Each punch-out opening has two sizes: ¾" and 1".

1 Strip off the isolation and expose the three wires in the AC cable, as follows:

The lengths of the wires to strip are as follows:

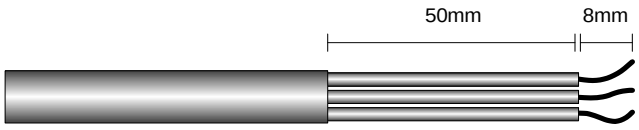


Figure 5: Wire Lengths to Strip – AC

- Strip 8 mm (1/3") for contact.
- Individual cable length 50 mm (2").

WARNING!

Make sure to connect the equipment grounding first.

Veillez à relier le conducteur de PE (la terre) d'abord.

2. Connect the wires to the appropriate terminal connectors according to their labels: GND, L1 and L2. Optionally, N, as well.
   - Line 1 (L1), which is typically red.
   - Line 2 (L2), which is typically black.
   - Neutral (N) which is typically white. You may optionally connect the Neutral wire for monitoring split phase balance.
   - Equipment grounding conductors, ⏚ can be bare, green or green with yellow stripe.

     Connect equipment grounding to the grounding terminal.
3. Tighten the screws of each wire terminal according to the following torque. The tightening moment is 1.2-1.5 Nm.(0.88-1.1 pound-foot).
4. Verify that there are no whiskers in each terminal connector and that the unused ports of the terminals are sealed.

Connecting the DC

Use any of the DC side conduit inputs. Each punch-out opening has two sizes ¾" and 1".

1. Connect the DC connectors from the photovoltaic installation to the DC+ and DC- connectors as shown in Figure 4.
   Two strings may be connected in parallel to both DC inputs of the Inverter. They are simply wired together in the terminal block inside.
2. Connect the DC equipment grounding to the equipment grounding terminal block.

   If more than two strings are required, they can be connected in parallel in an external combiner Box before connecting a unified DC connection to the Inverter.

NOTE:

If more than two strings are connected each should be properly fused on both DC+ and DC- according to NEC690.35(B).

NOTE:

SolarEdge's fixed input voltage architecture enables the parallel strings to be of different lengths. Therefore, they do not necessarily need to be connected to an identical number of power optimizers.

The lengths of the wires to strip are as follows:

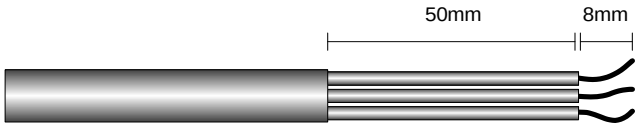


Figure 6: Wire Lengths to Strip – DC

- Strip 8 mm (1/3") to enable contact
- Each cable length is 50 mm (2")

CAUTION:

Ensure that the + wire is connected to the + terminal connector and that the - wire is connected to the - terminal connector.

S'assurer que le câble + est connecté à la borne + et que le câble - est connecté à la borne -.

3 Tighten the screws of each wire terminal according to the following torque. The tightening moment for the terminals is 1.2-1.5 Nm.(0.88-1.1 pound-foot).

Closing the AC/DC Safety Switch Covers

1. Close the AC/DC Safety Switch cover by putting back the three screws.
2. Install the decorative plastic cover using the three screws.

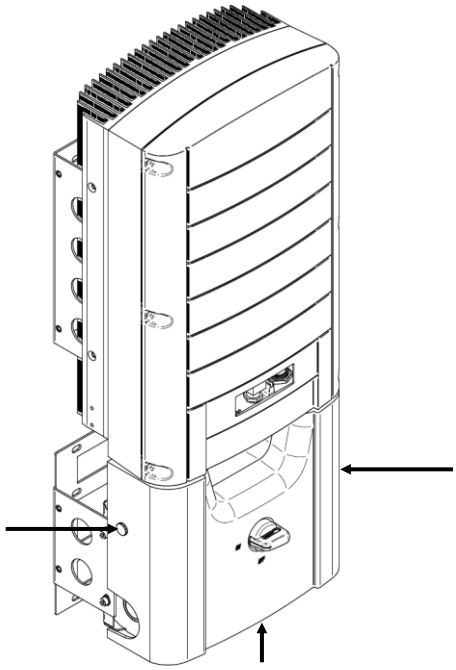
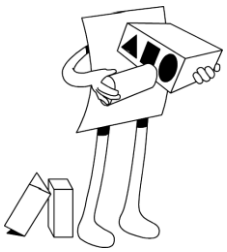


Figure 7: Closing the AC/DC Safety Switch Covers

You may now continue in the *SolarEdge Installation Guide* from *Chapter 5, Commissioning the Installation*.



Chapter 3

Replacing an Inverter

About This Chapter

This chapter describes how to replace an Inverter.

An Inverter can be replaced without opening or removing the AC/DC Safety Switch, as described below.

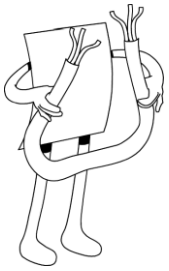
1. Turn the Inverter's ON/OFF switch on the bottom of the Inverter to OFF. Wait until the LCD indicates that the DC voltage is safe or wait at least five minutes before continuing to the next step.
2. Turn the AC/DC Safety Switch OFF.
3. Open the Inverter cover.
4. Disconnect the DC and AC wires from the Inverter.
5. Remove the Inverter from the mounting bracket.
6. Place the new Inverter on the mounting bracket and install the DC and AC wires, as described in this manual.

You may now continue setting up the new Inverter and re-pairing the new Inverter to the existing power optimizers, as described in *Chapter 5, Commissioning the Installation* of the *SolarEdge Installation Guide*.

NOTE:

If you remove the old Inverter and do not immediately install a new one, then:

- Lock the AC/DC Safety Switch to the OFF position using a padlock on the switch.
- Use insulation tape to isolate each of the AC and DC wires.
- Seal the open conduits using duck tape.



Appendix A

Technical Specifications

About This Appendix

This appendix provides the technical specifications of the SolarEdge AC/DC Safety Switch.

Input		
Maximum DC voltage	600	Vdc
Maximum DC current	32	Vac
Nominal AC voltage	240/208	Vac
Nominal AC current	32	Adc
Ambient temperature	-25 - 65	degC

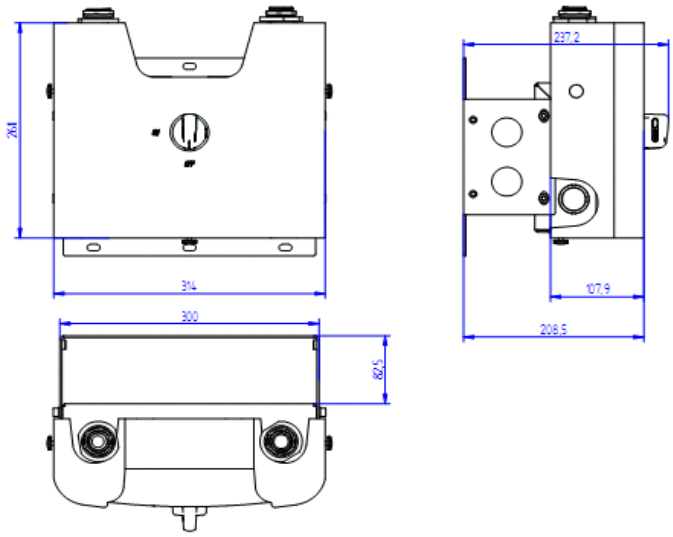


Figure 8: Switch Dimensions in mm

If you have technical problems concerning our products, please contact us:

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