1. What is an Outlet Branch Circuit AFCI?

An Outlet Branch Circuit AFCI is different from conventional receptacles. It is intended to provide protection of branch circuit wiring, cord sets, and power-supply cords connected to it against the unwanted affects of arcing. In the event of an arcing fault, an AFCI will trip and stop the flow of electricity to mitigate the effects of the arcing that may have posed a risk of fire ignition if the arcing persisted.

Definition of an arcing fault: An arcing fault is an unintentional arcing condition in a circuit. Arcing occurs as a normal condition in some motors or when a switch opens. An example of unintentional arcing would be arcing that occurs due to severed power-supply cord conductors.

An Outlet Branch Circuit AFCI does not protect against circuit overloads, short circuits or against shock hazards.

2. The AFCI’s features

AFCI in position A. All outlets of the protected branch, including lighting and receptacle outlets, must be connected to the load side of the AFCI.

6. Identify cables/wires

Procedure: box with two cables (4-6 wires)

(a) Detach one cable’s white and hot wires from the receptacle and cap each one separately with a wire connector. Make sure that they are from the same cable.

(b) Re-install the receptacle in the electrical box, attach the faceplate, then turn the power ON at the service panel.

(c) Determine if power is flowing to the receptacle. If so, the capped wires are the LOAD wires. If not, the capped wires are the LINE wires.

(d) Turn the power OFF at the service panel, and connect the AFCI's LOAD and LINE cables, then remove the receptacle.

(e) Go to step 7B.

4. LINE vs. LOAD

A cable consists of 2 or 3 wires.

Cable Wires

LINE cable: Delivers power from the service panel (breaker panel or fuse box) to the AFCI. If there is only one cable entering the electrical box, it is the AFCI’s LINE terminal. This cable should be connected to the AFCI’s LINE terminals only.

LOAD cable: Delivers power from the AFCI to another receptacle in the circuit. This cable should be connected to the AFCI’s LOAD terminals only. The LOAD terminals are under the yellow sticker. Do not remove the sticker at this time.

Next, plug in and turn ON the lamp or radio at the receptacle’s other outlet to make sure the power is OFF at both outlets. If the power is not OFF, stop work and call an electrician to complete the installation.
7. Connect the wires (choose A or B) ... only after reading other side completely

A: One cable (2 or 3 wires) entering the box

1. Cut the wires at a 90° angle...
2. ...and strip 1 7/8 inch (2.22 cm) of insulation... 
3. ...and place in place to the LOAD terminals...
4. ...and turn the screw firmly clockwise, 2/3 of the way around screw...
5. ...and insert bare end fully into screw...
6. ...and green in place...
7. Connect the ends of these wires to the LINE cable's bare copper (or green) AFCI. Also connect a similar wire to the grounding terminal on the box.

About wire connections:
- **Sidewire:**
  - Insert bare end fully into screw firmly...
  - Tighten screw firmly...
  - 7/8 inch (2.22 cm)...

- **Backwire:**
  - Connect the ends of these wires to the LINE cable's bare copper (or green) AFCI. Also connect a similar wire to the grounding terminal on the box.
  - ...and turn the screw firmly clockwise, 2/3 of the way around screw...
  - ...and insert bare end fully into screw...
  - ...and green in place...

B: Two cables (4 or 6 wires) entering the box

1. Cut the wires at a 90° angle...
2. ...and strip 1 7/8 inch (2.22 cm) of insulation... 
3. ...and place in place to the LOAD terminals...
4. ...and turn the screw firmly clockwise, 2/3 of the way around screw...
5. ...and insert bare end fully into screw...
6. ...and green in place...
7. Connect the ends of these wires to the LINE cable's bare copper (or green) AFCI. Also connect a similar wire to the grounding terminal on the box.

About wire connections:
- **Sidewire:**
  - Insert bare end fully into screw firmly...
  - Tighten screw firmly...
  - 7/8 inch (2.22 cm)...

- **Backwire:**
  - Connect the ends of these wires to the LINE cable's bare copper (or green) AFCI. Also connect a similar wire to the grounding terminal on the box.
  - ...and turn the screw firmly clockwise, 2/3 of the way around screw...
  - ...and insert bare end fully into screw...
  - ...and green in place...

Complete the installation:
- ...and insert bare end fully into screw...
- ...and green in place...
- Go to step 8.

8. Test your work

Why perform this test?
- • If you miswire the AFCI, it may not mitigate the effects of arcing faults due to unintentional arcing in a circuit. 
- • If you mistakenly connect the LINE wires to the LOAD terminals, the AFCI will still operate like an ordinary receptacle, but it will not interrupt an unintentional arcing fault.

Procedure:
(a) Turn the power ON at the service panel. Press the RESET button fully, plug a lamp or radio into receptacle(s)...
(b) Press the TEST button in order to trip the device. This should stop the flow of electricity, making the lamp or radio shut off...
(c) (a) Go to Troubleshooting.
(d) Press the TEST button then RESET button... 

Troubleshooting

Turn the power OFF and check the wire connections again. If they are correct, press the AFCI’s TEST button. Reverse the LINE and LOAD connections if necessary. Start the test from the beginning of step 8 if you rewired any connections to the AFCI.