



Installation guide for RV Electrical Hookups

The Wylers on Wheels Evangelistic Ministry

We have two RV's and need an electrical hookup for each one. (Total of two hookups)

Although we can get by with just an 110V wall outlet, it is a blessing if a church can install RV electrical hookups.

Over the years, we have discovered that standard RV plugs confuse and confound many electricians. We have compiled this installation guide from several resources and experienced electricians to help explain our specific hookups.

Below is an installation guide for two different electrical plug options:

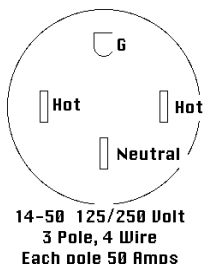
Option 1. 120/240 volt 50 amp outlet (Preferred)

Option 2. 120 volt 30 amp outlet (Acceptable - we use our adapter. This option is cheaper and usually easier.)

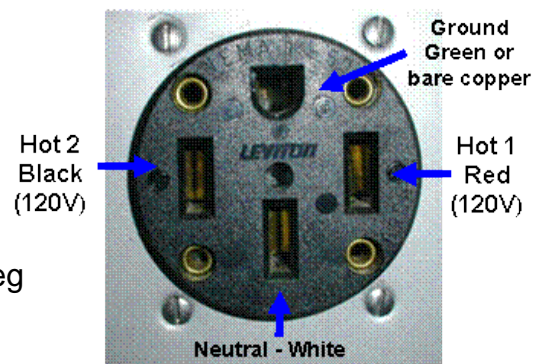
Info pertaining to both options

1. The parts and supplies listed below are typically available at most hardware or home improvement stores.
2. The terms "110V, 120V, & 125V" and "220V, 240V, & 250V" are often used interchangeably in their own respect.
3. There are two ways to setup the plugs on your property.
 - a. Most electricians run the wire through enclosed walls and mount the hookups in a nice outside electrical box(es) near the place where our RV's will be parked.
 - b. Another way is to run the wire and receptacle straight from the box through a window or door to near where our RV's will be parked. When we leave, the wire and receptacle can simply be wound up and stored near the breaker box until needed again.
4. If you place the ground on top (pictured below) it makes plugging in much easier.
5. Electrical panels are very dangerous and even fatal to work with. Use extreme caution! Turn off all power to the panel while connecting the new breaker.

Option 1. 120/240V 50 amp RV outlet (preferred)



The Standard 50 amp RV outlet is 120/240 volts. Meaning there are two legs of 120 volts which theoretically equal 240 volts. ($120V + 120V = 240V$) Nothing in the RV runs on 240V. Everything is 120V. Some appliances and equipment run off one leg of 120V and the rest run on the other leg. This is not standard 240V.



The half round pin is the ground, the blade directly below it is Neutral, and the other two blades each have 120 volts. If wired correctly, the two 120 volt feeds are of opposite phases so that you get 240 volts when you read across them and 120 volts between each of them and neutral or ground. The outlet is protected by a double breaker rated at 50 amps on each leg. (See "50 amp breakers" below for a detailed explanation)

The 50 amp receptacles are ANSI/NEMA 14-50R. (50A 125/250V AC) (Our plugs are ANSI/NEMA 14-50P.)



The plug from our RVs

Wiring instructions

When choosing a wire, most electricians use at least 6/3 plus ground.

It must have 4 wires (two hot, one neutral, and one ground). Whatever wire you choose, make sure you run a large enough wire to handle the load over the distance you are running.

On the back of the 250V receptacle, there will be four terminals labeled W (or white), G (or green), and possibly X and Y. The wires going to terminals X & Y on the receptacle are the hot wires and are interchangeable. The hot wires from the panel are typically red and black. The neutral W (white), and the bare (or green) ground wire G, MUST be on their designated connections. The bare/green wire should also be grounded to the electrical box that the receptacle is mounted in (if metallic). Most 14-50R receptacles provide a strap from the ground terminal to the mounting plate of the receptacle itself.



50 amp breakers



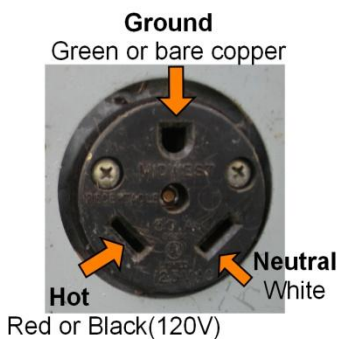
The breaker for this service must be a dual (double) 50 amp 240V breaker. A dual 240V breaker means that the breaker must be of the type that actually connects to both bus bars in the panel, every other bus lug in the panel is on the opposite leg of the incoming power line. Most 240V dual breakers have both breakers bridged or ganged together so that if one of the dual breakers trips it will also trip the other side, while others have only one toggle tab and are bridged internally. If you were to measure the voltage between opposite lugs in the panel, you would measure 240V. If you were to measure between either bus lug and a ground or neutral bus, you would measure 120V. If you ask your local building or electrical supply depot for a dual 50 amp breaker for use in a 250V dryer or range circuit for your model/make breaker panel, they will be able to pick out the correct breaker for you.

Double Checking for proper installation

After completing all the wiring and closing up the boxes, test the outlet for proper wiring with a voltmeter or appropriate circuit tester. You should measure 120V from either vertical blade on the side of the socket (check them both) to either the neutral slot on the bottom or the ground contact on the top. You should measure 240V from one side blade to the other side blade.



Option 2. 120V 30 amp RV outlet (acceptable – we use our adapter)



The installation of this option tends to be easier to understand. The Standard 30 amp RV outlet is 120 volts. This is a three prong 120 volt plug, not 240V. The half round pin is the ground, the blade on the lower right is the Neutral, and the blade on the lower left is the hot wire. The outlet is protected by a standard single 30 amp breaker. (See “30 amp breaker” below for a detailed explanation)

The 30 amp receptacles are NEMA TT-30R. (30A 125V AC) (Our plugs are ANSI/NEMA TT-30P.) The plug from our adapter is pictured on the right.



Wiring instructions

When choosing a wire, most electricians use at least 10/3 for this plug. It must have 3 wires (one hot, one neutral, and one ground). Whatever wire you choose, make sure you run a large enough wire to handle the load over the distance you are running.

30 amp breaker



The breaker for this service is a standard single 30 amp 120V dedicated breaker. If you ask your local building or electrical supply depot for a 30 amp breaker for your model/make breaker panel, they will be able to pick out the correct breaker for you.

Double Checking for proper installation

After completing all the wiring and closing up the boxes, test the outlet for proper wiring with a voltmeter or appropriate circuit tester. You should measure 120V from the lower left blade (hot) to either the lower right blade (neutral) or the ground hole on the top. You should measure 0 volts from the lower right blade (neutral) to the ground on top.

Thank you for your efforts!