The 50-amp 120/240-volt 3 pole 4 wire grounding Service

This <u>50-amp</u> <u>service</u> has 4 wires with two 120-volt HOT feeds. <u>It is a</u> <u>misconception that this 50-amp RV service is something special. This service is a</u> STANDARD 120/240 50-amp 3 pole with 4 prongs used for <u>numerous</u> applications.

From this common service we can draw 120 or 240 volts. Each leg is 50 amps @ 120 volts. 50-amp X 120-volt = 6000 watts. But since there are 2 HOT 120-volt legs at 6000 + 6000 = 12,000 watts to use in the RV or 50-amp X 240-volt = 12,000 watts when used as a 240-volt service.

Almost ALL 50-amp wired RV's use both sides of the service separately as 120 volt on each leg. Only a few mostly high-end coaches utilize the 240-volt from this <u>same</u> service.

The 50-amp 3-pole 4-wire service is superior to the 30-amp service because of the total amperage available.

30-amp 120-volt service = 3,600 watts 50-amp 120/240-volt service = 12,000 watts

The half round or U is the ground the one directly below it is the WHITE or neutral and the other two black wires are 180 degrees out of phase with each other are the HOT 120-volt. In reality you have TWO 120 volt split service going into your RV.

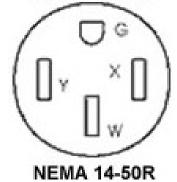


Click on photo to enlarge.



Click on photo to enlarge.







50-amp Double Pole Breaker

X & Y are interchangeable, red and black wires are hot (live) wires, one wire on the X, and the other on the Y. The neutral (white) and the bare ground wire MUST be on there designated connection. I purchased this box at the Home Depot. It is made by Midwest with a DUCK emblem on it.

Shut off the MAIN breaker in the panel. Pull the wires connect all the wires to the outside receptacle or panel first. Insert a double pole 50-amp breaker into your MAIN or sub service box. Connect the red wire to the Y configuration and to one of the screws on the breaker. Connect the black wire to the X and to the other screw on the breaker. The X and Y connections are interchangeable. Connect a white wire to W and to the neutral bar in the service. Connect the ground wire to the G and to the grounding bar in the service.

It is imperative that the Electric Service used for RV's are wired correctly. DO NOT TRUST anyone, yourself, friends, relatives or ANY Professional Electrician. ALWAYS check out all RV Electric Service BEFORE plugging in the first time.

For information on how to test RV Electric Outlets Look at the "OUTLET TESTING" page.

For <u>BASIC HOW to WIRE</u> a 50-amp Service Click on and Print out the following page and hand it to the person installing it.

50-amp 120/240-volt RV Service

Wire SIZE and voltage Drop calculators (The table is NOT a NEC code just recommendations)

For a 20-amp circuit, use 12-gauge wire. For a 15-amp circuit, you can use 14-gauge wire (in most locales). For a long run, though, you should use the next larger size wire. Here's a quick table for normal situations. Go up a size for more than 100-foot runs, when the cable is in conduit, or ganged with other wires in a place where they can't dissipate heat easily:

| For 120 V | 15 amp | 20 amp | 30 amp | 50 amp | 100 amp |
|-----------|--------|--------|--------|-----------|-----------|
| 25 feet | #14 | #12 | #10 | #8 | #6 |
| 50 feet | #12 | #10 | #8 | #6 | #4 |
| 100 feet | #10 | #8 | #6 | #4 | #1 |

Wire Size Calculator

Electrician
Calculators

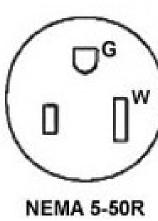
Most calculations are available here

Voltage Drop
Calculator

Other 50-amp Electric Services, used for many applications.



The 50-amp 120/240-volt 3 pole 4



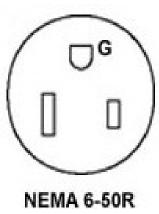
NEMA 5-50R, 2-pole, 3-wire, grounding, rated 50A 120V.

The 5–50 120-volt service is *uncommon*, twist-locking plugs and receptacles are generally used for this type of high-current applications.

This is a 120-volt service not a 120/240-volt service we normally associate with 50-amp.

This service is wired the same as the TT-30 120V except for the larger 50-amp Single Pole breaker.



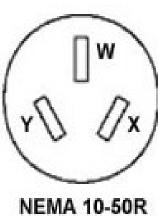


NEMA 6-50R, 2-pole, 3-wire, grounding, rated 50A 240V *No Neutral*

For welders, large air conditioners, kilns, commercial kitchen equipment and shop machinery.

NOT for RV. For more information check out "WELDER Service" on the left.





NEMA 10-50R, 3-pole, 3-wire, non-grounding, 50A 120/240V *No Ground*

For older ranges that are non-grounded and that require dual voltage: 240V for the heating elements and 120V for lighting/clock/controls.

NOT for RV. For more information check out "APPLIANCE Service" on the left.