Basic RV Electrical

By Lt Dan

In order to simplify the mystery of RV electrical systems, here is some basic information about pedestals, meters and wiring. First of all, lets look at some basic terms for electrical testing.

Alternating Current (AC) = The power supplied by the utility company or generator.

Direct Current (DC) = Constant voltage from batteries.

Volts = The electrical potential in a supply, usually 120v AC household or 12v DC coach house.

Amperage (Amps) = The strength of the electrical force.

Wattage (Watts) = The unit of power supplied by the source. Watts = Volts x Amps.

Resistance = The amount of force slowing electrical energy expressed in ohms.

RVs have two types of electrical supply, the 120/240 volt AC supplied by the park shore pedestal or generator used for appliances, A/Cs, etc. Then there is 12 volt DC power supplied by the house batteries used by the RV lighting and control systems. There is a charger or converter that converts the 120/240 volt AC source it to 12-14 volt DC to maintain the house batteries. An inverter does just the opposite, it takes 12-14v battery power and converts it to 120v AC power.

Here are some different types of electrical testing equipment and each coach should carry a minimum of a basic multimeter and an outlet tester. **IMPORTANT - When using a meter, always make sure you have it on the proper setting or range or it can ruin the meter.**

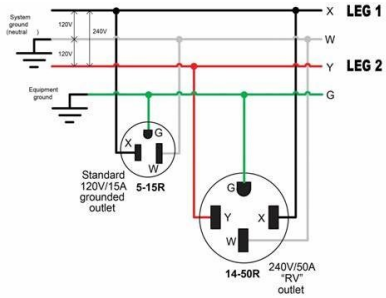
Basic Multimeter

Non-Contact 120v Checker and Plug Tester

Better Multimeter

Meter With Amp Loop

Plug In Watt Meter

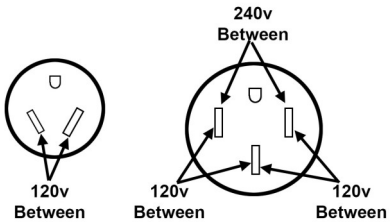


Typical Pedestal Wiring

The 20amp household outlet would be wired similar to the 30 amp connector connected to the White & Red wires.

Measuring Voltage

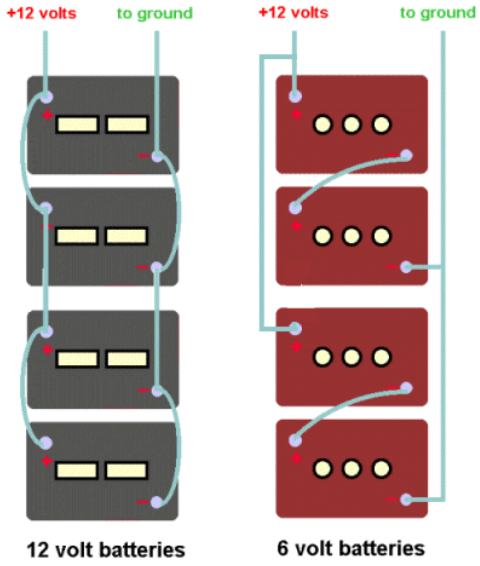
The illustration below shows how to use an AC voltmeter to check the voltages on a properly wired pedestal. A typical 50 amp setup consists of two 120v "legs" with capability of 50 amps each.

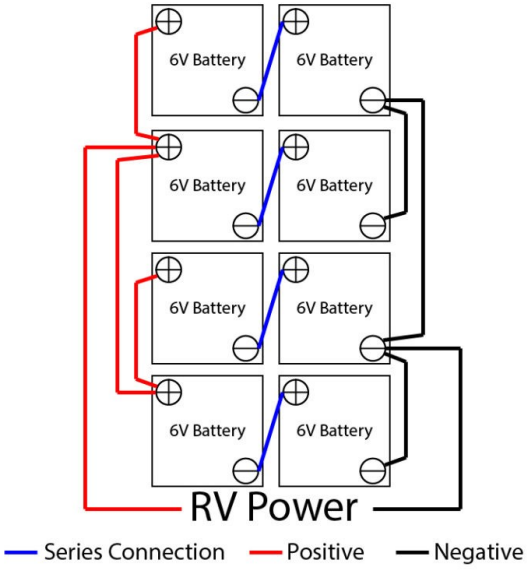


The 12v Side De-Mystified

The first image shows two 6v batteries wired in series which results in 12v output but the amp output would be the same as a single battery. The second image shows how two 12v batteries would be wired in parallel that would result in 12v output, but double the amp capacity. The third image shows how a typical eight 6v battery layout in a RV would be wired.

When testing 12v batteries, a full charge is above 12.5 volts. Anything below that is low voltage. The fourth image is a chart showing the state of charge at different voltages.



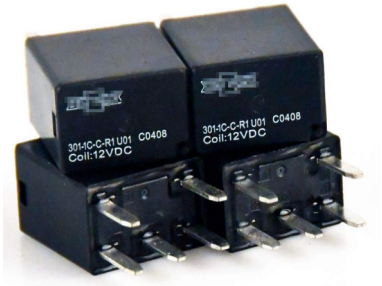


Voltage	State of Charge
12.6	100%
12.5	90%
12.42	80%
12.32	70%
12.20	60%
12.06	50%
11.9	40%
11.75	30%
11.58	20%
11.31	10%
10.5	0%

Some Recommended Spare Parts

Below are some of the spare parts that you should carry in your motorhome. The giant high amperage fuses are used in the main power cables to the inverter and the house systems. You should carry a selection of the automotive fuses, primarily the Maxi, the ATO and the Mini. These fuses are used in the motorhome as well as almost all towed vehicles. The relays are the two types that are used throughout the Tiffin and Freightliner chassis for engine systems power and taillights/brake lights.

871-1C-C-R1 U01 Relay

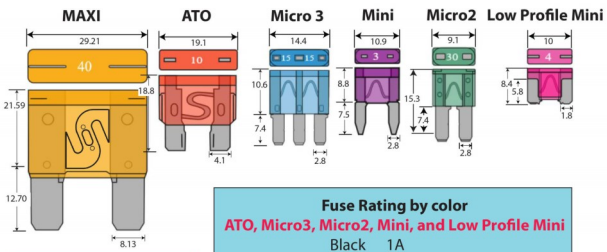


301-1C-C-R1 U01 Relay

High Amperage Fuse

These can be hidden behind rubber or clear plastic covers.

Automotive Type Fuses



Fuse Rating by color
MAXI Fuse

Tan	70A
Red	50A
Blue	60A
Yellow	20A
Clear	80A
Green	30A
Orange	40A

Fuse Rating by color
ATO, Micro3, Micro2, Mini, and Low Profile Mini

Black	1A
Gray	2A
Violet	3A
Pink	4A
Tan	5A
Red	10A
Blue	15A
Yellow	20A
Clear	25A
Green	30A