

ADDITIONAL RESOURCES

Go to our support page for more assistance:
<http://www.westmountainradio.com/supportrr.htm>

Go to our OpTips page for connection tips:
<http://www.westmountainradio.com/optipsrr.htm>

RIGrunner Warranty

The RIGrunner is warranted against failure due to defects in workmanship or materials for one year after the date of purchase from West Mountain Radio or an authorized dealer. If purchased from an authorized dealer it must be returned with a copy of the original sales receipt or proof of purchase.

Warranty does not cover damage caused by abuse, accident, misuse, improper or abnormal usage, failure to follow instructions, improper installation, alteration, lightning, or other incidence of excessive voltage or current. If failure occurs within this period, return the RIGrunner or accessory to West Mountain Radio at your shipping expense with a full explanation and necessary proof of purchase. The device or accessory will be repaired or replaced, at our option, without charge, and returned to you at our shipping expense. Repaired or replaced items are warranted for the remainder of the original warranty period. You will be charged for repair or replacement of the RIGrunner or accessory made after the expiration of the warranty period.

West Mountain Radio shall have no liability or responsibility to customer or any other person or entity with respect to any liability, loss, or damage caused directly or indirectly by use or performance of the products or arising out of any breach of this warranty, including, but not limited to, any damages resulting from inconvenience, loss of time, data, property, revenue, or profit, or any indirect, special incidental, or consequential damages, even if West Mountain Radio has been advised of such damages.

Except as provided herein, West Mountain Radio makes no express warranties and any implied warranties, including fitness for a particular purpose, are limited in duration to the stated duration provided herein.



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RIGrunner 4010S

owner's instructions

Thank you for purchasing a RIGrunner 4010S! We think that you will enjoy having a RIGrunner with Powerpole connections throughout. Having proper DC distribution should make a long overdue improvement to the convenience and safety of your station. The RIGrunner is a simple device and its basic function is the 12 volt equivalent of a 120 VAC power panel in a house except that it has a convenient on/off switching system.

There are some considerations to think about. Please read these instructions carefully before setting up your RIGrunner.

Choosing a mounting location:

Pick a location that is close, or central to, most of your radios and accessories; especially those that draw large amounts of current. Locate your power source as close as possible to the RIGrunner. Remember that every wire has resistance, longer wires have more resistance. More than a 10 foot run of #10 wire is not quite adequate to supply the RIGrunner to full output without a significant voltage drop.

Locate it in a cool dry place with good ventilation. It is recommended to not put it on top of an amplifier or room heater, or to cover the RIGrunner. Do not put it in the engine compartment of your car. Do not put it on the floor of a car; rain from open windows or snow covered boots may cause water damage. Put it in a location that allows for easy access and use.

Connecting your equipment:

The first step is to put a pair of PowerPoles on any cable that supplies or uses 12 Volts DC. The more 12 volt connections that have Powerpoles, the more convenient it will be to connect and make use of your equipment. Remember that Powerpoles are genderless, the same connector arrangement works on both supply and load. You can charge batteries, or power with batteries, using the same connectors.

Powerpoles can be installed by soldering or crimping. Be sure to make good connections. For detailed Powerpole connector installation instructions see our RIGrunner support pages: <http://www.westmountainradio.com/optips>

It is imperative to assemble the connector pairs correctly. They must be according to the amateur radio standard used by the RIGrunner. **DO NOT PLUG ANYTHING IN** unless **CERTAIN** that the black and red, plus and minus are correct. **CHECK THIS TWICE.**

The far left connector is labeled the DC input and is supplied with a 40 amp fuse. The next connector is labeled "MASTER" and is always on. The master outlet is where you would connect the radio or piece of equipment that you would like to automatically control the nine switched outlets. Plug in the equipment that you would like to be switched on and off, into switched outlets 1-9 starting with the highest power connections to the left and the lower power drain units to the right. Notice the supplied fuse ratings next to the connector you choose. Typically 12 volt input amplifiers and 100 watt RF output transceivers should be to the left, VHF radios next and smaller accessories to the right.

It is possible to connect as many amplifiers and/or transceivers as desired, even though the maximum current with several transmitting at once would exceed the RIGrunner's 40 amp maximum. The limiting factor is the total current draw while transmitting. You may not be able to transmit with every radio at the same time. Most radios and amplifiers draw less than 3 amps in receive, but much more in transmit. The manuals for your radios should list the power consumption specs if you are concerned about this. You cannot hurt the RIGrunner or anything plugged in to it if the total current goes too high, you will simply blow a fuse or make an undersized power supply unhappy.

The RIGrunner comes supplied with a range of fuses installed. This assortment will probably be usable for most stations. Change any fuses to fit your needs. Every RIGrunner outlet is safe up to 40 amps, but the total for the entire RIGrunner is also 40 amps. Note that the fuse on the Master outlet should be sized to the lowest value that is possible to adequately supply the equipment plugged in to that outlet.

You **MUST** have a fuse in each position that is in use. **ANY ATTEMPT TO BYPASS OR SHORT ACROSS THE FUSES WILL BE DANGEROUS AND VOID THE RIGRUNNER WARRANTY.** Since the maximum available automotive fuse is 40 amps, the RIGrunner will be protected as long as any value ATC/ATO fuse is installed. You should choose the correct fuse for your equipment.

Standard ATC/ATO automotive blade fuses are used. They are available at auto stores, super markets and even drug stores. These fuses are available in 10 values ranging from 1 amp to 40 amps.

The DC input should have a fuse that is appropriate for your power supply's rating. If you will be using a smaller power supply you may wish to use a lower value fuse than the 40 amp value supplied. Ideally, all of the outlets should have a fuse that is equal to, or just over the maximum current draw of the unit on that fuse. If the unit to be plugged in already has a fuse on its power cord, match that value or go one value higher. Sizing each fuse for each unit is desirable especially on the master outlet but not absolutely necessary. Having a higher value than the minimum will simply give less protection for that unit, too low a value will blow out prematurely.

Note that each fuse position has a LED blown fuse indicator that will conveniently light if that fuse is blown. There must be power to the RIGrunner and a load on the circuit that has the blown fuse for the blown fuse LED to light.

Automatic or Manual Power Switching:

The RIGrunner 4010S has a unique, high performance and convenient power switching system. It uses an electronically controlled solid state FET switch designed to switch DC currents of up to 100 Amps. This FET switch is over current and over temperature protected. It should last indefinitely compared to a mechanical switch that suffers from arcing. The mechanical control switch in the RIGrunner carries none of the load.

The control switch has three positions: "OFF", "AUTO" and ALL ON". In the "OFF" position only the switched outlets are switched off. In the "AUTO" position the switched outlets will automatically turn on whenever an adequate load current is drawn from the, always on, "MASTER" outlet. In the "ALL ON" position all of the switched outlets will be on regardless of what is connected to the master outlet.

IMPORTANT: The fuse installed in the master outlet must be chosen correctly (a package of extra fuses is supplied)! The power consumption of the unit you would like to use to control the master outlet must be matched to the fuse. Select the lowest value fuse that will supply your unit. A higher value fuse than is needed will reduce the sensitivity of the automatic control circuit. Too high a value may render the automatic control inoperative. Use the table below to select the proper master outlet fuse and to determine if the power consumption of the unit you plan to use will provide positive control.

Master Fuse Amps	Sensitivity Amps (typ.)	Master control unit
40	.8 A	160 watt VHF amp
30	.6 A	
25	.5 A	100 watt transceiver
20	.4 A	
15	.3 A	
10	.2 A	30 watt VHF mobile
5	.1 A	QRP transceiver
1	.02	small station accessory

NOTE: The current sensing circuit is very sensitive, it measures current with no additional voltage drop on the master outlet compared to an unswitched RIGrunner outlet. We are actually using the master fuse as the current sensing element! We have done everything possible to avoid false triggering of the automatic turn on. RF and transient voltages should not falsely trigger our circuit. The circuit is designed for 13.8 VDC operation. Operation at voltages in excess of 15 Volts may cause improper operation. We are not responsible if your equipment is accidentally left on due to improper operation.

NOTE: If the master outlet fuse is blown or removed, that blown fuse LED will light and the 4010S switched outlets will turn on even if there is nothing plugged in to the master outlet. A good fuse of any value must be installed at all times.

WARNING: Do not adjust the internal calibration potentiometer, it is carefully set for proper operation.

West Mountain Radio does not know the power requirements of all radios and station accessories made. Consult the owners manual for your unit or actually measure the power consumption.

A West Mountain Radio **PWRcheck** is a handy way to easily measure Volts, Amps, Watts and Amp / hours all at the same time on one display.

A Red overvoltage indication is bad, DISCONNECT OR TURN OFF THE POWER SUPPLY IMMEDIATELY! Overheating or damage a radio or other equipment may occur. As supplied there is an audible alert, unlike other RIGrunners, on both undervoltage and overvoltage.

The audible alert may be configured for only undervoltage or only overvoltage, or may be disable altogether. Simply place the P14 jumpers on under, over, both or none. Store the unused jumpers on a single pin to not lose them for later use.

NOTE: Because of the characteristics of the comparator chip it is normal for the undervoltage LED to glow very dimly with a normal or overvoltage indication. It is also normal for the LEDs to change intensity as it steps through 10 precision points or to flicker on the edge of these points. Two LEDs may be on on if exactly at the switchover point.

If there is a bad power source or power connection, the Yellow LED may flash or come on during transmit. This happens with most automobiles when running the starter motor. Check the power source and connections. It is possible for RF from a transmitter to cause an electronically regulated power supply to lose regulation and cause an overvoltage alert during transmit. The RIGrunner is extensively RF bypassed and should minimize the possibility of this problem. In the case of an overvoltage condition during transmit, especially with a VHF high power amp, it is due to inadequate RF filtering on the DC lead of the VHF amplifier, or poor RF immunity of the power supply regulator circuit.