

# ***RIGrunner***

*for model*

# ***4010S***



**[www.westmountainradio.com](http://www.westmountainradio.com)**

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Thank you for choosing the West Mountain Radio RIGrunner 4010S. You will enjoy having a RIGrunner with durable, standardized Powerpole® connections. Having proper DC distribution should make a long overdue improvement to the convenience and safety of your station. The RIGrunner is a simple device, with obvious function. Think of a RIGrunner as the 12 volt equivalent of a 120 VAC power panel in a house.

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' run of #10 wire is not quite adequate to supply the RIGrunner to full output without a significant voltage drop.

Install in a cool dry place with good ventilation. For example, do not put it on top of your amplifier or room heater, or cover it with something. It is recommended to not put it in the engine compartment of your car, or directly on the floor of a car; rain from open windows or snow covered boots may cause water damage.

## **Connecting your equipment**

Recognizing that RIGrunner comes standard with Powerpoles®, updating your cables that supply or use 12 volts DC with Powerpoles® will improve the convenience of quick connections and use of your equipment. Remember, Powerpoles® are genderless and the same connector arrangement works for both supply and load. Powerpoles® can be used to charge or power batteries, all using the same connectors.

Powerpoles® can be installed by soldering or crimping. Be sure to make good connections. For detailed Powerpole® connector installation tips see RIGrunner support pages at <http://www.westmountainradio.com/content.php?page=supportrr>

**IMPORTANT!!** It is essential that assembly of the pairs is correct. Follow the amateur radio standard used by the RIGrunner. **DO NOT PLUG IN** without verifying that **RED + PLUS** and **BLACK – MINUS** is correct.

The far left connector is labeled the DCIN 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 lower power drain units to the right.

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Notice the supplied fuse ratings next to the connector. Typically 12V input amplifiers and 100 watt RF output transceivers should be to the left, VHF radios next, and smaller accessories to the right.

Multiple amplifiers and/or transceivers may be connected to the RIGrunner. There is a 40 amp maximum that would be exceeded if trying to transmit all connected units at once. Most radios and amplifiers draw less than 3 amps in receive, but require many more amps in transmit. Therefore, the limiting factor is total current draw while transmitting. To determine how many radios may be used to transmit at one time, consult the radio manual for power consumption specifications. In the event that the total current goes over the 40 amp maximum, a fuse will blow or make an undersized power supply unhappy. The RIGrunner and any equipment plugged into the RIGrunner should go unharmed.

## **Using the proper fuses**

The RIGrunner 4010S comes supplied with a range of fuses installed. This assortment should be suitable for most stations, but can be changed easily. Every RIGrunner output is safe up to 40 amps, but the total allowable 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 into that outlet.

A fuse **MUST** have be in each position in use. **ANY ATTEMPT TO BYPASS OR SHORT ACROSS THE FUSES IS DANGEROUS AND VOIDS 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. Choose the correct fuse for your equipment. Standard ATC/ATO automotive blade fuses are used. 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 the power supply rating. If using a smaller power supply, consider using a lower value fuse than the 40 amp value supplied. Ideally all of the outlets should have a fuse that is the next higher value above the maximum current draw of the unit on that fuse. If using a power cord with a fuse, match that value or go one or two values higher. Sizing each fuse for each unit is desirable, but not absolutely necessary. Having a higher value than the minimum will offer less protection for that unit, too low a value and the fuse will blow out prematurely.

Note that each fuse position has a LED blown fuse indicator that will conveniently light up if an output 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 disabled 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.

## RIGrunner Accessories

	<u>Order Sku#</u>
<b>Fuse Assortment Low Value (8pcs)</b> 3- 1A, 3- 5A & 2- 10A	<b>#58537-1085</b>
<b>Fuse Assortment High Value (8pcs)</b> 2 ea. of 15A, 20A, 30A, 40A	<b>#58537-1086</b>
Buss 10A ATC Circuit Breaker	#58537-1087
Buss 15A ATC Circuit Breaker	#58537-1088
Buss 20A ATC Circuit Breaker	#58537-1089
Buss 25A ATC Circuit Breaker	#58537-1090
Buss 30A ATC Circuit Breaker	#58537-1091
<b>Powerpole® Extension Cable, 3 ft.</b> #12 Red/Black Wire w/ powerpole ends	<b>#58531-1082</b>
<b>Powerpole® Extension Cable, 6 ft.</b> #12 Red/Black Wire w/ powerpole ends	<b>#58531-1083</b>
<b>Powerpole® Extension Cable, 10 ft.</b> #12 Red/Black Wire w/ powerpole ends	<b>#58531-1084</b>
<b>15A. Powerpole® Connector-12 Pair</b>	<b>#58257-1093</b>
<b>30A. Powerpole® Connector-12 Pair</b>	<b>#58257-1095</b>
<b>45A. Powerpole® Connector-12 Pair</b>	<b>#58257-1099</b>
<b>Powerpole® Retention Clips - 12 Pack</b>	<b>#58257-1092</b>
<b>PowerLock - RIGrunner Retainer Kit</b>	<b>#58512-1060</b>
<b>PWRcrimp Crimp Tool</b>	<b>#58568-1049</b>

*To purchase or view other accessories available,  
call or go online at:*

**[www.westmountainradio.com/shop](http://www.westmountainradio.com/shop)**

***Additional Support and Operating Tips:***

**[www.westmountainradio/supportrr.htm](http://www.westmountainradio/supportrr.htm)**

**[www.westmountainradio/optipsrr.htm](http://www.westmountainradio/optipsrr.htm)**