RIGrunner

for model

4010S+

www.westmountainradio.com
1020 Spring City Drive
Waukesha, WI 53186
262-522-6503
sales@westmountainradio.com

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.

Key Features of the RIGrunner 4010S+

- Programmable features and voltage triggers via USB port.
- Two mutually exclusive modes for auto ON/OFF
  - Traditional mode that turns on when current goes through the master outlet. Programmable sensitivity for this mode.
  - Vehicle detect mode that turns on when the engine is running. Programmable delay for how long before the turn off. The turn on is fixed at 5 seconds. In this mode, the master outlet is always powered on as a non-switched outlet
- PWRguard feature to shut slave ports off when the voltage is out of range.

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/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 primary radio, light 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.

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 switch. This solid state 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 based on one of two auto modes described below. In the “ALL ON” position all of the switched outlets will be on regardless of what is connected to the master outlet.

Auto Turn On/Off Modes:

- Master outlet mode: As shipped, the RIGrunner 4010S+ operates in the master outlet current detect mode. Whenever adequate current is drawn from the master outlet, the other outlets will be on. For example, if the primary radio is plugged in here and you turn that radio on the other outlets become active. As shipped, the current threshold is set to detect 0.5A current draw. The sensitivity of the current detect can be adjusted with the USB port. In order to make the unit super-sensitive, use a fuse that is rated for a lower current on the Master Outlet. The PWRguard feature does not protect Master Outlet.

- Vehicle Detect mode: Using the USB port the vehicle detect mode can be selected. In this mode, the master outlet is not used for turn on/off control and is always on. In this mode, the switched outlets are on whenever the vehicle alternator is running. There is a 5 second delay before the outlets turn on. After the vehicle alternator turns off there is a user programmable (via USB port) delay before the outlets turn off. The USB port makes configurable to set the alternator voltage used to trigger this feature. This mode only functions when the toggle switch is in the “Auto” position.

Remote Control:

In both modes if PWRguard is enabled the ports turn off when the voltage is out of range. For example, the RIGrunner 4010S+ could be located in the vehicle trunk and a 15 foot cable connected to the master outlet to a PWRbrite at the front of the vehicle. When the switch on the PWRbrite is turned on the RIGrunner 4010S+ will turn on the other outlets in the trunk.

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 disabled by removing the internal jumper. Store the unused jumpers on a single pin to not lose them for later use.

Operational Reference

Switch Positions:

- Left: Unit off (except master outlet)
- Center: Auto mode
- Right: Unit on (unless voltage out of range)

Internal Jumpers:

- Top: Install to enable buzzer
- Middle: Install to enable PWRguard features. When removed, the power will not automatically be turned off for out of range voltage.
- Bottom: Install for power saver option. This will shut off all LEDs and run at the lowest possible power when the unit is off.

LED Patterns:

Red	Green	Yellow	
Off	Off	Off	No power to unit or unit is off and the power save jumper is in.
Off	On	Off	All outlets powered on.
Off	Dim	Off	Unit has power, outlets are off.
On	Off	Off	Outlets are off due to high voltage.
Off	Off	On	Outlets are off due to low voltage.
On	On	Off	Outlets are on but the voltage is high, either the PWRguard jumper is out or not enough time has yet passed.
Off	On	On	Outlets are on, but the voltage is low and the PWRguard jumper is out (off)
Off	On	Blink	Outlets are on, but the voltage is low, not enough time has passed to turn the outlets off.
Blink	Off	Off	Outlets are powered down, voltage is in range, but not yet down to the reset point. Flip switch to OFF, then back to reset now.
Off	Off	Blink	Outlets are powered down, voltage is in range, but not up to the reset point. Flip switch to OFF, then back to reset now.
Fast Blink	On	Off	Vehicle has been detected as not running and after the programmed time the unit power will shut off.
Off	Fast Blink	Off	Vehicle has been detected as running and after 5 seconds the unit power will turn on.
Any Status	Any Status	Fast Blink	The unit is connected to a PC via the USB port and the normal functions have been suspended.

Buzzer:
Sounds for 2 seconds every minute while the jumper is installed and the unit detects a low or high voltage while the outlets are on.

USB Programming Instructions

Download and install the West Mountain Radio port diagnostics utility or use another terminal program, such as Hyper-Term. During installation, be sure to install the drivers on the PC. The utility can be set to start every time the PC powers up and it is always on the tool tray (lower right) or to just run it when needed.

Open the RIGrunner 4010S+ unit. Power up the unit and switch to the ON position. When the LED is lit on, connect a micro-USB cable (not included with the RIGrunner) between the RIGrunner 4010S+ and the PC. The first time, Windows will attempt to install the driver. If the diagnostic utility was previously installed, Windows should find the driver on its own. Now the Yellow LED should be rapidly blinking.

After the driver is found, start the West Mountain Radio diagnostics utility program. Find the RIGrunner 4010S+ in the list of devices. Right-click on the RIGrunner 4010S+ and select “TEST”. When the terminal window pops up, press enter in the terminal area and the following menu will appear:

```
West Mountain Radio RR4010S+    1.00
1)  Reset to factory settings
2)  View/Change Settings
3)  Monitor mode
4)  Force output ON
5)  Force output OFF

Function  <0>:
```

If enter “2”, followed by “ENTER, the following PWRguard options occur:

```
Press just enter for no change:
High Trip <14.97>:
High Restart (14.81>:
Low Trip <10.97>:
Low Restart <12.96>:
Master Sensitivity (1-30) <15>:
Auto Restart when voltage is back in range <Y>?
Auto Shutdown when alternator is off <N>? y

  Min alternator voltage <13.98>:
  Delay in second <10>:
  Auto turn on when alternator is on <N>?
  Save new values <Y>?
```

NOTE: To determine the best master outlet sensitivity, use the monitor mode. It will show real-time the value being read on the master outlet. To exit monitor mode, press ESCape.

NOTE: If Auto Restart is to NO and the outlets are shut off due to an out of range voltage, then when the voltage returns to the normal range, switch the unit from ON to OFF and back to ON in order to turn the outlets back on.

WARNING: While the case is open, stay clear of the heat sink near the switch; under load, this heat sink if HOT.

RIGrunner Accessories

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

To purchase or view other accessories available, call or go online at:
www.westmountainradio.com/shop

Additional Support and Operating Tips:
www.westmountainradio/supportrr.htm
www.westmountainradio/optipsrr.htm

Powerpole® Wiring Guide

Powerpole® Series Contact	Recommended Wire Gauge
15 A	**20-16 AWG**
30A	**20-12 AWG**
45A	**14-10 AWG**

Additional Resources for Anderson Powerpoles® go to: www.andersonpower.com

Details and a video demonstration for using PWRcrimp Tool with powerpoles®, go to:
www.westmountainradio.com/crimptool
www.westmountainradio.com/videos

Specifications

Overall dimension (maximum, w/o cables)	**1.4” H x 11.5” W x 2.79” D**
Weight	**0.875 lb.**
Maximum total current	**40 amps**
Maximum single individual outlet current	**40 amps (fuse protected)**
ICAS current rating (fuse limited)	**37 amps**
Default PWRguard voltage range	11.5, 15.0 Volts
Metering accuracy	better than 2% @ 25 deg.C.
Audible alert SPL outlet	~60dB SPL @ 1 meter
Maximum voltage	19 volts
Reverse polarity protection (meter circuit)	Yes
4010S automatic switching threshold	Most radios with appropriate master outlet fuse
Quiescent current, power save function active, switched outlets off	5mA typical
Quiescent current, power save function inactive, switched outlets off	11mA typical
Quiescent current, switched outlets on	24mA typical