www.westmountainradio.com

PWRcheck

June 2011

Table of Contents

1020 Spring City Drive, Waukesha, WI 53186 ·
sales@westmountainradio.com · Phone: 262.522.6503

Introduction

What is PWRcheck?

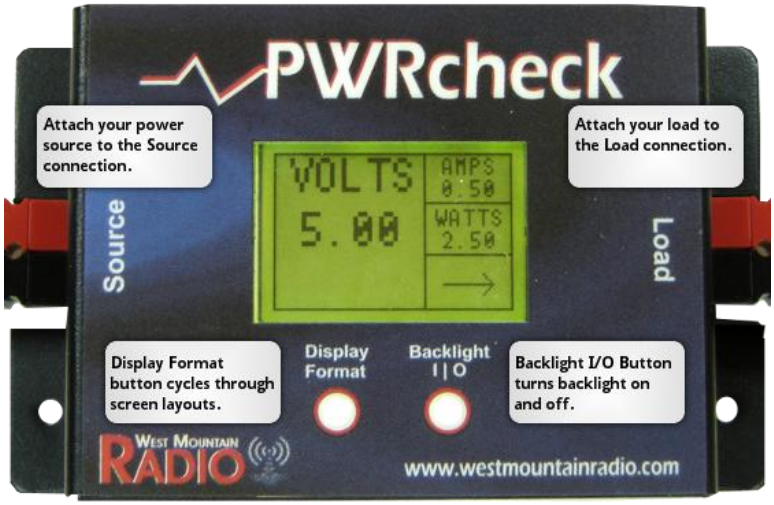
PWRcheck is an integrated DC power analyzer, watt meter and electricity monitor, measuring 0V to 60V DC at up to 40A. The backlit graphics LCD features eight display modes including voltage, amperage, wattage, amp-hours and voltage quality. Alarms can be set to flash the display for programmable limits for over/under voltage and over current, wattage and amp-hours. High side monitoring simplifies installation making it suitable for vehicle use. Source and load connections utilize 45A Powerpole® connectors. Non-volatile memory stores over 104000 sample points for data logging (Nearly 2 1/2 months worth of data @ 1 point per minute). Included PC software supports real-time monitoring, data download and charting.

Who is PWRcheck for?

PWRcheck enables amateur radio enthusiasts, emergency service providers and site operators to assess load requirements and monitor the status and health of their DC power supply systems.

Device Overview

User Interface



The user interface of the PWRcheck is simple. It consists of an LCD screen along with two buttons. The LCD screen has multiple layouts available to view various measurements at one time. The layouts can be cycled through by pressing the left button (Display Format). The right button (Backlight I/O) will turn the backlight on and off.

LCD Layouts

The PWRcheck LCD can be configured to display its readings in a number of different ways. All configurations contain a current direction indicator in the lower right. The following configurations are available:

1. Large digital voltage with smaller digital voltage quality, current and power.
2. Large digital current with smaller digital voltage and power.
3. Large digital power with smaller digital voltage and current.
4. Large digital amp-hours with smaller digital voltage and current.
5. Large graph of amp-hours remaining with smaller digital voltage and current.*
6. Large analog voltage with smaller digital current and power.
7. Large analog current with smaller digital voltage and power.
8. Large analog power with smaller digital voltage and current.

* Only shows up when maximum amp-hours is set.

Power Connections

PWRcheck has two sets of PowerPole connections. The Source connection should be attached to the power source. The Load connection will then attach to the load. The voltage and current readings reflect the voltage across and current through the Load connection when current is flowing from the source to the Load. If current is flowing in the opposite direction, the voltage and current readings reflect the voltage across and current through the Source connection.

PWRcheck itself is also powered by the power source so it will consume a small amount of current to operate. When current is flowing from Source to Load, this current is not reflected in the readings. If current is flowing from Load to Source, the current consumed by the PWRcheck will be included in the reading. Section 3 details the power consumption of the PWRcheck.

PC Interface (USB)

PWRcheck is equipped with a USB interface which allows for configuration of the device as well as enhanced viewing. There are two interfaces available for use via the USB connection. The first interface is accessed via the Windows software. The second is an ASCII interface which can be accessed with any terminal program.

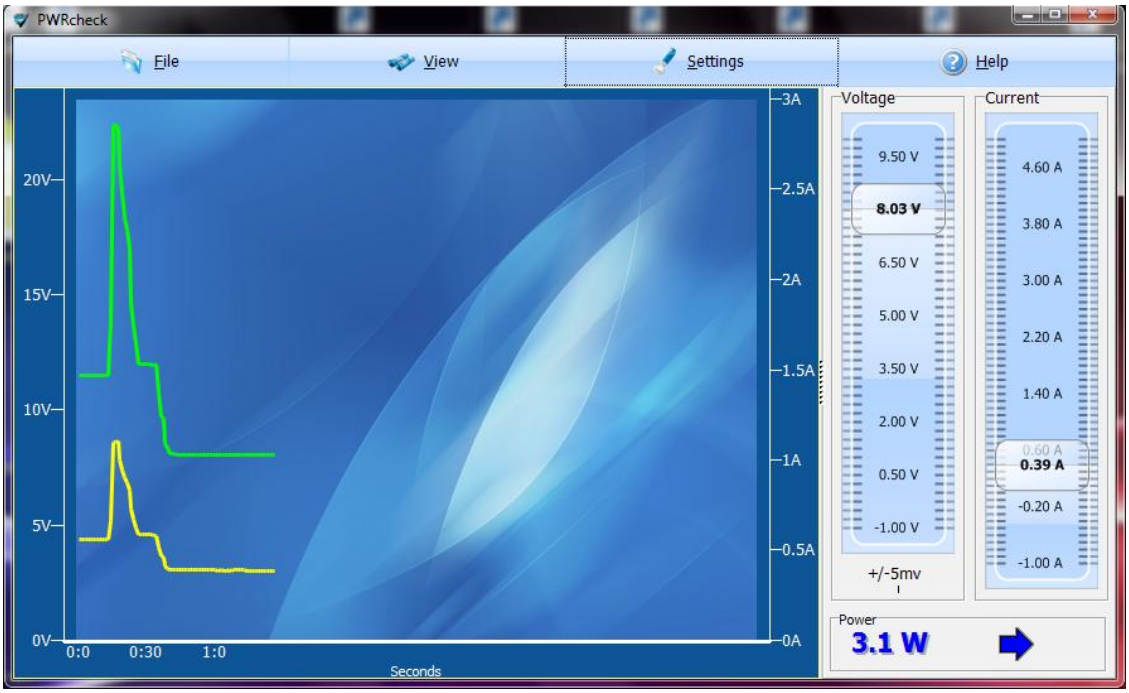
PC Software/Driver Installation

The following instructions should be followed to install the PC software and drivers for the PWRcheck:

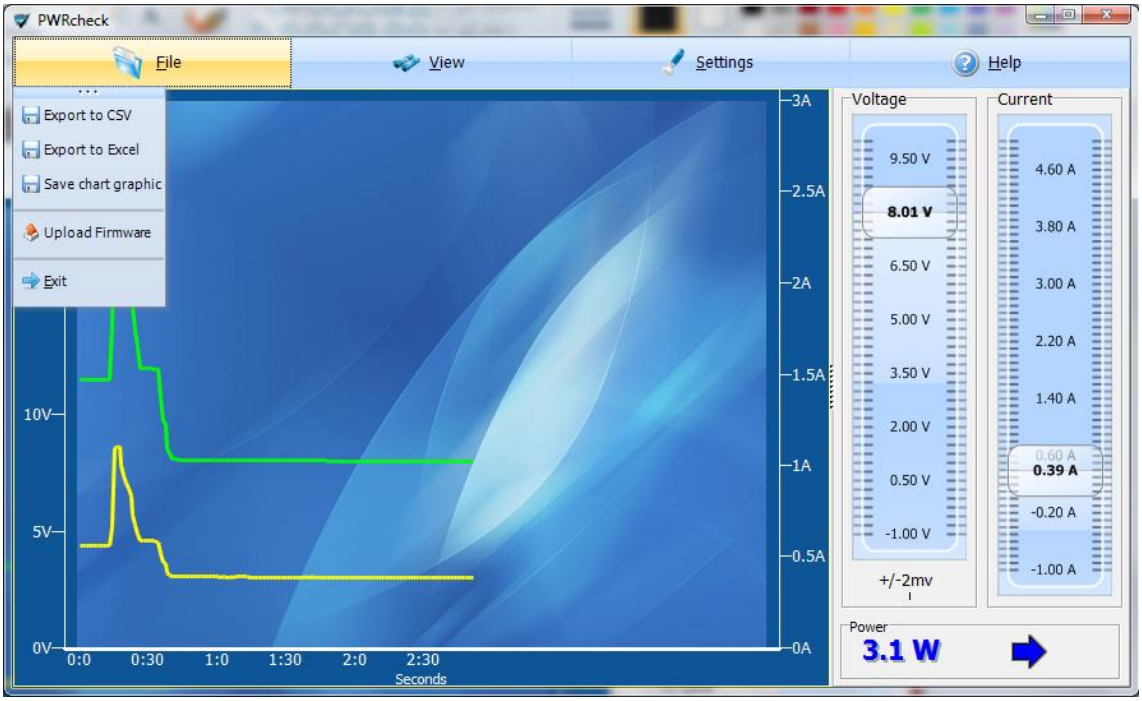
1. Run the software installation and proceed through the dialogs. Near the end of the installation you will be asked to plug in your PWRcheck.
2. Plug in the PWRcheck by connecting the PWRcheck to the PC using the supplied USB cable.
3. Windows should either install the driver automatically or present a dialog showing where to find the drivers. If the driver installs automatically continue to step 5.
4. Select the option to automatically search for the driver and Windows should find and install the driver.
5. The driver should now be installed and Windows will confirm you that your device is ready. The PWRcheck will be assigned a COM port. This COM port can be used for accessing the ASCII interface.

PC Software

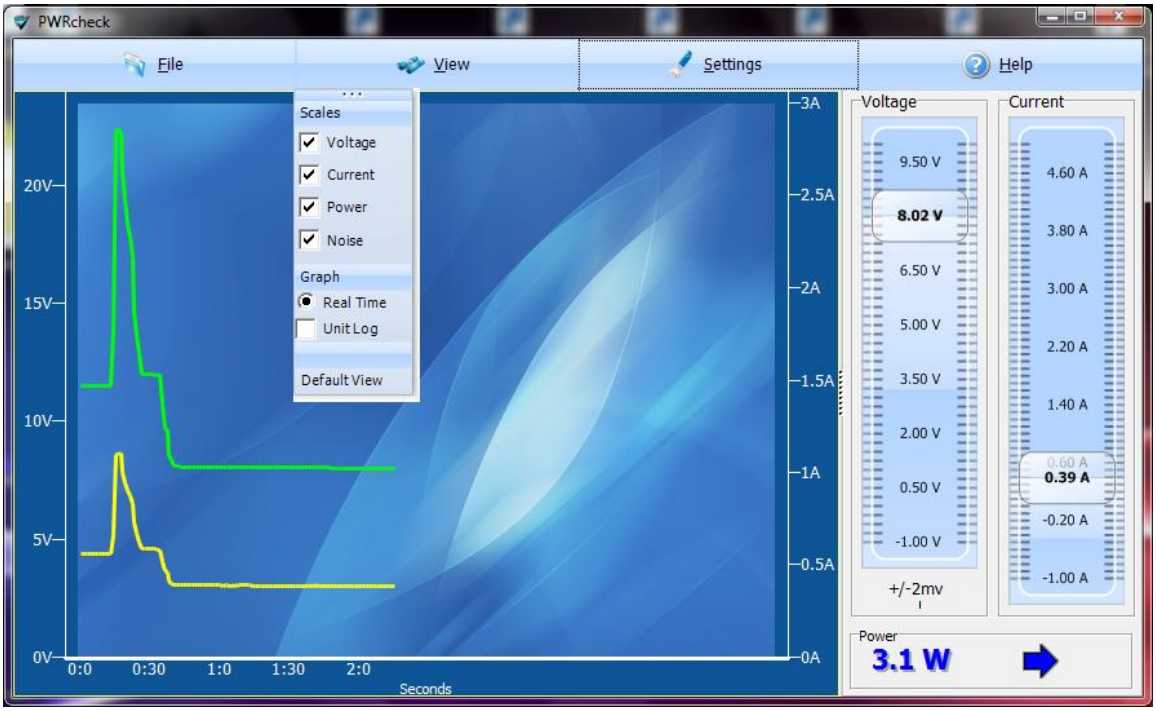
The CD-ROM that accompanies your PWRcheck contains software which allows you to configure your PWRcheck as well as view the readings in an easy to use interface. Updated versions of the software will also be made available on our website.



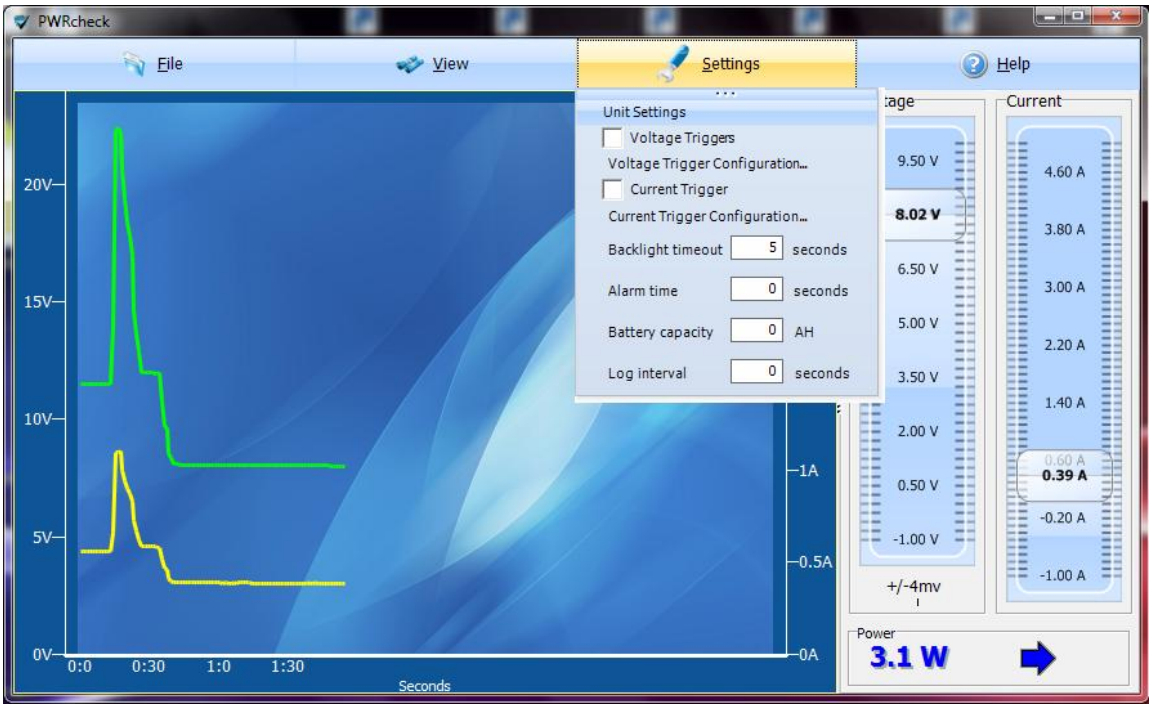
Main Screen: Graph on the left shows live or logged voltage and current. Bars on right show live voltage and current, including the quality of the voltage. Power is displayed along with the direction of current flow through the device.



File Menu: Voltage, current, power, etc. readings can be exported in a variety of ways. It is also possible to update the firmware on the PWRcheck to enable new features.

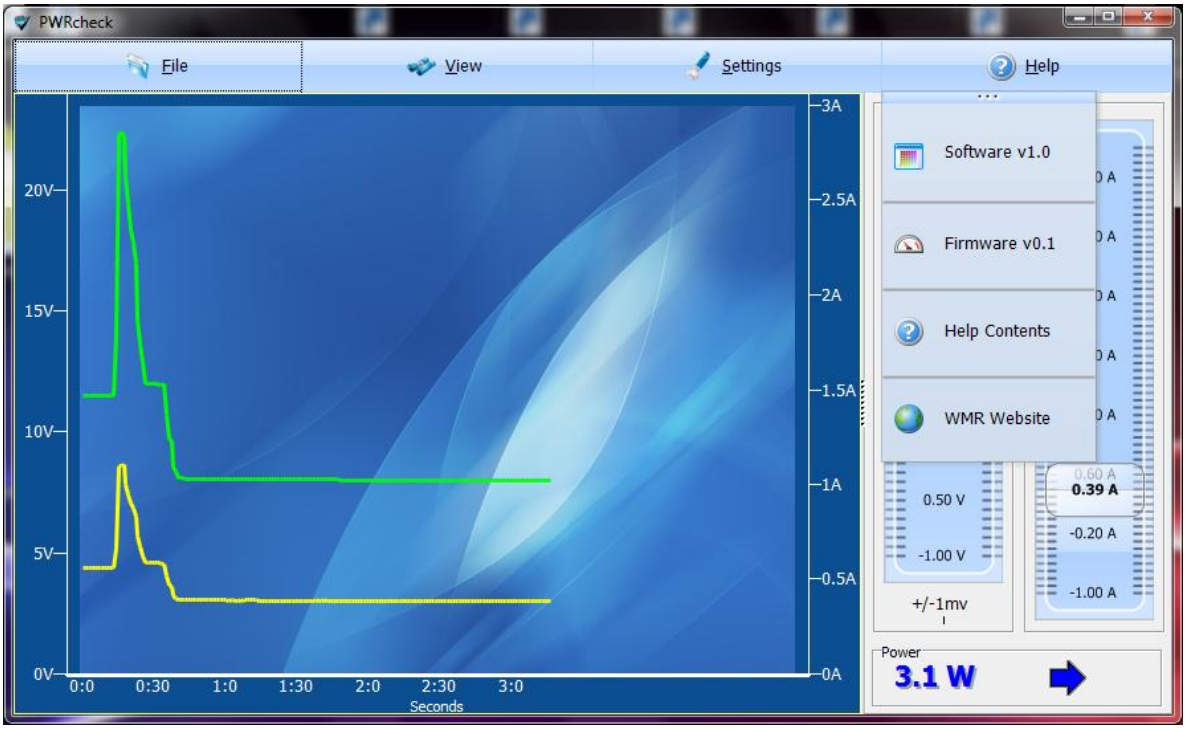


View Menu: Enable and disable live readings on the right hand side. Also allows toggling between live viewing and log viewing.



Settings Menu: Allows for configuration of alarms, backlight timeout and log interval.

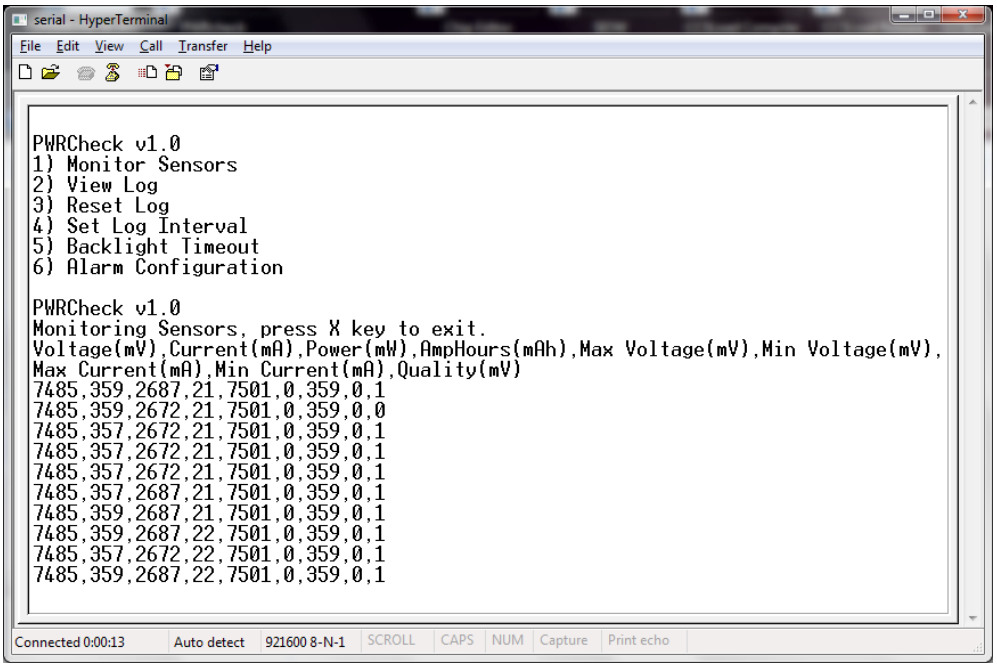
1020 Spring City Drive, Waukesha, WI 53186 ·
sales@westmountainradio.com · Phone: 262.522.6503



Help Menu: Provides version numbers and links to support information.

ASCII Interface

The ASCII interface is accessed via the COM port by using a terminal program such as Microsoft's HyperTerminal. Any baud rate is valid, but faster baud rates are recommended. The ASCII interface is a simple number based menu. Entering a ? will cause the current menu to be shown again.



Main Menu

1. Monitor Sensors – Will put unit into a mode where it outputs values to the terminal.
2. View Log – Will output the currently logged values in a CSV format
3. Reset Log – Will reset the log
4. Set Log Interval – Set the interval that the unit logs values to the flash.
5. Backlight Timeout – Configure the amount of time the backlight stays on in seconds
6. Alarm Configuration – Adjust the various alarm levels.

Monitor Sensors

This shows all measured and calculated readings in a comma separated list. The measurements will be output every second. The unit will stay in this mode until X is pressed. This is the order of the output values:

Volts, Amps, Watts, Total Amp-Hours, Forward Amp-Hours, Reverse Amp-Hours, Max Volts, Min Volts, Max Amps, Min Amps, Quality

A header row with titles will be output before the data rows are displayed.

Forward Amp-Hours will increase as current flows from Source to Load. Reverse Amp-Hours will increase as current flows from Load to Source. Total Amp-Hours is the total of forward and reverse amp-hours.

View Log

This will display a complete dump of the data logged on the flash chip. The output will be comma separated similar to the Monitor Sensors output. X can be pressed to stop the output. This is the order of the output values:
Volts, Amps, Watts, Max Volts, Min Volts, Max Amps, Min Amps
Only the Volts and Amps are logged. The other values are calculated as the log is dumped.
A header row with titles will be output before the data rows are displayed.

Reset Log

Will clear all log data. Before the data is erased, a confirmation must be accepted.

Set Log Interval

Enter an interval for logging data to the onboard flash device. The time can be anywhere from 1 to 60 seconds. Entering 0 will disable all logging. Logging is disabled by default.

Backlight Timeout

Enter a timeout for the backlight. The time entered can be anywhere from 1 to 30 seconds. The default is 5 seconds. This backlight will only time out when the voltage applied to the input is greater than 20V and the unit is not attached to the PC via USB.

Alarm Configuration

1. Over-voltage Limit – Set over-voltage limit in mV
2. Under-voltage Limit – Set under-voltage limit in mV
3. Over-current Limit – Set over-current limit in mA
4. Amp Hours Limit – Set maximum amp hours in mAh
5. Alarm Notification Time – Set number of seconds to display an alarm condition.

Electrical Specifications

	Minimum	Typical	Maximum	Unit
Input Voltage				
Without USB	8	-	60	V
With USB	0	-	60	V
Input Current				
Without USB	0.120	-	40	A
With USB	0.025	-	40	A
Input Power				
Without USB	0.960	-		W
With USB	0			W
Input Current Used by PWRcheck				
Without USB	0.060	-	0.120	A
With USB	0	-	0	A

Troubleshooting

Problem	Suggestions
All	• If more than 60V was applied to the Source input, the PWRcheck may be damaged. Contact West Mountain Radio for support. • If more than 40A was applied to the Source input, the PWRcheck may be damaged. Contact West Mountain Radio for support.
No Voltage Reading	• Verify that Source connection is secure. • Verify that Load is not shorted. • Verify that Source is applying voltage. • If powered via USB, a load of 0.025A must exist for readings to display. • If you continue to have no voltage reading, contact West Moutain Radio for support.
No Current Reading	• Verify that Source connection is secure. • Verify that Load connection is secure. • Verify that Load is consuming current. • Verify that Source is able to supply current. • If powered via USB, a load of 0.025A must exist for readings to display. • If you continue to have no current reading, contact West Moutain Radio for support.
Software Cannot Find Device	• Ensure device is plugged into computer via provided USB cable. • Bypass any USB hubs and plug the PWRcheck directly into the computer. • Verify that drivers are installed by running software/driver installer again. • Verify the PWRcheck turns on when connected to the PC.
Readings are Inaccurate	• Verify that Source and Load connections are secure and free of debris. • If issues persist, unit may have lost calibration. Contact West Mountain Radio for support.
LCD is not Working	• Power cycle the device. • If issues persist, contact West Mountain Radio for support.
Button(s) are not Working	• Contact West Mountain Radio for support.
Backlight will not Turn on/off	• Contact West Mountain Radio for support.

PWRcheck Warranty

The *PWRcheck* 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 *PWRcheck* 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 *PWRcheck* 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.

1020 Spring City Drive, Waukesha, WI 53186 ·
sales@westmountainradio.com · Phone: 262.522.6503