

Changing the PL-PM1RJ IP address

whirlwind PL-PM1RJ Power Meter

There are two methods of accessing the PL-PM1RJ to change the IP address.

- 1) Use a router to establish a small temporary network at 192.168.1.1.
- 2) Use a cross wired cable or two straight cables with a switch to directly connect a computer to the meter's network connection jack.

Using a Router to set IP address

With the computer connected to the router, access the setup for the router. Set the router to have an IP address Of 192.168.1.1 and subnet mask of 255.255.255.0. Connect the PL-PM1RJ to the router. Type the IP address <http://192.168.1.200> into a browser on the computer to connect to the meter. Note that the PL-PM1RJ also responds to ping commands.

When the browser window with the meter display opens, click on the Setup button in the lower right corner. To change the IP address, simply type the new IP address and Subnet Mask in the boxes, check for accuracy, and click Apply. The unit can also be given an identifying name in this screen as well. Once set internally, the system will try to contact the unit at the new address.

To confirm the IP address, press and hold the mode button for more than 3 seconds, and, the IP address will appear in the top row of LED number displays and the subnet mask will appear in the lower row of numbers. Press the mode button again to exit this mode.

Note that for subsequent IP changes you must connect to the meter using its current address and the router must be set correspondingly. The router IP right set of digits should always be lower than the computer and the meter settings.

Using a cross wired cable or Ethernet switch to change IP address

Using a cross wired Ethernet cable, connect a computer to the PL-PM1RJ. Using a web browser, type the IP address PL-PM1RJ into address bar of the browser. The default address for the meter is 192.168.1.200. Allow time for the computer to find the unit and open it in the browser window. This method also applies to using a switch with two standard Ethernet cables to connect to the PL-PM1RJ.

When the browser window with the meter display opens, click on the Setup button in the lower right corner. To change the IP address, simply type the new IP address and Subnet Mask in the boxes, check for accuracy, and click Apply. The unit can also be given an identifying name in this screen as well. Once set internally, the system will try to contact the unit at the new address.

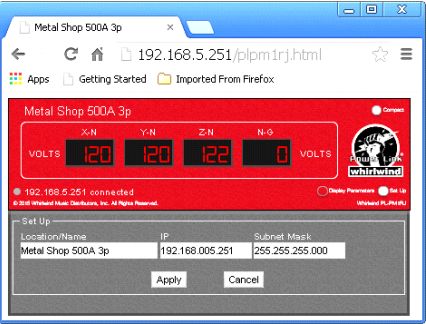
Personalizing Display Features

The PL-PM1RJ has a Display Parameters menu that allows for display color changes and the setting of alerts to indicate out of range voltage readings. The meter reading refresh rate can also be changed on this screen. These settings are stored as cookies in the web browser, so they are specific to the individual computers accessing the PL-PM1RJ.

Supported Web Browsers

Google **Chrome** No known issues with recent versions.  
Mozilla **Firefox®** (v34) sometimes requires multiple refreshes at startup. Pop-up lists do not appear in correct spot. It is a zoom issue.  
Microsoft **Internet Explorer** No known issues with v11. Possible issues with v10. Previous versions do not work.  
Apple **Safari** No known issues.

The display below shows the compact display view with the setup page activated.



MODEL NUMBERS  
PL-PM1RJ with network interface  
PL-PM1 without network interface

whirlwind  
whirlwindusa.com

whirlwind PL-PM1 & PL-PM1RJ Power Meter



Whirlwind PL-PM1/PL-PM1RJ Power Meter Technical Information.

Intended Use:

The Whirlwind PL-PM1/PL-PM1RJ Power Meter is intended to monitor 3 phase Y power with three 120 Volt AC legs or single phase with two 120 Volt AC legs. It is intended to monitor the line side voltage and load current of both portable AC distribution and permanent power distribution systems.

Display Mode Description:

- Apply Power.
- The power on sequence will illuminate all LEDs on the front panel.
- The Software Revision is then displayed in the lower right hand display.
- Mode A Voltage (blue LED) and current measurements will display.

Mode A Voltage Display (blue LED reference)

The TOP row of displays will show (left to right):

- X Leg to Neutral voltage
- Y Leg to Neutral voltage
- Z Leg to Neutral voltage
- Safety Ground to Neutral voltage

Mode B Voltage Display (red LED reference)

The TOP row of displays will show (left to right):

- X-Leg to Y-Leg voltage
- Y-leg to Z-Leg voltage
- Z-Leg to X-Leg voltage
- Frequency

Amperage Display (mode A and B)

The bottom row of displays will always show:

- X-Leg current
- Y-Leg current
- Z-Leg current
- Neutral Leg current

Flashing Display Notifications

The Voltage displays will flash when a voltage is out of range.

- In Mode A, the X, Y, or Z to Neutral voltage display will flash when the voltage is below 108 Volts or above 131 Volts.
- In Mode B, a voltage display will flash when the voltage is less than 187 Volts or greater than 228 Volts.

For technical assistance:

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whirlwindusa.com Made in U.S.A.

Theory of operation: Voltage Measurement:

The first 3 of 4 Voltage displays are the primary voltage measurements. Normal use is expected to be 3 phase “Y” with three 120 Volt AC Legs or single phase with two hot Legs. It also measures Leg to Leg voltages of 208 Volts AC. Maximum voltage Leg to Neutral or Leg to Leg is 280 Volts AC.

The PL-PM1 also measures Neutral to Ground voltages (4<sup>th</sup> display, normal mode). The range on the Neutral to Ground is 0 to 99 Volts AC. Accuracy is better than 2%, typically 1%.

The Voltage Input connector is a Wago 5 pin model with the center pin (safety ground) designed to mate first, due to a longer pin.

The connections are (Left to Right looking at the rear of the chassis)

1. X- Leg
2. Y-Leg
3. Safety Ground (extended pin)
4. Z- Leg
5. Neutral

Current Measurement:

Current measurement utilizes 4 Current Transformers part # TRCT600:1. The PL-PM1 presents a 1.5 Ohm resistive load to the current transformer. It has a 600 to 1 current ratio. At 400 Amps AC in, the coil delivers 0.66 Amps AC. The maximum current the PL-PM1 measures is 400 Amps AC.

Accuracy is better than 2%, typically 1%.

The Current Input connector is an 8 pin Wago to the PL-PM1 from the current transformers.

The connections are:

- 1,2: X-Leg current loop
- 3,4: Y Leg current loop
- 5,6: Z-Leg current loop
- 7,8: Neutral Leg current Loop

Polarity of the current loop inputs does not matter, although it is recommended to connect the red and black in a consistent fashion on all the coils.



Theory of Operation continued:  
Frequency Measurement:

The PL-PM1 measures the frequency of the AC line voltage from 47 Hz to 63 Hz with an accuracy of 0.1 Hz.

System Reset:

The PL-PM1 is intended to be tolerant to interference and EMI. The system has a watchdog timer such that if measurements stop being displayed, the system will automatically reset itself and resume measurement.

PL-PM1 Calibration:

Calibration information is held internally in a non-volatile memory. This is set at the factory and there is no provision for field calibration. When powering up, if for any reason calibration information is lost, the system will display “EEP Err” in the display. The meter will still function except that the accuracy will be reduced to 5%.

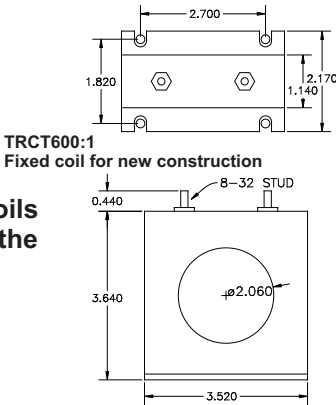
whirlwind PL-PM1RJ Power Meter

Equipment Ratings:

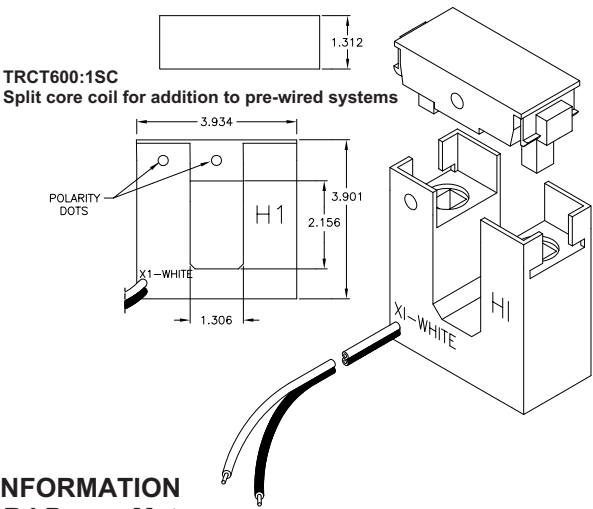
Supply Voltage Range: 108-229 VAC  
Power draw: 10 Watts maximum  
Frequency Range: 40 to 100 Hz

Environmental Conditions:

- Indoor Use
- Altitude up to 2000 meters
- Temp range 5° C to 40° C
- Maximum relative humidity 80% for temperatures up to 31° C decreasing linearly to 50% relative humidity at 40° C
- Mains supply voltage fluctuations up to ±10% of the nominal voltage
- Overvoltage Category III; Distribution level, fixed installation
- Pollution Degree 2



Available Current Coils  
for installation with the  
PL-PM1 meters



WHIRLWIND PL-PM1RJ ETHERNET CONNECTIVITY INFORMATION  
The following information applies only to the PL-PM1RJ Power Meter.

The PL-PM1RJ model has Ethernet connectivity for network monitoring of power distribution parameters in real time. The PL-PM1RJ provides monitoring from any location or multiple locations simultaneously by accessing the Ethernet LAN that the meter is connected to. The PL-PM1RJ has an assignable IP address that can be set to fit into your current network. If multiple units are on the same network, each can be assigned its own unique IP address and name. Each meter is viewed through a separate web browser window. Use Internet Explorer 11 or greater and Apple Safari for best viewing.

PL-PM1RJ Power Meter Network Setup

To view the PL-PM1RJ Power Meter in a web browser, the browser will need to know the IP address of the Power Meter. Browser cookies must be enabled to properly view the meter parameters. It is possible that the default address will work, unchanged, on your existing network. Assuming that the address is not compatible with your existing network, the following explains how to access the Power Meter and how to change its IP address to be compatible with your network.

Default Address

The PL-PM1RJ is shipped from the factory with a static IP address of 192.168.1.200 and a subnet mask of 255.255.255.0. At any time, the IP address stored in the Power Meter can be viewed by pressing the mode button in for more than 3 seconds. The IP address will appear in the top row of LED number displays and the subnet mask will appear in the lower row of numbers. Press the mode button again to exit this mode.

If you use the PL-PM1RJ on a small network, and the network router is set at 192.168.1.1 with a net mask of 255.255.255.0 (a common default address for small networks), and as long as the address of 192.168.1.200 is not already in use, no changes to the IP address will be needed. Simply plug the unit into your network's router or switch, then with a computer that is also on the same network, use a browser and type in the URL for the Power Meter which will be:  
<http://192.168.1.200/>.

Once your browser finds the Power Meter, it will be redirected to a sub directory in the meter and you will see <http://192.168.1.200/plpm1rj.html> in the address bar of the browser window. If this address is acceptable, then no further work is needed.

The display you see should look like the following, however the IP address will be different than shown.



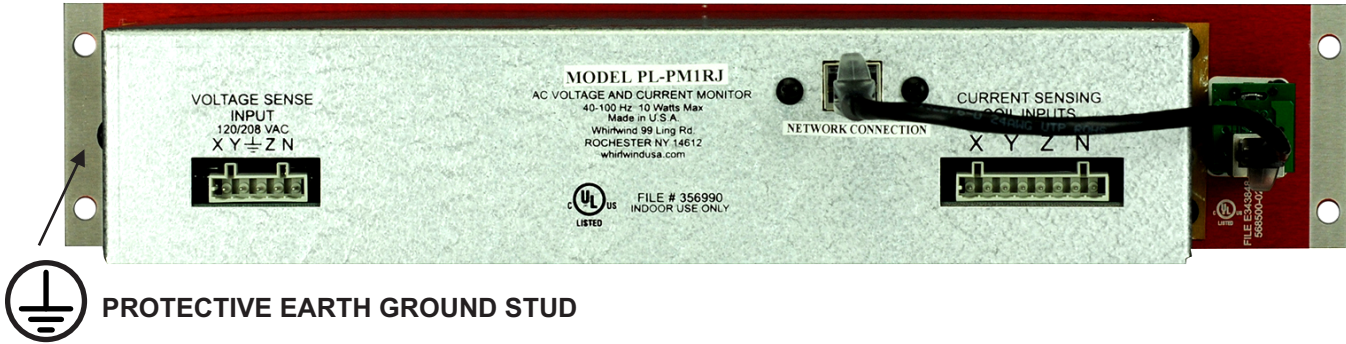
INSTALLATION IS INTENDED TO BE PERFORMED ONLY BY QUALIFIED PERSONNEL

Equipment Installation:

Connections to the PL-PM1 are made through pluggable Wago Eurostyle connectors. The voltage sensing input is a 5 pin connector with the Earth contact mating first and the current sensing input is an eight pin connector. The connectors are prewired to harnessing for connection to the system AC input terminals and the current sensing coils. Maximum working voltage is 229 VAC and the PL-PM1 is rated at measurement category III.

- Confirm that all power is disconnected from the system.
- Disconnect device is considered a circuit breaker that is part of facility wiring per NEC.
- Install a current coil around each hot leg wire and the neutral wire.
- Connect the four pair current coil wiring harness to the coils following the labels on the wire pairs. It is recommended to connect the red and black in a consistent fashion on all the coils.
- Connect the 5 conductor voltage wiring harness to the incoming line connectors following the color code; green is protective earth ground, white is neutral, black, red and blue are the hot legs.
- Connect a Protective Earth (Ground) wire from the #10-32 stud on the rear of the chassis to the Green Protective Earth (Ground) input connection.
- Connect the Wago 5 pin and 8 pin Voltage and Current connectors to the PL-PM1.
- Securely attach the PL-PM1 to the rack rails of the enclosure.

Rear view of meter showing connection points for voltage, current and earth



PROTECTIVE EARTH GROUND STUD