

Enphase Reporting & WEM-MX Setup Documentation

Dated: March 27, 2013

By: Tech Support

Summary: Field technicians sometimes need support in setting up a WEM-MX meter and/or also need support to setup communication to the Enphase Envoy system. The technical support group at Energy Tracking want to make it as easy as possible.

Accessing & Commissioning the WEM-MX Meter:

Let's first make sure that the WEM-MX is properly configured before it starts reporting to the Enphase Energy Envoy.

You may have purchased a WEM-MX meter without a display. Hence, you need to know the IP Address to Log-In to the meter.

You MUST use Microsoft Internet Explorer™ Version: IE6~IE9 Web Browser.

Download and install the 'Discover IP' software application from Energy Tracking's web site. You can find this application by clicking on the 'Download' link. This application will help identify the meter's IP Address so you can connect to it from your Internet Browser.

<http://www.energytracking.com/download.htm>

This application will provide minute-by-minute updates.

Please refer to the WEM-MX 333mV manual for more details.

After installation, launch the application go to '[Menu >> Debug](#)'.

Click the lower button that says '**Start**'. You will see data appear within 1~2 minutes.

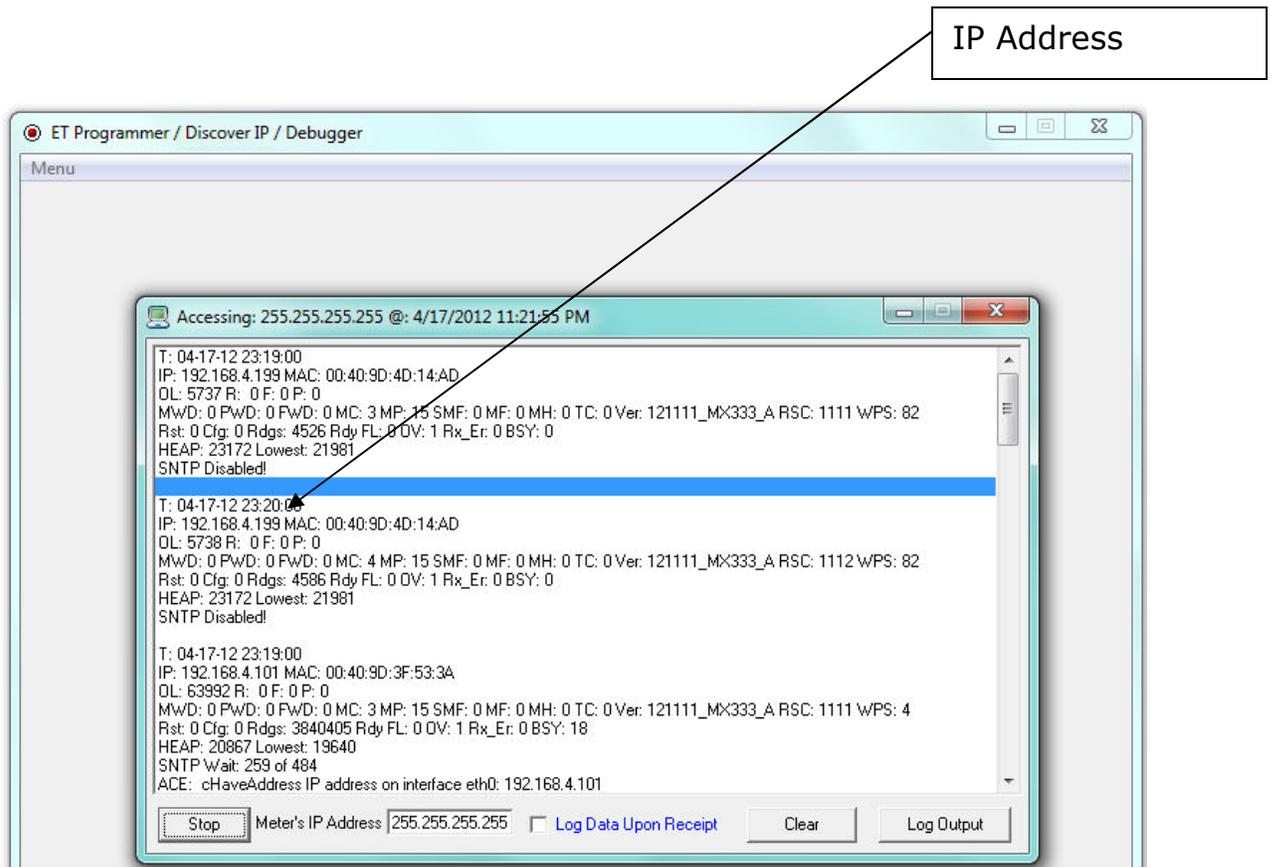


Figure 1

Once the IP Address is identified, log-in to the meter using an Internet Browser MS Internet Explorer. Note: You must use MS IE™

Log-In to the Meter using the IP Address:

<http://xxx.xxx.xxx.xxx>

Energy Tracking

Web Enabled Meter (WEM-MX 333mV)

Log-In

Figure 2

You should see the page shown above. Click on the 'Log-In' link and an authentication pop-up dialog will appear.



Figure 3

User Name: eM200
Password: PW

Enter the default values above (case sensitive).

Post Log In:

Upon a successful log-in, you will see a menu to the left.

- [Home](#)
- [Real Time Data 1](#)
- [Real Time Data 2](#)
- [Load Profile 24 Hrs.](#)
- [Load Profile Flash](#)
- [Current Month](#)
- [Last Month](#)
- [SOAP Service](#)
- [Setup](#)

Figure 4

Click on '**Real Time Data 1**':

With no voltage or current inputs connected, you should see:

Energy Tracking - WEMM			
Phase	VOLTAGE	CURRENT	POWER FACTOR
PH_A:	0.000	0.000	1.000
PH_B:	0.000	0.000	1.000
PH_C:	0.000	0.000	1.000

Figure 5

With voltage and current applied, you should see.

Energy Tracking: WEM-MX 333mV			
Phase	VOLTAGE	CURRENT	POWER FACTOR
PH_A:	277.049	40.025	1.000
PH_B:	276.992	40.025	1.000
PH_C:	276.992	40.025	1.000

Figure 6

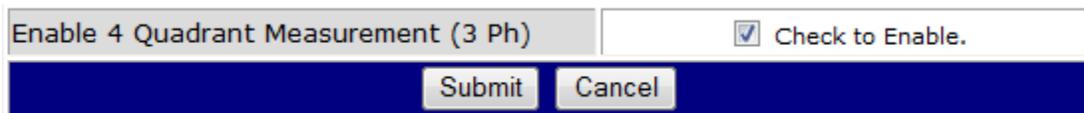
Note: Power factor values will typically be in-between 0.8 to 0.9.

Now, you can connect each voltage phase and confirm its proper connection by clicking on the '[Real Time Data 1](#)' link.

Next, connect each current transformer (CT) input and check the reading by phase by clicking on the '[Real Time Data 1](#)' link.

Note: If after connecting the CT, the Power Factor value is **negative**, then the CT is not oriented properly. The CT orientation must be reversed. If you are installing the meter at a location where only the **absolute** current flow needs to be measured; you can disable 4-quadrant measurement by:

Click on '[Setup >> Schedule Reporting & Setup](#)'.



The screenshot shows a web form with a title bar that reads "Enable 4 Quadrant Measurement (3 Ph)". To the right of the title bar is a checkbox labeled "Check to Enable." which is checked. Below the title bar are two buttons: "Submit" and "Cancel".

Figure 7

IMPORTANT: For Solar power plants that must measure bi-directional energy, then you MUST enable the checkbox.

Finally, in order for the meter to measure the correct energy consumption, we must enter the primary CT value.

Click on '[Setup >> Schedule Reporting & Setup](#)'. Identify the row shown below and enter the appropriate CT size. For example: If the Primary CT sizing is 200 Amps, then enter the CT size = 200.



The screenshot shows a web form with two sections. The first section is labeled "Primary CT Size:" and contains a text input field with the value "200" and the unit "Amps". The second section is labeled "CT Options" and contains two radio buttons: "Solid Core or Rope" (which is unselected) and "Split Core" (which is selected).

Figure 8

You **must** select the "CT Options" depending on the type of current transformers you have installed.

After clicking on the '**Submit**' button, the meter will apply the new primary CT size. This can be viewed by clicking on the link '[Real Time Data 1 or 2](#)' where the CT size is applied.

Commissioning the WEM-MX Meter Installation:

Before leaving the installation site we recommend the following:

- Validate the voltage values per phase.
- Validate the current values per phase.
- Validate the power factor values per phase. Note: Low values below 0.7 is a strong indication that the wiring has not been correctly done. Please review the section above on "**Common Meter Installation Mistakes in Appendix B**" below.
- Validate that the current transformer (CT) primary amps have been correctly entered.
- Setup reporting to the Enphase Envoy and test FTP reporting as shown below.

Configure Reporting to the Enphase Envoy:

Setup and Configuration

Configuration includes both adding the power meter (WEM-MX) to the Envoy database and configuring the power meter through the power meter's web interface. Both of these can be done from the Envoy and require manual intervention. For assistance with any of the steps below, please contact Enphase Energy at commercial@enphaseenergy.com.

Add the Power Meter (WEM-MX) to the Envoy Database:

To add the power meter to the Envoy Database, do the following:

1. Configure the Envoy for a static IP address either in the router or on the Envoy. This is required for the power meter to always know how to send reports to Envoy. Please see **Appendix A** below for instructions on how to configure your Envoy for a static IP address.
2. Go to the Administration tab on the Envoy Web Page and login (username:admin; password:admin)
3. Go to the **Power Meter Configuration** by using the link in the navigation window.
4. Under the **Power Meters on the Network** heading, select the power meter(s) to associate with the Envoy, then click **Accept Selected Meters**

Configure the WEM-MX Meter to Report to the Envoy:

Log-In to the WEM-MX meter as shown above in Figure 3.

- a. Navigate to **Setup->Main Configuration**
- b. Under *FTP Server IP* put in the IP address of the Envoy
- c. Under *FTP Account Name* enter: **energytracking**
- d. Under *FTP Password* enter: **enphasepmu**
- e. Make sure the *FTP Directory* is blank.

FTP Setup:	
Ftp Server IP	192.168.1.101
FTP Account Name	energytracking
FTP Password	••••••••
FTP Directory	

Figure 9

f. Under the *SNTP And Time Zone Setup*: Change the DST and STD Zone offset for your local time. Refer to the time zone table on the following page.

g. Enter the DST Zone Offset: Daylight Savings Time (**18** for PDT).

h. Enter the STD Zone Offset: Standard Time (**17** for PST). Note these setting are for Pacific Coast (California). Some locations such as Hawaii do not have Daylight Savings Time; so for Hawaii, both the values will be set to **15**.

i. Click on the **Submit** button at the bottom to save the changes.

NOTE: The meter clock automatically adjusts based on the values entered for DST and STD zones. Values from 1 to 12 represent positive hour offsets from UTC (Universal Coordinated Time), where a value of 1 indicates 1+ hour from UTC. Values from 13 to 24 represent negative hour offsets from UTC, where a value of 13 indicates -12 hours from UTC. An entered value of 24 indicates -1 hour from UTC.

SNTP And Time Zone Setup:	
Enable SNTP	<input checked="" type="checkbox"/> Check to Enable.
Enable Half Hour Offset	<input type="checkbox"/> Check to Enable.
Server 1	0.us.pool.ntp.org
Server 2	time-a.timefreq.bldrdoc.gov
SNTP Periodicity	8 Hours
DST Zone Offset:	18 21 for East Coast USA
STD Zone Offset:	17 20 for East Coast USA
DST START:	Mth: 3 Wk: 2 Day: 0 Hr: 2
DST END:	Mth: 11 Wk: 1 Day: 0 Hr: 2
<input type="button" value="Submit"/> <input type="button" value="Cancel"/> <input type="checkbox"/> Power OFF!	

Figure 10

Although this brief addresses California installations, all time zone setting possibilities are shown in the following table.

Time zone	Name	Relative to UTC	STD Zone Offset
UTC	Universal Coordinated Time	UTC	0
ECT	European Central Time	UTC+1:00	1
EET	Eastern European Time	UTC+2:00	2
EAT	Eastern African Time	UTC+3:00	3
NET	Near East Time	UTC+4:00	4
PLT	Pakistan Lahore Time	UTC+5:00	5
BST	Bangladesh Standard Time	UTC+6:00	6
VST	Vietnam Standard Time	UTC+7:00	7
CTT	China Taiwan Time	UTC+8:00	8
JST	Japan Standard Time	UTC+9:00	9
AET	Australia Eastern Time	UTC+10:00	10
SST	Solomon Standard Time	UTC+11:00	11
NST	New Zealand Standard Time	UTC+12:00	12
		UTC-12:00	13
MIT	Midway Islands Time	UTC-11:00	14
HST	Hawaii Standard Time	UTC-10:00	15
AST	Alaska Standard Time	UTC-9:00	16
PST	Pacific Standard Time	UTC-8:00	17
MST	Mountain Standard Time	UTC-7:00	18
CST	Central Standard Time	UTC-6:00	19
EST	Eastern Standard Time	UTC-5:00	20
PRT	Puerto Rico Time	UTC-4:00	21
AGT	Argentina Standard Time	UTC-3:00	22
		UTC-2:00	23
CAT	Central African Time	UTC-1:00	24

Figure 11

Test Reporting via FTP:

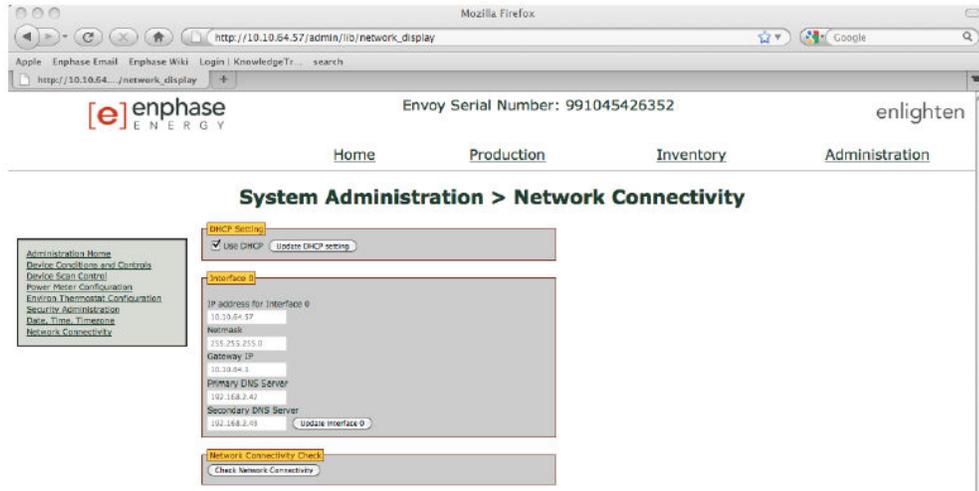
Validate that the FTP setup is correct and the WEM-MX meter is successfully able to send reports.

- a. Navigate to **Setup->Test FTP** (from the meter's web server)
- b. Select **Yes**, and it will report that the transfer was successful. If anything else is reported, review the configuration.

Appendix A: Configuring the Envoy with a Static IP Address

To configure the Envoy with a static IP address:

1. From the Admin menu, choose **Network Connectivity**.



2. Uncheck the check box for Use **DHCP** and click **Update DHCP Setting**.
3. Enter static IP settings appropriate for your network, subnet, and name server. Note that the setting for Secondary DNS Server is optional.
4. Click **Update Interface 0**.

NOTE: The Envoy is now set for the static IP settings specified; you will no longer have connectivity to it. This is because after changing the address from DHCP to Static, your browser will still be pointed at the old IP address.

5. Plug the Envoy into the network router.
6. Unplug the Envoy for 10 seconds and then plug it in again.

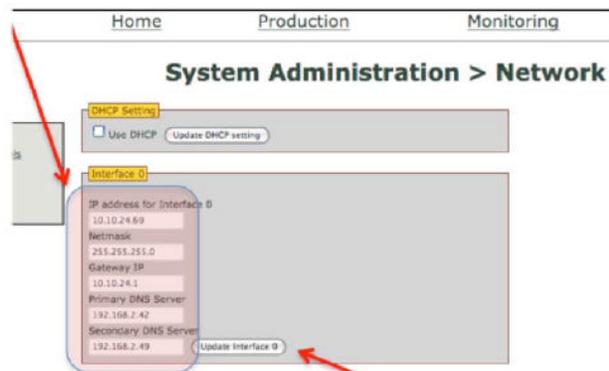


Figure 12

Appendix B - Common Meter Installation Mistakes:

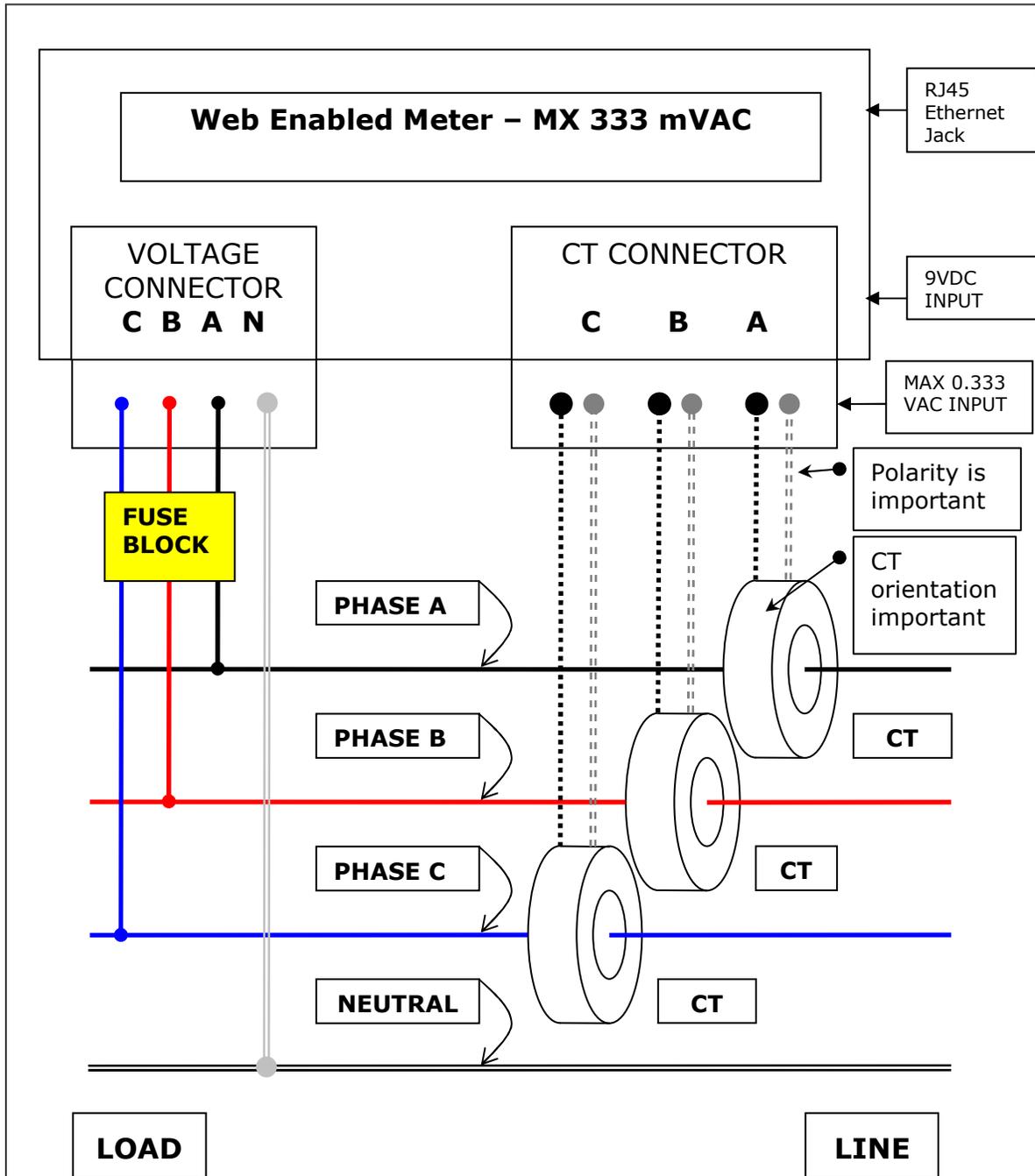
The following are the most common mistakes done during installation of a meter and associated current measurement transformers (CTs) inputs.

- a. The voltage connections for the respective phases A, B & C (L1, L2, & L3) must match the voltage designated inputs to the meter. Each phase must be confirmed to ensure it matches the voltage measurement input to the meter.
- b. The current transformer connections for the respective phases A, B & C must match the associated voltage phases to the meter. i.e.; Phase 'A' CT must be routed through the phase 'A' voltage conductor. Each phase must be confirmed to ensure it matches the current measurement input to the meter.
- c. The current transformer(s) need to be oriented properly. Each current transformer will have either an arrow or orientation of the output secondary leads (X2, X1) that should point towards the load. No damage will occur to the meter if incorrectly installed. The power factor for each phase will be displayed as a negative value indicating power flow in the opposite direction. See note below in (d). To correct, flip the current transformer(s) until all phases report positive power factors.
- d. Note: From an electric utility's perspective energy "delivered" or "imported" is energy flow from the grid to the load / building. Energy "received" or "exported" is flow of energy from the load / building to the grid which can occur when metering a solar power plant or onsite generator. When installing a "NET" meter where energy flows in both directions need to be recorded, you must enable the 4 quadrant logging in the meter as shown above in Figure 7.

Please email support@energytracking.com if you have any questions or require additional details. Phone: 973-448-8660

Wiring Diagram:

Three Phase – 4 Wire WYE Connection WEM-MX 333mV:



Check for CT label 'THIS SIDE TOWARDS SOURCE' on the CT always faces the LINE.

Figure 13