

Energy Tracking
Web Enabled Meter (WEM-MX)
Email: support@energytracking.com

General:

The WEM-MX is a traceable revenue grade (ANSI C12.20 / 0.2% accuracy) low cost, highly accurate electric energy and power measurement meter with enhanced embedded network and reporting capability.

It has been designed for broad International use and provides data using open standards such as XML and uses push / pull technology to send or retrieve data via email, ftp, SOAP XML web service client or via ModBus TCP/IP. In addition, it's on board web server allows you to view and setup data via a web browser such as MS Internet Explorer™. It can be set to periodically send reports via email, ftp files or SOAP Web Service client. The ModBus Server can be accessed anytime over the LAN.

The WEM-MX is ROHS compliant for export to European countries.

The supporting Energy@DeskTop or ET Analytics web portal application can be used for billing, charting, load profile analysis, aggregation, peak demand analysis, etc. The combination of the WEM-MX and Energy@DeskTop or ETAnalytics.com allows you to optimally view, track and manage energy usage.

Power Supply:

- External power supply. Input: 100 to 240VAC. Output +9VDC.
- Supply Current: 300mA (typical)

Internal Back up power supply:

- Rechargeable Lithium Ion battery. Charging circuit is built-in.

Accuracy:

±0.2% at unity power factor.

±0.5% at 0.5 power factor. (Call factory for 0.2%)

Input Signal Range:

- Max Voltage Input per phase: 277 rms AC (Phase to neutral)
- AC Voltage (VA, VB, VC): 0 to 277 (rms)
- AC Current (IA, IB, IC): 0 to 5A. (or 333mV)

Frequency:

- 50 / 60 Hz.

Energy Measurement (4-Quadrant):

- 1 Element, 2 Wire, Single Phase.
- 1 Element, 3 Wire, Single Phase.
- 2 Element, 3 Wire, Three Phase Delta.
- 2 Element, 4 Wire, Three Phase Delta.
- 2 Element, 4 Wire, Three Phase Wye.
- 3 Element, 4 Wire, Three Phase Wye.

Interface Connectors:

- | | |
|-----------------------|--------------------|
| • DC Supply Jack | Concentric 2.5 mm. |
| • RJ 45 Network Cable | |
| • Voltage Inputs | Phase A, B, C. |
| • Current Inputs | Phase A, B, C. |
| • Neutral | |

Network:

- Plug-n-Play: DHCP enabled (default).
- User can set meter to a Fixed IP address.
- Ethernet 10/100 BaseT.

Applications Built In:

- | | |
|------------------------|--------------------------------------|
| • DHCP Client | Acquires IP Address. |
| • DNS Client | Domain to IP conversion. |
| • SNTP | Real time clock support. |
| • Day Time Client | Backup Real time clock. |
| • Time Zone Support | International Synchronization. |
| • FTP Server | Firmware Updates. |
| • FTP Client | Report Data via FTP. |
| • Email Client | Report Data via Email. |
| • XML/SOAP Client | Report Data via Web Services Client. |
| • Web Server | Password protected. |
| • ModBus TCP/IP Server | |

Standard Ports Utilized:

Web Server – Web Services:	Port 80
FTP Server:	Port 21
Email SMTP	Port 25
SNTP (time synchronization):	Port 123
Day Time Server	Port 13
Debug Output:	Port 12345
ModBus TCP/IP	Port 502

User Selectable Features:

- Program Load Profile interval of 1,5,15,30,60 minutes.
- Send load profile report immediately upon end of interval.
- Send alarm email on power failure / return.
- Send alarm email when kW threshold is exceeded.
- Time of Use Tiers.
- Demand Reset Date.
- Schedule weekly or daily email Reports.
- Set Demand Threshold Alarm.
- CT / PT Ratios.
- Meter ID / Serial Number.
- Concurrent Reporting via Email, FTP, SOAP web service client and ModBus TCP/IP.

Accessible via Web Server:

- Setup of Email, DNS, FTP, Time Zone, DHCP or Fixed IP.
- Load Profile Data – kWh / kVArh Delivered and Received.
- Instantaneous Voltage, Current, Power Factor by Phase.
- Watt Hours, VARH, VA
- Energy Imported, Exported, Sum, Net.
- Energy Consumption and Demand with Time Stamp.
- Previous Month's Consumption and Demand Data.
- Last 24 hour Load Profile w/ ≥ 1 minute intervals.

Storage Capacity of Load Profile Data:

- 55 days – 4 channels @ 15 minute intervals.

Software Supporting Applications:

ET Analytics Web Portal	(optional)
Energy@DeskTop Application.	(optional)

Environmental:

- Operating Temperature: -25C to +70 deg C.
(Consult Factory for extended temperature range.)
- Storage Temperature: - 40C to +85 deg C.
- Humidity: 5% to 95%
- Altitude: 12,000 ft (3657.60 meters)

Display LEDs:

- Yellow – Provides indication of Ethernet Link.
- Green – Provides indication of Ethernet Activity.
- Red – Power
- Yellow / Green – Activity.
- IR LEDs for Watts and Vars (enables traceability).

Standards:

The embedded Network module meets the following Electromagnetic emission standards:

EN55022: 1988

EN55024: 1988

VCCI

AS 3548

The embedded network module meets the following Electromagnetic emission standards:

- UL 60950
- CSA 22.2 No. 60950
- EN60950

Overall WEM-MX Safety Standards and EMC Testing:

The MX meets the following standards based on independent Testing by Underwriters Laboratories, Melville, NY, USA.

IEC 61010-1: 2001 2nd Edition

EN 61000-6-1

EN 61000-3-2 Harmonics

EN 61000-3-3 Conducted Emissions, Voltage Fluctuations and Flicker.

EN 61000-6-3 Radiated Emissions

IEC/EN61000-4-2 Electrostatic Discharge Immunity Test.

IEC/EN61000-4-3 RF Electromagnetic Immunity Test.

IEC/EN61000-4-4 Fast Transient / Burst Immunity Test.

IEC/EN61000-4-5 Surge Immunity Test.

IEC/EN61000-4-6 Immunity to Conducted Disturbances.

IEC/EN61000-4-8 Magnetic Field Immunity Test.

IEC/EN61000-4-11 Voltage Dips, Interruptions Immunity Test.

FCC Part 15, Subpart B (Valid for Residential Installations).

IEC/EN55022

LCD Display:

WEM-MX can be ordered with a LCD Display. This LCD is a 4 line display where the following data will be displayed.

Line 1: Date and Time

Line 3: kWh

Line 4: kW. Note this line is also used to display critical messages such 'Ethernet Link Lost'.

Line 2: Will display the following values in sequence with a 4 second wait.

- kW: Current instantaneous demand measured by the meter.
- kWh: Total kilo-watt hours.
- kVARh: Total kilo-watt reactive hours.
- Pk kW: The highest peak demand recorded in the current month.
- Pk T: Time and date at which the peak demand occurred.
- IP: Meter's IP Address.
- Snet: Meter's subnet mask.
- Gway: Meter's gateway.
- V Phase A: Phase A voltage.
- V Phase B: Phase B voltage.
- V Phase C: Phase C voltage.
- I Phase A: Phase A current.
- I Phase B: Phase B current.
- I Phase C: Phase C current.
- Avg. PF: Average power factor of all 3 phases.
- PF Phase A: Phase A power factor.
- PF Phase B: Phase B power factor.
- PF Phase C: Phase C power factor.
- Meter ID:
- MC: Meter's MAC Address.

Design:

Panel / Wall Mount.

Dimensions:

- Length 6.4"
- Width 3.8"
- Height 3.5"