1.1 High density power metering – HDPM6000

A. The metering device used to monitor circuits for purposes of network management, energy cost management, energy allocation, and operational efficiency shall have the following minimum features:

1. Connections and form factor - direct connect to circuits up to 480 VAC, eliminating the need for voltage (potential) transformers; 250mV current transformer inputs, supporting CTs up to 6000 amperes(A). Terminal block for voltage inputs, removable connectors for control power and communications; easily mountable, DIN rail form factor.

2. Supported monitoring parameters—full range of 3-phase voltage, current, power and energy measurements, power factor, frequency, total harmonic distortion (THD), individual power harmonics (up to 63rd order).

3. Accuracy standards - sample current/voltage simultaneously without gaps with at least 128 samples per cycle (zero-blind);

4. Display – 4.3” (480x272 resolution) or 7” (800x480 resolution) TFT touch screen backlit display capable of displaying main and branch circuit values.

5. Environmental monitoring – support one channel temperature/humidity sensor.

6. Communications - serial RS-485 Modbus and Ethernet Modbus TCP; provide two Ethernet ports to allow wiring from meter to meter as a daisy-chain; be capable of serve data over the Ethernet network accessible through a standard web browser and on the HMI (front display); the monitor shall contain default pages from the factory.

7. Onboard data logging capabilities – Non-volatile event log and 20 user configurable data logs. 8GB of storage for log data and captured waveforms.

8. Alarming capabilities – Provide user defined alarms for low and high voltage, high current, tripped breaker detected.

9. Voltage sag and swell detection shall be provided with waveform capture for both current and voltage channels.

10. Firmware-upgradeable to enhance functionality through the Ethernet connection for the system.

11. Native BACnet/IP support with capability to communicate via Modbus TCP/IP and BACnet/IP simultaneously.

12. Native SNMP support with capability to communicate via Modbus TCP/IP and SNMP simultaneously.

13. The power meter shall provide a wide range control power input up to 480 V AC / 250 V DC through an external power supply and low voltage DC input of 24VDC nominal.

14. Branch Circuit and Busway Monitoring – Optionally support up to 192 circuits with current, power and energy measurements, power factor, frequency, total harmonic distortion (THD), individual power harmonics (up to 63rd order).

15. Input/Output Module – Support two digital inputs and one digital output.

16. Designed for easy disassembly and recycling at end of life and comply with environmental directives ROHS and WEEE.

17. Standards Compliance:

The HDPM instrument shall comply to the following safety/construction standards:

a. CAN/CSA C22.2 No. 61010-1.

b. CAN/CSA C22.2 No. 61010-2-030.

c. IEC 61010-1.

d. IEC 61010-2-030.

e. UL 916.Fourth Addition

The HDPM instrument shall comply to the following electromagnetic immunity standards at levels consistent with those outlined in the construction standards:

a. IEC 61000-4-2 (Electrostatic discharge immunity).

b. IEC 61000-4-3 (Radiated, radio-frequency, electromagnetic field immunity).

c. IEC 61000-4-4 (Electrical fast transient/burst immunity).

d. IEC 61000-4-5 (Surge immunity).

e. IEC 61000-4-6 (Immunity to conducted disturbances, induced by RF fields).

f. IEC 61000-4-11 (Voltage dips, short interruptions and voltage variations immunity).

The HDPM instrument shall comply to the following electromagnetic emission standards:

a. FCC Title 47 CFR Part 15 (Subpart B, Class B: Class B digital device, radiated emissions).

The HDPM instrument shall comply to the following communications standards with third party compliance certification as noted:

a. EIA/TIA-485.

b. Modbus Interoperability.