GENERAL:

The scope of this document is to provide instruction for the installation and testing of revenue class electric energy meters installed at the University of Missouri.

DESIGN GUIDELINES:

1. Materials
   - 1.1. Meter
     - 1.1.1. The kWH meter for all the new installations shall be Landis & Gyr AXS4e Solid-State Polyphase Meter.
     - 1.1.2. 3-Wire Delta Application
       - 1.1.2.1. Type: Cat. #4E010000-0000, class 20, service 3D, wires 3, test amp 2.5, form 5S, standard nameplate
     - 1.1.3. 4-Wire Wye Application
       - 1.1.3.1. Type: Cat #4E000000-0000, class 20, service W, wires 4, test amp 2.5, form 9S, standard nameplate
   - 1.2. Current Transformers
     - 1.2.1. The Current Transformers (Instrument Transformers) shall meet the applicable provisions of ANSI C57.13-1978 (R1986) and ANSI C12.11-1987
     - 1.2.2. Current transformers (CT's) shall be of a design for indoor use suitable for electricity metering grade. The CT's shall be suitable for padmount distribution transformer installation. The current transformer body construction shall be of molded insulation. The preferred outside body shape or configuration shall be Grecian Urn style. The CT's shall be window-type with voltage application range of 1.2 to 15kV.
     - 1.2.3. The ratio factor (RF) of selected CT's shall be enough to pick up a small load. At full load, meter current must not exceed the CT's maximum rating. CT ratio and RF rating shall be coordinated with Energy Management Electric Distribution.
     - 1.2.4. Other CT specifications shall be as follows
       - 1.2.4.1. ANSI Accuracy Class, 60Hz
       - 1.2.4.2. B0.2 Burdens per ANSI
       - 1.2.4.3. Polarity permanently molded primary H1/H2 and secondary X1/X2
       - 1.2.4.4. Stainless steel Name Plate shall carry all information prescribed by the ANSI standard and installed at easy to read location
   - 1.3. Wiring
     - 1.3.1. All secondary current circuit wiring shall be of pvc insulated, flexible, *multi-stranded* and colored (red, yellow, blue, white) wire with appropriate gauge as shown in the table, in section 3.2 below.
     - 1.3.2. All potential wiring shall be #12 AWG pvc insulated, *solid* stranded and colored (red, yellow, blue, white) wires.

1.4. Meter Base (Socket)
1.4.1. The Meter Sockets shall conform to ANSI Standard C12.7-1993. The meter base shall have CT's short-circuiting arrangement and disconnect switches for potential circuits.
1.4.2. The acceptable meter sockets are:
1.4.2.1. Landis & Gyr 13 terminal, pre-wired Cat. #9837-0354

1.5. Fuse Blocks
1.5.1. Cooper Industries, Bussman Fuse Block #BM6033B, 30A, 600V

1.6. Fuse
1.6.1. Cooper/Bussmann KTK-2

2. Installation
2.1. The installation of energy meter shall be according to NEC, ANSI and IEEE C12 Electricity Metering standards, where applicable
2.2. The Contractor shall supply and install current transformers, fuse block and fuses, meter socket, meter, conduits, prescribed wires and other material and gadgets required to complete the job.
2.3. Meter Wiring
2.3.1. The maximum distance in feet between CT and meter shall meet ANSI accuracy classification at B0.2 accuracy class

AWG Copper Wire Size	NO. 12 multi-stranded	NO. 10 multi-stranded	NO. 8 multi-stranded	NO. 6 multi-stranded
Max. Distance (in feet)	31	49	79	126

2.3.2. Energy Management Electric Distribution Crew shall terminate all wires at the current transformers, fuse block, and the meter.
2.3.3. The wiring detail is shown in sketch Metering Detail.dwg.

2.4. Meter Location
2.4.1. The location of the meter shall be coordinated with system owner. Consideration shall be given to the monthly meter read in determining the accessibility of the location. The preferred location is on an exterior wall near the transformer.

3. Testing
3.1. Warranty and Other Requirements

3.1.1. A Certified Factory Test Report of the meter to be installed shall be given to Energy Management Electric Distribution prior to the installation. After the new installation is energized for the first time, the system owner shall program an "in service" test and calibrate the kWH meter in the presence of the contractor or his representative. If the "in service" testing results indicate a faulty meter, a replacement meter shall be provided.

4. Commissioning
   4.1. MU Only: The meter shall be programmed and inserted into socket by system owner personnel.

REFERENCES