

Utility Metering

33.00.00

Description:

The purpose of the section is to highlight the current applicable UMCP Design Standards for all utility metering.

Related Sections:

- TBD

Effective Date:

May 30, 2014

Applicable Standards:

- TBD

General Requirements:

1. Summary:

- All utilities serving a building shall be metered.
- All utility meters will be supplied by the contractor unless otherwise specified. All revenue meters must be installed in accordance with the utilities (Washington Gas Light (WGL), Washington Suburban Sanitary Commission (WSSC) or Pepco Holdings Inc. (PHI), etc. standard procedures and must be coordinated with the UMCP Facilities Management and the Department of Engineering and Energy.
- Temporary utility meters are required during construction and shall be included in the specifications.
- Electric, water (domestic, condensate, hot water, etc.), energy (BTU), steam utilities shall be remotely metered.
- All sub-metering opportunities will be identified, such as lighting, data centers, large specific equipment or laboratory loads. When sub-metering is appropriate, the specified meter and installation shall be inspected and certified by the appropriate governing agency.
- Steam condensate shall exit to a steam condensate return system. Cooling tower condensate shall exit to a sanitary sewer.
- All service conductors entering a building shall be metered using the appropriate meter from the electric meter table listed below.
- Where building service provides power to computer systems requiring three phase, uninterruptible power supply, the electrical load shall have electrical power monitoring for on-line alarming and documentation.
- Service entry locations and critical load distribution locations shall be served in accordance with Tables: 1, 2, 3 and 4.
- The university relies on real time energy (meter) data for the daily operation of the UMCP campus electrical and mechanical systems. Energy data is compared with building occupancy and comfort levels and is a critical input to the Central Control and Monitoring System (CCMS) Building Automation System (BAS) for demand shedding. Energy data is also required by the Department of Engineering and Energy and the Combined Heat & Power (CHP) plant for demand monitoring, billing and trending of Campus Utilities. Energy data from the meters is communicated via integration to the BAS. The energy meters are maintained by the campus meter shop and the campus CCMS group who provide the campus customers one source for all meter data. This section outlines the requirements for furnishing of equipment and installation of electric, energy (BTU), steam, flow computers, domestic water and natural gas meters.

2. Product Data

- Include detailed manufacturer's specifications for each component specified. Include data sheets reflecting the model numbers, features, ratings, performance, power requirements and dimensions. The information provided shall be in sufficient detail to confirm compliance with requirements outlined in this specification. No substitutions can be made without the express written consent of the university and review and approval of the Department of Engineering and Energy and CCMS. The vendor will submit the final points list for each meter and display format for each point (KWH, Tons, BTUs, etc.) for approval by the campus meter shop under the Energy Performance group.
- All meter installations interconnected to the campus BAS receive prior approval from the campus customers listed in the Tables below.

3. Design Guidelines

- Each building shall be integrated into the campus BAS. The BAS vendor shall reserve adequate virtual points in the BAS to be able to read and display a minimum of 40 data points from each flow computer and meter. All local meter displays shall be mounted 2-5' A.F.F. or a remote display shall be installed at 5'-0" A.F.F.
- The tables below provide the approved meters, vendors and their required features and/or components for the successful integration. All components and features are required for the vendor to deliver a product that provides turnkey integration to the campus BAS system interface. The campus CHP plant accepts only one steam meter. The final selection and sizing of the steam meter should be coordinated with the MEDCO Energy Manager.

Table 1 Electric Meters

Electric Meters				
Manufacturer	Model	Communication Requirement	Campus Customer	Additional Features Required
Square D	PM 800 (820,850,870)	ModBus RTU or BACnet MSTP RS 485	UMD Engineering & Energy, UMD CCMS, SUEZ	Modbus or BACnet communications over RS485, Panel Display.
GE	PQM II	ModBus RTU or BACnet MSTP RS 485	UMD Engineering & Energy, UMD CCMS, SUEZ	Modbus or BACnet communications over RS485, Panel Display.
ION	7650	ModBus RTU or BACnet MSTP RS 485	UMD Engineering & Energy, UMD CCMS, SUEZ	Modbus or BACnet communications over RS485, Panel Display.
Veris	H8437V	ModBus RTU or BACnet MSTP RS 485	UMD Engineering & Energy, UMD CCMS, SUEZ	Modbus or BACnet communications over RS485, Panel Display.

Table 2 Chilled Water, Hot Water, Condensate, Thermal Meters

CHW, HW, Etc... BTU Thermal Meters				
Manufacturer	Model	Communication Requirement	Campus Customer	Additional Features Required
Onicon	F3100 (Magnetic Flow Meter) w/ Remote Display	Modbus RTU and DC Pulse or (4-20ma) or (0-10VDC)	UMD Engineering & Energy, UMD CCMS, SUEZ	Flow Computer/Totalizer Required, Flanged 2" or above, Unions below 2"
Rosemount	8705 (Magnetic Flow Meter) w/ Remote Display	DC Pulse or (4-20ma) or (0-10VDC) Pulse	UMD Engineering & Energy, UMD CCMS, SUEZ	Flow Computer/Totalizer Required, Flanged 2" or above, Unions below 2"
Yokogawa	AFX (Magnetic Flow Meter) w/ Remote Display	DC Pulse or (4-20ma) or (0-10VDC)	UMD Engineering & Energy, UMD CCMS, SUEZ	Flow Computer/Totalizer Required, Flanged 2" or above, Unions below 2"

Table 3 Steam Meter

Steam Meter				
Manufacturer	Model	Communication Requirement	Campus Customer	Additional Features Required
Yokogawa	DYA-Vortex with ITC	Hart and DC Pulse or 4-20ma or 0-10VDC	UMD Engineering & Energy, UMD CCMS, SUEZ	Moore Industries HCS Hart to Modbus Converter, Modbus RTU RS485, Flanged 2" & above, Unions below 2"

Table 4 Flow Computers

Flow Computer/Totalizer				
Manufacturer	Model	Communication Requirement	Campus Customer	Additional Features Required
Onicon	System 10	BACNET MSTP via RS 485 or Modbus RTU	UMD Engineering & Energy, UMD CCMS, SUEZ	24VAC, Matched Temperature Sensors, Dual Mode Bi-Directional
Kessler-Ellis Products	KEP ST2 (Supertroll II) ES 749	Modbus RTU RS485 & 4-20ma output	UMD Engineering & Energy, UMD CCMS, SUEZ	24VDC, (2) 3-Wire 100 Ohm Platinum RTD Match Pair Temperature Sensors, Dual Mode Bi-Directional
Domestic Water Meters / Other Liquids (Condensate, Tower Bleed, Etc...)				
Manufacturer	Model	Communication Requirement	Campus Customer	Additional Features Required
Onicon	F3100 (Magnetic Flow Meter) w/ Remote Display	ModBus RTU RS485	UMD Energy & Utilities, UMD CCMS, SUEZ	Modbus RTU to BAS, Flanged 2" & above , Unions below 2"
Rosemount	8705 (Magnetic Flow Meter) w/ Remote Display	Hart and DC Pulse or 4-20ma or 0-10VDC Pulse	UMD Energy & Utilities, UMD CCMS, SUEZ	Moore Industries HCS Hart to Modbus Converter, Modbus RTU RS485, Flanged 2" & above, Unions below 2".
Yokogawa	AFX (Magnetic Flow Meter) w/ Remote Display	Hart and DC Pulse or 4-20ma or 0-10VDC	UMD Energy & Utilities, UMD CCMS, SUEZ	Moore Industries HCS Hart to Modbus Converter, Modbus RTU RS485, Flanged 2" & above, Unions below 2".
Natural Gas/ Propane/Compressed Air				
Manufacturer	Model	Communication Requirement	Campus Customer	Additional Features Required
Onicon	F5100 (Thermal Dispersion Flow Meter) w/ Display	ModBus RTU RS485	UMD Energy & Utilities, UMD CCMS, SUEZ	24VDC, Modbus RTU to BAS
Sierra	QuadraTherm [®] 640i Air Mass Flow Meter	ModBus RTU RS485	UMD Energy & Utilities, UMD CCMS, SUEZ	24VAC, Modbus RTU RS485
ABB	Sensyflow FMT400-VTS Thermal Mass Flowmeter	Hart or ModBus RTU RS485 and DC Pulse or 4-20ma or 0-10VDC	UMD Energy & Utilities, UMD CCMS, SUEZ	24VAC, Modbus RTU RS485 or Moore Industries HCS Hart to Modbus Converter, Flanged 2" & above, Unions below 2".

End of Section