

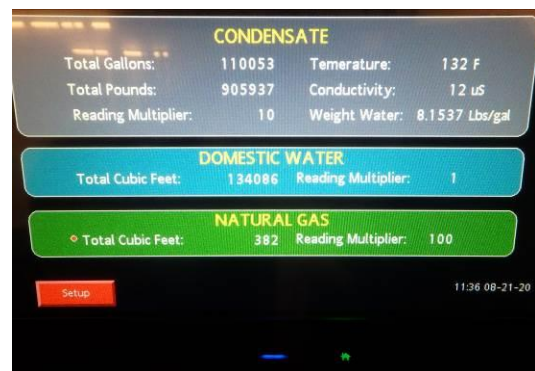
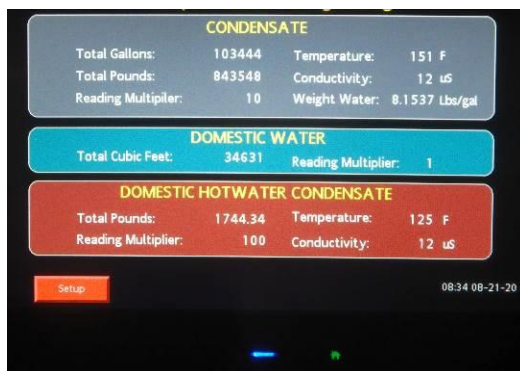
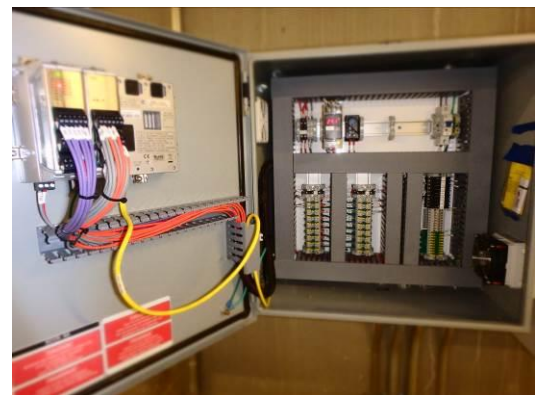
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PART 1 GENERAL

1.1 DESCRIPTION

A. Purpose

1. This section covers data collection controllers for use in the Owner's Metering and Monitoring system.
2. The Data Collection Controller consists of a PLC and HMI display in a wall mounted NEMA enclosure designed to accept the inputs from locally installed Steam Condensate, Domestic Water, Domestic Hot Water (if produced via steam heating), UW Natural Gas, and other metering to calculate energy usage, consumption, and condensate quality. The Data Collection Controller monitors, displays and provides access to the real-time readings to the campus Metering and Monitoring System.
3. Photos below of a typical Data Collection Controller:



1.2 QUALIFICATIONS

A. Approved manufacturers.

1. Data Collection Controllers
 - a. UW Campus Utilities - 'The Zett' Data Collection Controller
 - b. No Exceptions. No Substitutions. No Approved Equal.

2. Twisted Shielded Pair (TSP)
 - a. Belden 88760
 - b. Or Approved Equal

1.3 RELATED SECTIONS

- A. 01 91 00 – General Commission Requirements
- B. 23 05 19.11 – Steam Condensate Meter
- C. 23 05 19.14 – Building Water Meter
- D. 23 08 00.11 – Mechanical Meter Integration and Commissioning
- E. 33 51 33 – UW Gas Meter

1.4 REFERENCES

- A. Applicable codes, standards, and references codes, regulations and standards
 1. National Electrical Testing Association – NETA
 2. National Fire Protection Association – NFPA
 3. National Electrical Code - NEC
 4. UL 916 – Energy Management Equipment
 5. UL 508A – Standards for Industrial Control Panels
 6. State and local codes and ordinances
- B. Attachments and Details
 1. 23 00 00 Attachment #1 – Mechanical Meter Schematic
 2. Attachment #1 – UW Campus Utilities ‘The Zett’ Data Collection Controller Product Data
 3. Attachment #2 – UW Campus Utilities ‘The Zett’ Data Collection Controller Typical Wiring Diagrams
 4. Detail #1 – Typical Data Collection Controller Installation
 5. Detail #2 – Data Collection Controller Mounting

1.5 COORDINATION

- A. Coordinate design of utility services and associated mechanical systems in accordance with 23 00 00 Attachment #1 – Mechanical Meter Schematic and with Campus Utilities and Operations.
- B. Coordinate Data Collection Controller installation location with UW Campus Utilities and Operations. Show on project documents and submit for approval.
- C. The project team shall complete the required fields on the “Early Building Services (EBS)” tab of the UW-IT Outlet Schedule. All fields listed under “Project Responsibility” on the EBS tab must be filled in.

- D. If a UW-IT Outlet Schedule is not being maintained for the project, the project team shall submit a FacNet IP Address Request by emailing uwfot@uw.edu with the subject line: "FacNet IP address request."

In the body of the email, provide the following information for each IP address being requested:

1. Location: Room name and number
 2. If using an existing biscuit jack, include the Outlet ID (label on the data outlet).
 3. Device Type: For example, Electrical Meter, CCW Meter, Data Collection Controller, etc.
 4. IDF Room: IT service origination for data jack, if known.
 5. Panel Name: Device enclosure name or label.
 6. MAC Address: Format should follow standard convention (e.g., 00:05:e4:05:0D:d2).
- E. Device startup, commissioning, and integration into the Owner's data aggregation software shall be completed in accordance with the Startup, Commissioning, and Integration Specification (26 08 00.11 for Electrical or 08 00.11 for Mechanical).
- F. (For mechanical systems only) BACnet Device Instance ID provisioning shall be coordinated on the "Early Building Services (EBS)" tab with both the UW Facilities OT Team and the UWF Environmental Control Systems Manager (ECSM), Shop 69. Use of uncoordinated or self-assigned Device Instance IDs is strictly prohibited. If a UW-IT Outlet Schedule is not being maintained for the project, requests may also be emailed to uwfot@uw.edu with the subject line "BACnet Device ID Request" and coordination with Shop 69 will be managed by UW Facilities OT and the ECSM.
- G. Contractor shall provide a completed "Mechanical Meter Profile Report" form per Specification 23 08 00.11 Appendix A for each meter.
- H. Coordinate meter quantity and types with Campus Utilities and Operations for programming the Data Collection Controller. See SUBMITTALS 23 08 00.11 Worksheet #1.

1.6 SUBMITTALS

- A. Submittals shall only be approved by Campus Utilities and Operations (CEUO)
1. Submit a completed "Worksheet: Mechanical Meter Schedule" form per Specification 23 08 00.11
 2. Submittals shall be in accordance with Conditions of the Contract and Division 01 Specification Sections.
 3. Submittals shall be complete and provide all necessary details for full review of installation. Incomplete or partial submittals will be rejected and not reviewed.

4. Submit a completed "Worksheet: Mechanical Meter Schedule" form per Specification 23 08 00.11.
5. The project team shall complete the required fields on the "Early Building Services (EBS)" tab of the UW-IT Outlet Schedule. All fields listed under "Project Responsibility" on the EBS tab must be filled in.
6. If a UW-IT Outlet Schedule is not being maintained for the project, the project team shall submit a FacNet IP Address Request by emailing uwfot@uw.edu with the subject line: "FacNet IP address request."

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- 2 (For mechanical systems only) BACnet Device Instance ID provisioning shall be coordinated on the "Early Building Services (EBS)" tab with both the UW Facilities OT Team and the UWF Environmental Control Systems Manager (ECSM), Shop 69. Use of uncoordinated or self-assigned Device Instance IDs is strictly prohibited. If a UW-IT Outlet Schedule is not being maintained for the project, requests may also be emailed to uwfot@uw.edu with the subject line "BACnet Device ID Request" and coordination with Shop 69 will be managed by UW Facilities OT and the ECSM.

2.1 OPERATIONS AND MAINTENANCE (O&M) MANUALS

- A. None required

2.2 MEETINGS

- A. Pre-installation conference
 1. The Contractor shall request a pre-installation conference with the UW Meter Shop (Shop 69) before project begins construction.
- B. Post-installation Inspection Meeting

1. The Contractor shall request a post-installation meeting with the UW Campus Utilities and Operations for projects requiring the data collection controller. The Contractor shall request a post-installation conference with the UW Meter Shop before the Data Collection Controller is powered and commissioned.
- C. Attend meetings with the Owner and/or Owner's Representative as required to resolve any installation or functional problems.

PART 2 PRODUCTS

2.1 DATA COLLECTION CONTROLLER(S)

- A. Provided by UW Campus Utilities as Owner-Furnished, Contractor Installed (OFCI). UW Project shall reimburse the UW Campus Utilities and Operations for cost of Data Collection Controller supplied to contractor.
- B. Capacity
 1. Each data collection controller shall have a minimum of 8AI and 8DI. The project shall coordinate input point quantity with the UW Meter Shop to supply either sufficient inputs or controllers and cabinets for the required metering installed.

PART 3 EXECUTION

3.1 REQUIREMENTS

- A. Application
 1. Data Collection Controller shall be provided and installed to read field installed Steam Condensate, Domestic Water, Domestic Hot Water (if produced via steam heating), UW Natural Gas, and other metering to calculate energy usage, consumption, and condensate quality. Equipment shall be installed as a complete metering system including all necessary accessories to measure flow, conductivity, and temperature of the various systems monitored.
- B. General installation
 1. Identification and Labeling
 - a. Reference section 23 05 53 Identification of Mechanical Piping and Equipment
 - b. All wiring and devices shall be properly labeled in accordance with system diagrams and wiring details to identify device tag, name, and purpose.
 - c. Wire labels shall be machine made shrink type labels and match wire designations on the instrumentation drawings.
 - d. Field devices including flow meters, conductivity/temperature transmitters and sensors, shall be labeled with Brother P-touch or equal.
 - e. Label in accordance with other sections of this specification.
 2. Installation
 - a. Only personnel qualified and experienced in this type of work shall make connections.
 - b. The installation of data collection controllers shall be done with care to

avoid damage.

- 1) Controllers showing damage after installation shall be replaced.
 - 2) Controllers hung improperly shall be properly secured and all paint scratches shall be touched up.
 - 3) Data collection controller cabinets hung improperly shall be secured and all paint scratched shall be touched up.
 - c. Controllers shall be installed in building mechanical rooms, in the vicinity of primary utility service entrance and associated meters. Coordinate installation location with Campus Utilities and Operations for approval.
 - d. Controllers shall be installed so that integrated display shall be mounted at an easily read height (4'-5') above finished floor (AFF). The controller shall be installed in an easily accessible area that does not inhibit pathways and the controller shall have a minimum of 30" of clearance in front of the cabinet with 8" clearance on either side.
 - e. All wire must be unbroken from source to endpoint.
 - f. No penetrations shall be made in the back of Data Collection Controller. IT/Communication CAT 6 shall not penetrate wireway.
 - g. Penetrations made in the top of the Data Collection Controller shall "Myers Hub" installed.
 - h. Owner shall verify installation prior to energizing data collection controller.
3. Each device requiring communication on the FacNet network shall be provided with a dedicated Category 6 (CAT6) communication cable. The cable shall be installed in a minimum 1" rigid conduit and terminated at a FacNet data jack in accordance with UW-IT Specification Drawing OL- CI-2. The data jack shall be housed inside the following Milbank enclosure components:
- 1) Milbank #12126-LC1 (12" x 12" x 6" enclosure)
 - 2) Milbank #A-LKSFMKEYL (hinged cover with lock)
 - 3) Key: #2233

Refer to UW-IT Specification Drawing CNT-CI-2: [CNT-CI-2 Drawing](#)

- b. The Milbank enclosure shall be mounted in a serviceable area within 10' of the device that will be communicating on the FacNet network. Any exceptions must be reviewed and approved by the Owner.
 - c. The Milbank enclosure shall be mounted at an accessible height (4'-5') above the finished floor. Exceptions must be reviewed and approved by the Owner.
 - d. A durable label (Brother P-touch or equal) shall be affixed to the exterior of the enclosure cover, indicating the IT Room from which service originates.
 - e. Where shared use of a FacNet data jack is proposed (e.g., electrical meter and lighting control device sharing a connection), the Contractor shall coordinate with the Owner and obtain approval prior to installation.
4. The System Integrator will check the Contractor's work to ensure the accuracy of the connections.

- a. The Contractor shall arrange with the Owner for the times when their services will be required, and under no circumstances shall the Contractor connect to the existing system without Owner's knowledge.
 - b. The Contractor shall coordinate with the Campus Utilities and Operations staff to complete a final acceptance inspection when the installation is complete.
 - c. The proper connection of the wires and cables to other systems as specified is entirely the responsibility of the Contractor.
 - d. In the event the connections cannot be made as specified, the Contractor shall make the necessary corrections at his own expense.
5. Install controllers per manufacturer's recommendations.
- C. Mounting and electrical connections
1. In accordance with manufacturer's installation instructions.
 2. The Data Collection Controller shall be mounted on a Unistrut standoff support. Refer to Detail #2 for mounting details.
 3. Rigid-style GRC or IMC conduit must be used for installations in utility tunnels, utility vaults, or building service entrances. EMT conduit is only permissible in mechanical rooms and inside buildings. EMT fittings shall be compression type. All conduits must use threaded conduit style junctions (LB, LR, LL, C, TEE, etc.) with no unused/open hubs or Knockout holes (No 4" sq., etc.). LFMC liquid-tight flexible metallic conduit shall be used when transitioning from conduit to device.
 4. Install a dedicated 120VAC circuit from a normal panelboard to the Data Collection Controller with #12 THHN/THWN stranded wire. Wiring shall be in a dedicated ¾" conduit run with no sharing of conduit for multiple power sources. All wiring shall be continuous with no breaks from source to endpoint.
 5. Do not provide secondary means of 120VAC electrical disconnect external of Data Collection Controller. Safe means of access will be achieved by LOTO of dedicated circuit feeding controller at service panelboard.
 6. Data Collection Controller must be clearly labeled to show 120V service including panel name, circuit, and room number. Label shall read (for example) *"Fed from PCB-01-N01, Circuit 25 – Located in Room 025"*
 7. 120v Electrical Panel must be clearly labeled to show circuit/feed to Data Collection Controller. Label shall read *"Metering Data Collection Controller."*
 8. Owner to verify power cable installation and energize circuit after inspection.
- D. UL Listing
1. The Contractor shall ensure that the controller installation is UL Listed.
- E. Testing
1. Provide testing as required per 26 60 00 Inspection, Calibration and Testing.
- F. The project team shall complete the required fields on the "Early Building Services (EBS)" tab of the UW-IT Outlet Schedule. All fields listed under "Project Responsibility" on the EBS tab must be filled in.

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END OF SECTION