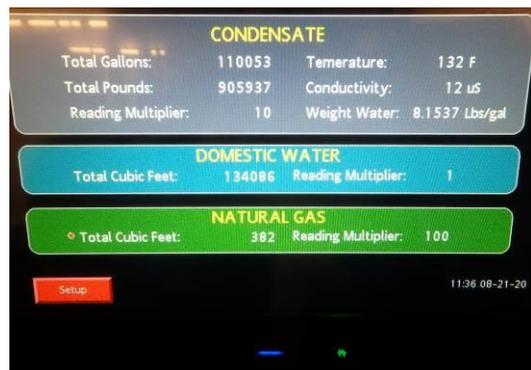
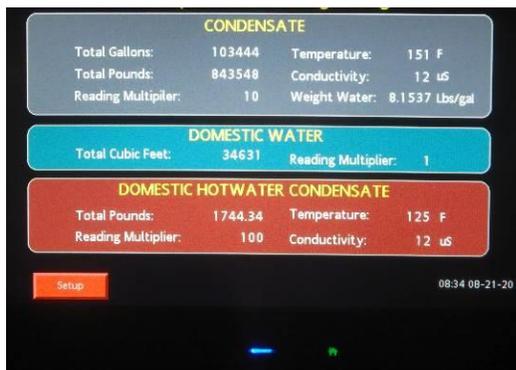


PART 1 GENERAL

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. Coordinate the quantity and location of Facility Network (FacNet) Ethernet ports with Div 27 Low Voltage Communications, UWIT, and Campus Utilities & Operations. Data Collection Controller connects directly to FacNet to integrate with the campus Metering and Monitoring System
- D. Contractor shall provide a completed “Mechanical Meter Profile Report” form per Specification 23 08 00.11 Appendix A for each meter.
- E. Coordinate meter quantity and types with Campus Utilities and Operations for programming the Data Collection Controller. See SUBMITTALS 23 08 00.11 Worksheet #1.

- F. Coordinate with UW Campus Utilities Meter Shop to receive Data Collection Controller after Worksheet #1 and other related submittals are approved.

1.6 SUBMITTALS

- A. Submittals shall only be approved by Campus Utilities and Operations (CUO)
 - 1. Submittals shall be in accordance with Conditions of the Contract and Division 01 Specification Sections.
 - 2. Submittals shall be complete and provide all necessary details for full review of installation. Incomplete or partial submittals will be rejected and not reviewed.
 - 3. Submit 23 08 00.11 Worksheet #1 – Mechanical Meter Schedule to Campus Utilities for review and programming of Data Collection Controller. Submit minimum 6 weeks prior to expected start of installation of equipment.
 - 4. Submit FacNet IP Address Request to UW Facilities:Business Innovation and Technology (BIT) by email uwftech@uw.edu subject line 'FacNet Ip address request'.

In the body of the request (e-mail), for each ip address being requested provide the following:

- 1. Location: Room number and port number
- 2. Device Type: ie, Electrical Meter, CCW Meter, Data Collection Controller, etc.
- 3. IDF room feeding the panel where the device is being installed
- 4. Panel Name: where the device is being installed
- 5. Mac address of the device: ie, 00-05-e4-05-0D-d2

1.7 OPERATIONS AND MAINTENANCE (O&M) MANUALS

- A. None required

1.8 MEETINGS

- A. Pre-installation conference
 - 1. The Contractor shall request a pre-installation conference with the UW Campus Utilities and Operations for projects requiring the installation of or the connection to a Data Collection Controller. The Contractor shall request a pre-installation conference with the UW Meter Shop 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 (OFICI). 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. Each controller shall have dedicated CAT6 communication cable installed to connect the controller to the facility network. UW shall make communication cable terminations. Dedicated communication conduit shall be 1" minimum. Refer to Detail #1 – Typical Data Controller Installation.

- d. 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.
 - e. 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.
 - f. All wire must be unbroken from source to endpoint.
 - g. No penetrations shall be made in the back of Data Collection Controller. IT/Communication CAT 6 shall not penetrate wireway.
 - h. Penetrations made in the top of the Data Collection Controller shall "Myers Hub" installed.
 - i. IT Termination Box (Millbank Enclosure)
 - 1) Shall be 12" x12" x 6" (B-Line #12126-1) with keyed lock #1333 Dirak.
 - 2) Must be located in a serviceable location within 10' of data collection controller.
 - 3) Label (Brother P-touch or equal) shall be installed on outside cover indicated IT Room that service originates from.
 - j. Owner shall verify installation prior to energizing data collection controller.
3. 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.
 4. 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. Integration and Commissioning
1. See section 23 08 00.11 Mechanical Meter Integration and Commissioning

END OF SECTION