

33 61 00 Hydronic Energy Distribution Metering

Revision 01/04/2019

Purpose:

The Architect and/or Engineer shall incorporate the Rice specific requirements indicated in this standard's section into their design. The Architect and/or Engineer shall further produce project specifications in line with industry standards that are updated to reflect these Rice specific requirements.

1. Chilled Water Flow Meter

- a. Chill Water Flow: Flexim clamp on ultrasonic flowmeter (Or Rice approved equal). A model Fluxus ADM5107 flow computer with the pipe size appropriate flow transducers either the M5L7 or Q5L7 shall be mounted to the chill water supply pipe using the Flexim "PermaLok" mounting fixture. The flowmeter shall be programmed by the vendor for startup. The ADM5107 4-20mA output shall be connected to an analog input on the building meter PLC. The ADM5107 and transducers can be purchased from The Baro Companies or Allesco Inc.
- b. Temperature Sensors: Two 100 Ohm Platinum RTDs and thermowells. One each for the CHW supply pipe and one each for the CHW return pipe to be purchased from Sandelius Instruments. RTD Part #: SR5H-4A3EL-LOO_Band 5. thermowell Part #: 132B-1/2-LL-M316. Or Rice approved equal.
- c. Temperature Transmitters: Two Rosemount 3144P transmitters with 4-20mA output, HART programming protocol, and calibrated to 0-100 degrees Fahrenheit. There shall be one Rosemount transmitter mounted on each of the Sandelius RTDs during field installation. The 3144P 4-20mA output shall be connected to an analog input on the building meter PLC. The transmitters can be purchased from Emerson/Rosemount. Or Rice approved equal.

2. Heating Hot Water Flow Meter:

- a. Chill Water Flow: Flexim clamp on ultrasonic flowmeter. A model Fluxus ADM5107 flow computer with the pipe size appropriate flow transducers either the M5L7 or Q5L7 shall be mounted to the chill water supply pipe using the Flexim "PermaLok" mounting fixture. The flowmeter shall be programmed by the vendor for startup. The ADM5107 4-20mA output shall be connected to an analog input on the building meter PLC. The ADM5107 and transducers can be purchased from The Baro Companies or Allesco Inc. Or Rice approved equal.
- b. Temperature Sensors: Two 100 Ohm Platinum RTDs and thermowells. One each for the CHW supply pipe and one each for the CHW return pipe to be purchased from Sandelius Instruments. RTD Part #: SR5H-4A3EL-LOO_Band 5. thermowell Part #: 132B-1/2-LL-M316. Or Rice approved equal.

- c. Temperature Transmitters: Two Rosemount 3144P transmitters with 4-20mA output, HART programming protocol, and calibrated to 0-250 degrees Fahrenheit. There shall be one Rosemount transmitter mounted on each of the Sandelius RTDs during field installation. The 3144P 4-20mA output shall be connected to an analog input on the building meter PLC. The transmitters can be purchased from Emerson/Rosemount. Or Rice approved equal.

3. Building level Steam Flow Meter:

- a. Building level steam Steam flow meters shall be installed in the 60 PSIG steam service.
- b. The flowmeter shall be a Spirax Sarco ILVA flowmeter. There are only two acceptable configurations, Or Rice approved equal:
 - i. The ILVA shall have an application correct programmed Spirax Sarco "Scanner 2000" flow computer. The "Scanner 2000" shall have a 4-20mA output that represents the compensated PPH mass flow rate for the steam flow point connected to an analog input on the building meter PLC.
 - ii. The ILVA shall have an EL2271 temperature transmitter, EL2600 pressure transmitter, and a M610 differential pressure transmitter. The outputs of the EL2271, EL2600, and M610 shall be used as inputs for an application correct programmed Spirax Sarco "MBOO" flow computer. The "MBOO" shall have a 4-20mA output that represents the compensated PPH mass flow rate for the steam flow point connected to an analog input on the building meter PLC.

4. Options Selections

- a. The Architect/Engineer shall meet with the Rice Project Manager and the Instrumentation Supervisor prior to 100% Design Development to decide on :
 - i. Steam Instrumentation Options

5. PLC requirements:

- a. Use Automation Direct PLC DL06. The hardware can be purchased off of their website.
- b. Standard components for a building meter PLC:
 1. N1C121206 N1 SINGLE DOOR SM WALL 12X12X6 IN
 2. D2-BATDL205 CPU Battery for D2-230 & D2-240
 3. N1P1212 Subpanel 10.2"x10.2" for 12"x12" Multi Encl Series – 14GA Carbon Steel
 4. F0-04AD-1 Four Channel Analog Input 0-20ma / 4-20ma 12 Bit Res
 5. H0-ECO M100 Ethernet Comm Module 10/100 MBPS for DL05 & DL06 w/ MODBUS TCP
 6. D0-06DR DL06 20DC IN/16 Relay Micro PLC w/AC P/S
 7. PSP12-06OS Power Supply 12VDC, 4A (48W) DIN-Rail Slim-Line PLASCASE
- c. Programming
 - i. Contact Rice Project Manager to receive canned ladder program written for a DL06 PLC that does a standard building metering application that includes chill water temps & flow, steam flow. KWH pulse measurement with math, and tonnage calculation.