STEP 5

SYSTEM-1000
COMMISSIONING QUICK START GUIDE

ONICON
Flow and Energy Measurement

Upon initial installation, it is strongly recommended that the SYSTEM-1000 and its associated flow meters are commissioned to ensure that they are properly installed and functioning correctly. This process involves verifying the mechanical installation, measuring flow and temperature signals and then comparing these measurements to the specified installation and operating parameters listed on the FACTORY CONFIGURATION SHEET provided with the meter. The data collected during this initial commissioning process will then serve as baseline data for periodic revalidation of the meter operation.

COMMISSIONING PROCEDURE

Please read the entire procedure carefully before proceeding. A wiring diagram is provided with the meter. A worksheet for checking off the following steps and recording measured values is located on the next page.

MECHANICAL		
1	Confirm flow meter location and adequate straight pipe run to achieve desired results.	Is the flow meter located in the correct location as required by the plans? Compare actual straight pipe upstream and downstream of the flow meter location to the recommended distances identified in the flow meter installation manual.
2	Confirm pipe size & material.	Confirm that the flow meter is tagged for the pipe diameter and material it is installed in. When in doubt, measure the circumference of the pipe. Pipe O.D. = (circumference / 3.14) – (insulation thickness x 2)
3	Confirm insertion depth and orientation (for insertion meters only).	Each insertion type flow meter comes with an attached insertion gage and instruction tag. Ensure that meter is inserted to correct depth and that the electronics enclosure is parallel with the pipe, with the arrow in the direction of flow.
4	Confirm temperature sensor thermowell installations.	Confirm that the thermowells are properly installed and the bottom of the well is in the flow stream. Make certain that only the components supplied with the installation kit were used and that additional bushings were not added.
5	Confirm temperature sensor installations.	Confirm that the temperature sensors are properly installed, and each sensor is bottomed out in the well. A small amount of thermal compound should be applied to the tip of each sensor to improve the thermal transfer.
ELECTRICAL		
6	Confirm connection.	Using the wiring diagram, confirm that the flow meter and temperature sensor serial number matches the correct terminal connection.
7	Confirm correct supply voltage.	Verify that correct AC/DC voltage is available at the power supply input terminals per its wiring diagram. Input voltages should be within the following ranges: 24 VAC/DC 22 - 28 V DC/AC, 50/60Hz, 100VA 120-240 VAC 99 - 126 VAC or 196 - 253 VAC, 50/60Hz, 200VA
PROGRAMMING		
8	Verify the type of fluid used in the piping system.	Confirm that the fluid specified on the BTU meter certificate of calibration matches the fluid flowing in the piping system.
In order to proceed with the following steps, the BTU meter must be operating and connected to the network. There must also be flow in pipes. Flow signal readings should be taken while holding the flow rate constant if possible. Otherwise, take the various output readings as quickly as possible.		
9	Confirm Values in the Energy Measurement Screen.	Confirm the displayed Flow Rates, Supply and Return temperature are within the expected present values of the application. Energy rate (KBTU/HR) is approximately = 500 * Delta-T * GPM/1000
10	Display/BMS Interaction.	Validate the value of the meter display match with the displayed values shown on the building control network.
End of standard commissioning. Please contact ONICON at (727)447-6140 with any questions.		

COMMISSIONING WORKSHEET

Please read all installation instructions carefully prior to proceeding with these steps. Wiring diagrams and Network Commissioning Guide are provided inside of the the SYS-1000 enclosure. Contact the factory if there is any missing documentation. Use the following worksheet for checking off the commissioning steps and recording measured values:

STEP	MEASUREMENT	S/N:	S/N:	S/N:	S/N:	S/N:	S/N:	S/N:	S/N:
1	Meter location								
2	Pipe Size								
3	Insertion depth and orientation								
4	Thermowell installation								
5	Temperature installation								
6	Terminal pin connection on the SYS-1000 (Ex: J9 Terminal 3 & 4 are Analog input 1)								
6.1	Verify flow meter and temp sensor wires match wiring diagram location								
7	Supply voltage verified (Note voltage)								
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8	Verify the liquid type								
9.1	Note and record the SUPPLY temperature								
9.2	Note and record the RETURN temperature								
9.3	Note and record the FLOW RATE								
9.4	Note and record the ENERGY RATE								
10.1	Measured frequency or Analog output signal from flow meter (refer to wiring diagram for terminal or wiring specific output)								
10.2	Measured frequency or Analog output signal from flow meter (refer to wiring diagram for terminal or wiring specific output) For Frequency Flow Meters: GPM = Frequency in Hz x 60 / Meter Factor (Refer to calibration tag for meter factor) For Analog Flow Meter: GPM = Full Scale * (mA DC Value - 4) / 16 (Refer to calibration tag for Full Scale output)								
10.3	Compare and record the displayed values with those shown on BTU meter certificate of calibration and the network, where appropriate.								