System-10
BTU Meter

ONICON's SYSTEM-10 BTU METER is the premier platform for accurately measuring and reporting the thermal energy usage, flow and temperatures required by today's High Performance Buildings.

• Chilled Water • Hot Water • Condenser Water •

DESCRIPTION

The System-10 BTU Meter provides highly accurate thermal energy measurement in chilled water, hot water and condenser water systems based on signal inputs from two matched temperature sensors (included) and any of ONICON's insertion or inline flow meters which are ordered separately. The basic model provides a local indication of energy, flow and temperature data through an alphanumeric display. An isolated solid state dry contact is provided for energy total. Optional analog outputs and network communications are also available.

Whether it's used for chiller plant optimization, CEP monitoring and control, or sub-metering the hydronic energy use across a campus, the System-10 has the versatility and functionality required to integrate seamlessly with your BMS/EMS.

APPLICATIONS

Chilled water, hot water and condenser water systems for:

- Commercial office tenant billing
- Central plant monitoring
- University campus monitoring
- Institutional energy cost allocation
- Performance/efficiency evaluations
- Performance contracting energy monitoring

CALIBRATION

Flow meters and temperature sensors are individually calibrated followed by a complete system calibration.

Field commissioning is also available.

FEATURES

Simple Installation and Commissioning - Factory programmed and ready for use upon delivery. All process data and programming functions are accessible via front panel display and keypad.

Single Source Responsibility - One manufacturer is responsible for every aspect of the energy measurement process ensuring component compatibility and overall system accuracy.

NIST* Traceable Calibration with Certification - Each BTU measurement system is individually calibrated using application specific flow and temperature data and is provided with a certificate of calibration.

Precision Solid State Temperature Sensors - Custom calibrated and matched to an accuracy better than ±0.15°F over the calibrated range.

Highly Accurate Flow Meters - ONICON offers a wide variety of insertion and inline type flow measurement technologies including turbine, electromagnetic and ultrasonic sensing. Each type offers unique advantages depending on the application. All ONICON flow meters are individually wet calibrated and designed to operate over a wide flow velocity range with accuracies ranging from ±0.2% to ±2.0% of rate depending on the model.

Complete Installation Package - All mechanical installation hardware, color coded interconnecting cabling and installation instructions are provided to ensure error-free installation and accurate system performance.

Serial Communications - Optional: Provides complete energy, flow and temperature data to the control system through a single network connection, reducing installation costs.

Smart button technology simplifies menu page navigation

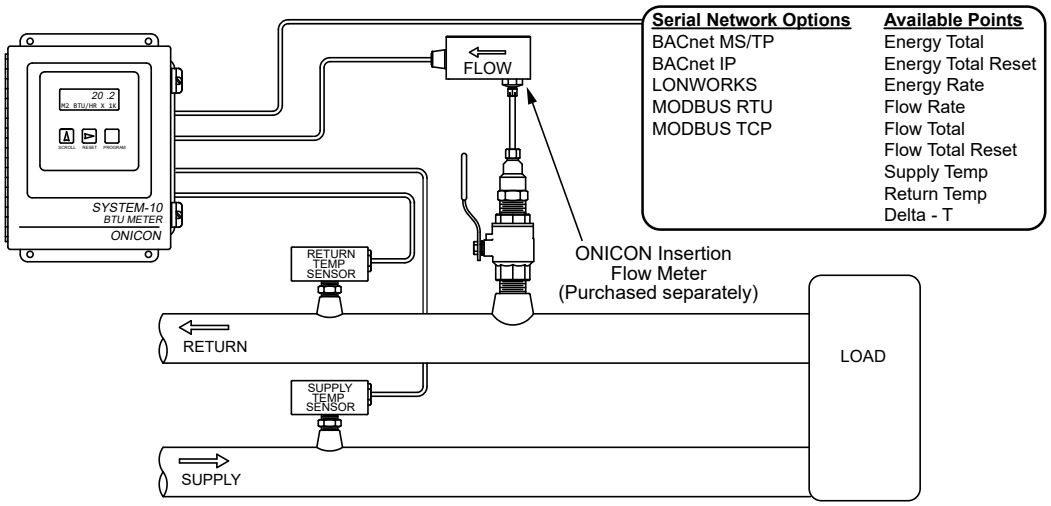
*National Institute of Standards and Technology

SPECIFICATIONS*

TEMPERATURE	Overall differential temperature measurement uncertainty of ≤ ±0.15°F over the stated range (Includes uncertainty associated with the sensors, transmitters, cabling and calculator input circuitry) Temperature sensors meet EN1434/CSA C900.1 accuracy requirements for 1K sensors for cooling applications, 32°F to 77°F. Temperature sensors meet EN1434/CSA C900.1 accuracy requirements for 2K sensors for heating applications, 140°F to 212°F.
CALCULATOR	Computing nonlinearity within ±0.05% Calculator meets EN1434 / CSA C900.1 class 1 accuracy requirements for 2K sensors for all applications.
PROGRAMMING	Factory programmed for specific application Field programmable via front panel interface
MEMORY	Non-volatile EEPROM memory retains all program parameters and totalized values in the event of power loss.
DISPLAY	Alphanumeric LCD displays total energy, total flow, energy rate, flow rate, supply temperature, return temperature, serial number and alarm status Alpha: 16 character, 0.2" high Numeric: 8 digit, 0.4" high Rate Display Range: 0 - 9,999,999 Total Display Range: 0 - 9,999,999
OUTPUT SIGNALS	Isolated solid state dry contact for energy total Contact rating: 100 mA, 50 V Contact duration: 0.5, 1, 2, or 6 sec Analog Output(s) (4-20 mA, 0-10 V or 0-5 V): One or four analog output(s) available for flow rate, energy rate, supply/return temps, or delta-T
SERIAL COMMUNICATIONS	BACnet® IP or MS/TP, MODBUS® RTU RS485 or TCP/IP, LONWORKS - TP/FT-10F, Siemens Apogee - P1, Johnson Controls Metasys - N2
TEMPERATURE SENSORS	Solid state sensors are custom calibrated using NIST traceable temperature standards. Current based signal (mA) is unaffected by wire length.
TEMPERATURE RANGE	Liquid temperature ranges based on application. See Meter Ordering Information on next page. Ambient temperature range: -20°F to 140°F
LIQUID FLOW SIGNAL INPUT	Pulse (frequency) or 4-20 mA input
MECHANICAL	**Available Electronics Enclosures:** Steel NEMA 13, wall mount, 8"x10"x4" NEMA 4 Approximate weight: 12 lbs **Temperature Sensor Thermowell Kits:** Thermowells and other kit components vary by fluid type, fluid temperature, pipe material and pipe size. Commonly used kits are listed on the previous page. Contact ONICON for additional thermowell kit options, including Hot Tap Installation Kits for retrofit installations.
ELECTRICAL	**Input Power:** Based on BTU meters configured for network connection without the analog outputs: 24 VAC, 50/60 Hz, 500 mA 120 VAC, 50/60 Hz, 200 mA 240 VAC, 50 Hz, 150 mA **Internal Supply:** Provides 24 VDC at 200 mA to electronics and select flow meters **Wiring:** Temperature signals: Use 18-22 ga twisted shielded pair Flow signals: Use 18-22 ga - see flow meter specification sheet for number of conductors.

* SPECIFICATIONS subject to change without notice.

TYPICAL INSERTION METER INSTALLATION



Serial Network Options	Available Points
BACnet MS/TP	Energy Total
BACnet IP	Energy Total Reset
LONWORKS	Energy Rate
MODBUS RTU	Flow Rate
MODBUS TCP	Flow Total
	Flow Total Reset
	Supply Temp
	Return Temp
	Delta - T

COMPATIBLE FLOW METERS

AVAILABLE OUTPUTS

METER ORDERING INFORMATION

Meter Model Number Coding = SYS-10-ABCD-EFGG

A = Electronics Enclosure

1 = NEMA 13 enclosure with LCD display

2 = NEMA 4 enclosure with LCD display

B = Input Power

1 = 24 VAC, 12 VA

2 = 120 VAC, 15 VA

3 = 240 VAC, 17.5 VA

C = Serial Communications

0 = No serial communications provided

1 = RS485, BACnet MS/TP

2 = RS485, MODBUS RTU

3 = BACnet IP

4 = MODBUS TCP/IP

5 = DualNet serial communications, IP and RS485

8 = LonWorks

D = Analog Output

0 = No analog output

1 = Single (1) isolated analog output

2 = Four (4) isolated analog outputs (Not available when C=5)

E = Auxiliary Pulse Inputs

0 = (1) Directional pulse input only

1 = (1) Directional pulse and auxiliary pulse input

F = Auxiliary Pulse Outputs

1 = Three (3) pulse outputs, dry contact

GG = Temperature Sensor

01 = Matched pair of current (mA) based sensors, CHW/CW range

02 = Matched pair of current (mA) based sensors, HHW range

S1 = Matched pair of current (mA) based sensors, 122°F to 302°F range

S4 = Matched pair of current (mA) based sensors, 80°F to 400°F range