

SYSTEM-10 BTU METER

Chilled Water • Hot Water • Condenser Water



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

ONICON
— Flow and Energy Measurement —

• SYSTEM-10 BTU METER •



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 calibration certificates.

Precision Solid State Temperature Sensors - Custom calibrated and matched to an accuracy better than $\pm 0.15^{\circ}\text{F}$ over calibrated range.

Highly Accurate Flow Meters - ONICON offers a wide variety of insertion and inline type flow measurement technologies including turbine, electromagnetic and vortex 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 $\pm 0.2\%$ to $\pm 2.0\%$ 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 communications card provides complete energy, flow and temperature data to the control system through a single network connection, reducing installation costs.

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 (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.

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.

* National Institute of Standards and Technology



Smart button technology simplifies menu page navigation

SYSTEM-10 BTU METER SPECIFICATIONS

ACCURACY

TEMPERATURE

Overall differential temperature measurement uncertainty of $\leq \pm 0.15^\circ\text{F}$ 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 to 77°F

Temperature sensors meet EN1434 / CSA C900.1 accuracy requirements for 2K sensors for heating applications, 140 to 212°F

CALCULATOR

Computing nonlinearity within $\pm 0.05\%$

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

The totals will roll over to zero when the maximum count is exceeded.

OUTPUT SIGNALS

Standard:

Isolated solid state dry contact for energy total:

Contact rating: 100 mA, 50 V

Contact duration: 0.5, 1, 2, or 6 sec

Optional:

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	LONWORKS - TP/FT-10F
Siemens Apogee - P1	Johnson Controls Metasys - N2
MODBUS RTU RS485 or TCP/IP	

TEMPERATURE SENSORS

Solid state sensors are custom calibrated using

NIST traceable temperature standards.

Current based signal (mA) is unaffected by wire length.

TEMPERATURE RANGE

Standard liquid temperature range: 32 to 200°F

Optional extended temperature ranges available

Ambient temperature range: -20 to 140°F

LIQUID FLOW SIGNAL INPUT

0-15 V pulse output from any ONICON flow meter

MECHANICAL

Electronics Enclosure:

Standard: Steel NEMA 13, wall mount, 8"x10"x4"

Optional: NEMA 4 (Not UL listed)

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 optional analog outputs

Standard: 24 VAC, 50/60 Hz, 500 mA

Optional: 120 VAC, 50/60 Hz, 200 mA

230 VAC, 50 Hz, 150 mA

Internal Supply:

Provides 24 VDC at 200 mA to electronics and flow meter

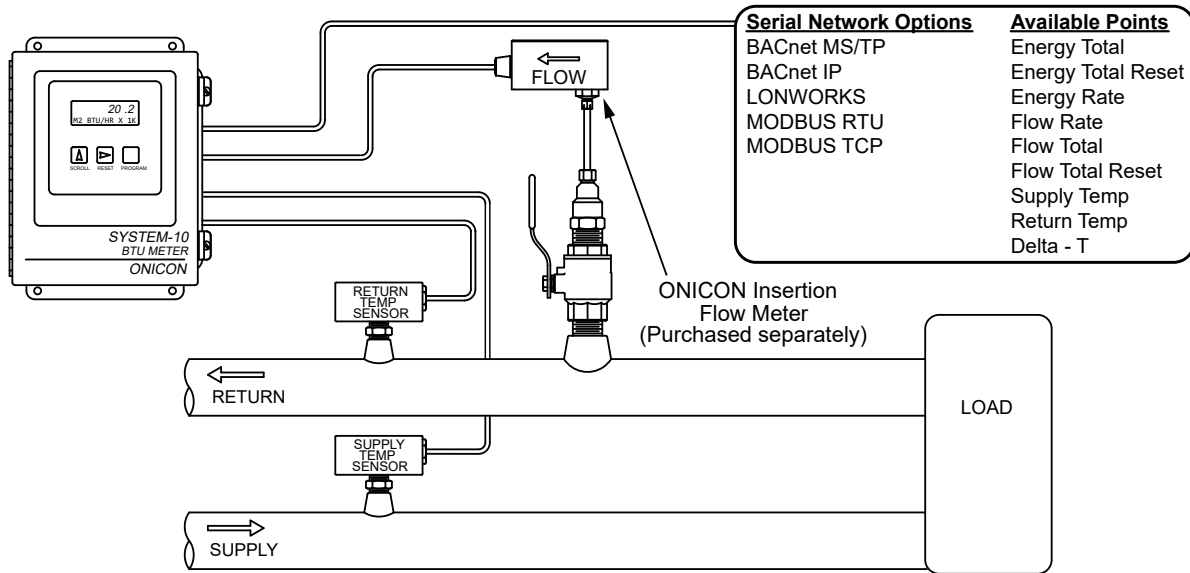
Wiring:

Temperature signals: Use 18-22 ga twisted shielded pair

Flow signals: Use 18-22 ga - see flow meter specification sheet for number of conductors.

Note: Specifications are subject to change without notice.

TYPICAL SYSTEM-10 INSTALLATION



COMPATIBLE FLOW METERS

AVAILABLE OUTPUTS



METER ORDERING INFORMATION

Meter Model Number Coding = SYS-10-**AB**CD-EFGG

A = Electronics Enclosure

- 1 = NEMA 13 enclosure with LCD display
- 2 = NEMA 4 enclosure with LCD display

BB = 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

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 range
- 02 = Matched pair of current(mA) based sensors, HHW range
- S1 = Scaled RTD pair, 122 to 302° F range
- S2 = Scaled RTD pair, 32 to 302° F range

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