



#### FEATURES

**Simple Installation and Commissioning** - Factory programmed and ready for use upon delivery.

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

**N.I.S.T.\* Traceable Calibration with Certificate** - Customer supplied application data is used to individually calibrate the flow and temperature sensors using N.I.S.T. traceable standards. This is followed by a complete system calibration. A certificate of calibration is provided with each meter. Field commissioning is also available.

**Precision Solid-State Temperature Sensors** - Integral sensors are custom calibrated and matched to an accuracy better than  $\pm 0.15^\circ\text{F}$  over the calibrated range.

**Highly Accurate Integral Flow Meter** - Built-in turbine flow meter is accurate to within  $\pm 0.5\%$  of reading at the calibrated flow rate and within  $\pm 2\%$  of reading over an extended range (0.8 - 38 gpm.)

**Complete Installation Package** - Mechanical installation hardware, sensor cable and installation instructions are provided to ensure error-free installation and optimal performance.

\*National Institute of Standards and Technology

#### DESCRIPTION

The System-30-BAC provides highly accurate thermal energy measurement in chilled water, hot water or condenser water systems. Energy rates and totals are calculated based on signal inputs from two integral matched temperature sensors and an integral ONICON inline turbine meter.

This compact system is suitable for use in piping systems with flow rates from 0.8 to 38 gpm. When provided with the optional BACnet MS/TP serial interface, the System-30 communicates energy, flow and temperature data to the network.

#### APPLICATIONS

Chilled water, hot water and condenser water systems for:

- Commercial office tenant billing
- Residential apartment and condominium tenant buildings

#### ORDERING INFORMATION

The System-30 is sold complete with integral flow meter, temperature sensors and (1) standard thermowell. Please refer to the ONICON catalog for available options.



Process connections are available with sweat union or threaded connections.

**SYSTEM-30-BAC BTU MEASUREMENT SYSTEM SPECIFICATIONS CON'T**



**ACCURACY**

**FLOW**

- ± 0.5% of reading at calibrated velocity
- ± 1.0% of reading from 5.7 to 38 gpm (0.36 to 2.4 l/s)
- ± 2.0% of reading from 0.8 to 38 gpm (0.05 to 2.4 l/s)

**DIFFERENTIAL TEMPERATURE ACCURACY**

- ± 0.15° F (0.083° C) over calibrated temperature range

**COMPUTATIONAL ERROR**

- ±0.05%

**OUTPUT SIGNALS**

**NETWORK INTERFACE:**

- PROTOCOL: BACnet MS/TP
- CONNECTION: RS485, 2-wire (half duplex)
- BAUD RATE: 9600, 19200, 38400 and 76800

**BACnet Point list**

Point Name	BACnet Object Type	Available Engineering Units
Total Energy	Analog Value	Btu, kW-hrs or ton-hrs
Energy Rate	Analog Input	Btu/hr, kW or tons
Total Flow	Analog Value	gallons, liters or M <sup>3</sup>
Flow Rate	Analog Input	gpm, l/s, m <sup>3</sup> /hr
Supply Temp	Analog Input	°F or °C
Return Temp	Analog Input	°F or °C
Operating Mode	Analog Value	Not Applicable
Mode 1 / Mode 2 Indication	Analog Value	Not Applicable
Energy Total Reset	Analog Value	Not Applicable
Flow Total Reset	Analog Value	Not Applicable

**Isolated solid state dry contact for mode 1 and mode 2 energy total**

- Contact rating: 100 mA, 50V
- Contact duration: 0.5, 1, 2 or 6 sec selectable

**OPTIONAL LOCAL DISPLAY**

- Alphanumeric LCD displays total energy, total flow, energy rate, flow rate, supply temperature and return temperature
- Alpha: 16 characters, 0.2" high
- Numeric: 6 digits, 0.4" high

**PROGRAMMING**

- Application specific factory programming
- Non-volatile memory stores program and totalized values in the event of a power failure.

**OPERATING TEMPERATURE & PRESSURE**

- Liquid temperature range: 32° to 200°F (0° to 93.3°C)
- Ambient operating temperature range: 40° to 120°F (4.4° to 48.9° C)
- Maximum operating pressure: 400 psi (28.1 kg/cm<sup>2</sup>)
- Maximum pressure drop: 3 psi @ 38 gpm (0.21 kg/cm<sup>2</sup> @ 2.4 l/s)

**MECHANICAL**

**MATERIALS:**

- Btu meter: Brass inline body, polysulfone electronics enclosure
- Thermowell: brass

**PROCESS CONNECTIONS:**

- Threaded or sweat union fittings
- 3/4" or 1"

**OVERALL DIMENSIONS:**

- 9.25"L x 5"W x 6.5"H

**WEIGHT:**

- 6 lbs (2.7 kg) with threaded process connections

**ELECTRICAL**

**INPUT VOLTAGE:**

- 24 V ± 10% AC 50/60 Hz or
- 24 V ± 4 DC

**MAXIMUM OPERATING CURRENT:**

- 200 mA

Note: Specifications are subject to change without notice.

**TYPICAL SYSTEM-30 INSTALLATION**

(Meter may be installed in supply or return.)

