Badger Meter

Btu Monitor
Model 3050

GENERAL

The Badger Meter Model 3050 Energy Monitor is an economical full featured compact unit designed for HVAC sub-metering applications, and general hydronic thermal transfer systems.

Outputs include one mechanical relay and one solid-state pulse output, both featuring unit/pulse and set-point control independently based on flow or energy rate/total, supply return, or delta temperature readings. Also driven by the same variables, an optional Analog 4-20mA or 0-20mA output is provided. Additionally, the optional USB, RS-485 MODBUS, and BACnet/MSTP provide high-level communication.

A two line by 16-character 3/8" high backlit LCD display is configured by the user to display flow rate, flow total, energy rate, energy total, supply and return temperatures, and/or delta T. In addition to many pre-programmed units of measure, many custom units can be created during field set-up.

The two required temperature inputs can be standard Badger Meter two wire 10k thermistors, or three wire 100 Ω platinum RTD's. A unique programming feature permits custom RTD or thermistors to be accommodated.
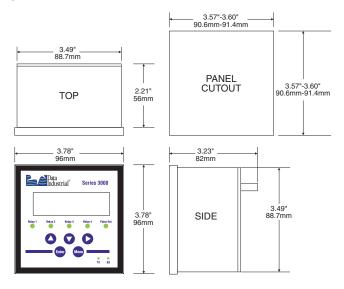
The flow sensor input features flexible scaling options and signal type selections that permit the use of most Badger Meter sensors, or other frequency sine/pulse or linear analog devices.

PROGRAMMING

Programming is very easy and can be done using the five front panel push buttons, or optionally by using Windows® based software via a USB port.
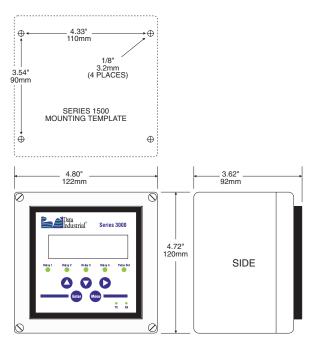
OPTIONS

NEMA4x panel mount conforms to DIN standard 96 mm x 96 mm for meter size and cutouts. NEMA4x wall mount is available as an option.

Advanced features include the following:

- Infinite Impulse Response Filter (IIRF) smoothes the flow rate, temperature, and energy rate calculations. This proprietary smoothing software provides accurate energy calculations by compensating for a wide variety of flow and temperature signal variables.

- Temperature sensor zeroing effectively makes any two similar sensors a matched pair at the actual operating temperature.

- Password restricted access to programming, reset total, or both.

- Non-volatile memory of totals and field configuration, without need for battery backup.

- Efficient switching power supply permits 12-24VAC/DC operations.

TOP
3.49"
88.7mm
2.21"
56mm

PANEL CUTOUT
3.57"-3.60"
90.6mm-91.4mm
3.57"-3.60"
90.6mm-91.4mm

3.78"
96mm

3.78"
96mm

SIDE
3.23"
82mm
3.49"
88.7mm

4.33"
110mm
3.54"
90mm
1/8"
3.2mm
(4 PLACES)

SERIES 1500
MOUNTING TEMPLATE

4.80"
122mm
3.62"
92mm
4.72"
120mm

SIDE

Technical Brief

Flow Sensor Inputs

Type	Threshold	Signal Input	Frequency	Pull-up	Impedance	Aux. Power	Calibration
Pulse-DI	2.5 VDC	30 VDC	0.4 Hz to 10 kHz	1K to 12 VDC	- - -	12 VDC@30mA	K + Offset
Pulse-K Factor	2.5 VDC	30 VDC	0.4 Hz to 10 kHz	- - -	- - -	12 VDC@30mA	Pulse/Gal
Pull-up-K Factor	2.5 VDC	30 VDC	0.4 Hz to 10 kHz	1K to 12 VDC	- - -	12 VDC@30mA	Pulse/Gal
Analog - 4-20mA	10mVPP	50mA Fused	- - -	- - -	100 Ω	12 VDC@30mA	Linear
Analog - 0-20mA	- - -	50mA Fused	- - -	- - -	100 Ω	12 VDC@30mA	Linear
Analog - 0-1 VDC	- - -	30 VDC	- - -	- - -	100 Ω	12 VDC@30mA	Linear
Analog - 0-5 VDC	- - -	30 VDC	- - -	- - -	100 Ω	12 VDC@30mA	Linear
Analog - 0-10 VDC	- - -	30 VDC	- - -	- - -	100 Ω	12 VDC@30mA	Linear

Rate Units of Measure: GPM; gal/sec; gal/hr; Mgal/day; LPS; LPM; LPH; ft3/Sec; ft3/min; ft3/hr;m3/sec; m3/min; m3/hr; acre-ft/sec; acre-ft/min; acre-ft/hr; bbl/sec; bbl/min; bbl/hr; and field programmed custom units 0.00 to 999999999

Total Units: gallons; Mgal; liters; ft3; m3; acre-ft; bbl; and field programmed custom units 0.00 to 999999999

SPECIFICATIONS
Voltage
12-24 VDC / VAC
(Limit: 8-35VDC)
(Limit: 8 – 28VAC)

DC current draw (~280mA)
AC power rating (~5 VA)

Display
16 character by two line alphanumeric dot matrix 7.95mm high backlit LCD

Operating Temperature
-20°C to +70°C

Storage Temperature
-30°C to +80°C

DIMENSIONS
Panel Mount:
3.78"W x 3.78"H x 3.23"D
(96mm x 96mm x 63mm)
Wall Mount:
4.80"W x 4.72"H x 3.63"D
(120mm x 120mm x 92mm)
Weight
Panel mount, 12 oz.

Temperature Inputs
Two of 2-wire 10k type II thermistor (25.0°F to 170.0°F) or custom field-defined 3-wire platinum 100Ω RTD; (25.0°F to 250.0°F) or custom field-defined
Units of measure: °F and °C

Energy Rate units: kBtu/hr; Btu/min; kW; Tons; J/Sec; and field programmed custom units.

Operating Mode: T1<T2; T1>T2; absolute. Defines how reverse energy flows are handled.
(T1 should be installed in the same pipe as the flow sensor.)

Zeroing: Compensate for variances between temperature elements by adjusting T2 reading to match T1 reading.
Constant: Single point correction for variances in specific heat of transfer liquid. Energy Total units: kBtu; Mbtu; kWh; MWh; kJ; and field programmed custom units

Pulse and Relays
Both pulse and relay are fully functional as either totalizing, or set-point outputs.

Pulse Electrical
1 Amp @ 35VDC/ 30VAC
Closed: 0.5Ω @ 1 AMP   Open: >108 Ω

Relay Electrical
Resistive load: 5Amp@120VAC/30VDC
Inductive load: 1Amp@120VAC/30VDC

Pulse/Unit Volume (Totalizer)
Driving Source: flow total; Btu total
Units: any predefined or custom unit
Rate: 1 Pulse per 1.0000000 to 99999999 units
Contact Time: 1 to 9999 mS

Set-Point (Alarm)
Driving Source: flow rate; Btu rate; temperature 1; temperature 2, delta T
Units: Any predefined or custom unit
Set-Point: 1.0000000 to 999999999
Delay to Set: 1 to 9999 Seconds
Release-Point: 1.0000000 to 999999999
Delay to Release: 1 to 9999 seconds

Optional Analog Output
Driving Source: flow rate; Btu rate; temperature 1; temperature 2, delta T, PID control
Range: 4-20mA; 0-20mA (isolated current sinking or sourcing)
Sinking: 30VDC @ 0mA maximum; 3 volts @20mA minimum
Sourcing: 600 W maximum load

USB Communication
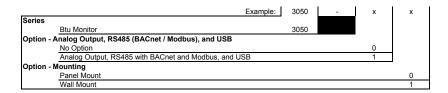Provides complete access to all programming and operation features.
Requirements:
USB 2.0 A to Mini-B 5-Pin Cable (example: SYSONIC model UAM56 GWT/B)

RS-485 Communication
Supports: Modbus and BACnet/MSTP

Accessories
Programming kit
Wall mount kit

	Example:	3050		x	x
Series					
Btu Monitor		3050			
Option - Analog Output, RS485 (BACnet / Modbus), and USB					
No Option			0		
Analog Output, RS485 with BACnet and Modbus, and USB			1		
Option - Mounting					
Panel Mount				0	
Wall Mount				1	

Model 3050 Ordering Matrix

Please see our website at www.badgermeter.com for specific contacts.

Data Industrial®

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