



**Impeller**  
Data Industrial®

# BTU Monitor

## Series 3050

### DESCRIPTION

The Badger Meter® Series 3050 BTU 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 setpoint 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...20 mA or 0...20 mA 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 in. (9.5 mm) high backlit LCD display is configured by the user to display flow rate, flow total, energy rate, energy total, supply and return temperatures or delta T. In addition to many pre-programmed units of measure, many custom units can be created during field setup.

The two required temperature inputs can be standard Badger Meter two wire 10k thermistors, or three wire 100 Ω platinum RTDs. 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.

### OPTIONS

NEMA 4X panel mount conforms to DIN standard 96 mm x 96 mm for meter size and cutouts. NEMA 4X wall mount is available as an option.

Advanced features include:

- Infinite Impulse Response Filter (IIRF) smooths 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...24V AC/DC operations.

### PROGRAMMING

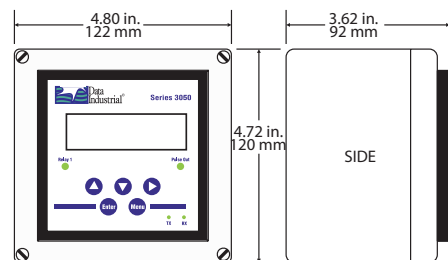
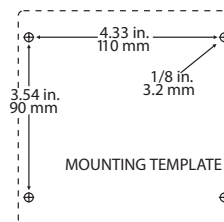
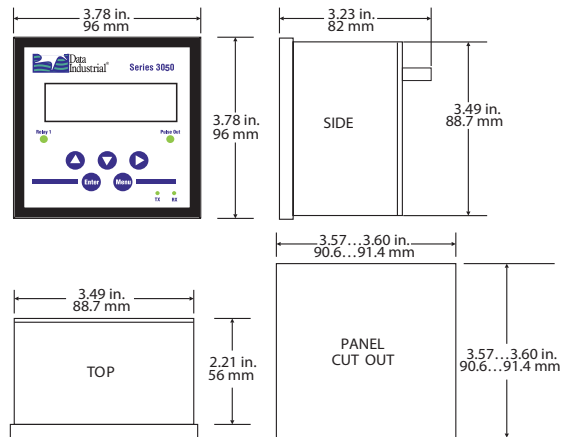
Programming is very easy and can be done using the five front panel push buttons, or optionally by using Windows® based software via a USB port.



### PART NUMBER CONFIGURATION

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

### DIMENSIONS



**Badger Meter**

DSY-DS-01684-EN-05 (February 2016)

## FLOW SENSOR INPUTS

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

## SPECIFICATIONS

<b>Voltage</b>	12...24V DC/AC (limit: 8...35V DC); (limit: 8...28V AC)		DC current draw (~ 280 mA) AC Power rating (~5 VA)
<b>Operating Temperature</b>	-4...158° F (-20...70° C)		
<b>Storage Temperature</b>	-22...176° F (-30...80° C)		
<b>Weight</b>	Panel Mount: 12 oz		
<b>Pulse and Relays</b>	Both pulse and relay are fully functional as either totalizing or setpoint outputs		
<b>Pulse Electrical</b>	1 Amp at 35V DC/30V AC	<b>Closed:</b> 0.5 Ω at 1 Amp; <b>Open:</b> >10 <sup>8</sup> Ω	
<b>Relay Electrical</b>	<b>Resistive Load:</b> 5A @ 120V AC/30V DC	<b>Inductive Load:</b> 1A @ 120V AC/30V DC	
<b>Pulse/Unit Volume (Totalizer)</b>	<b>Driving Source:</b> flow total, Btu total	<b>Rate:</b> 1 pulse per 1.000000...99999999 units	<b>Contact Time:</b> 1...9999 mS
<b>Setpoint (Alarm)</b>	<b>Driving Source:</b> flow rate, Btu rate, temperature 1, temperature 2, delta T	<b>Units:</b> Any predefined or custom unit	<b>Setpoint:</b> 1.000000...99999999
	<b>Delay to Set:</b> 1...9999 sec	<b>Release Point:</b> 1.000000...99999999	<b>Delay to Release:</b> 1...9999 sec
<b>Optional Analog Output</b>	<b>Driving Source:</b> flow rate, Btu rate, temperature 1, temperature 2, delta T, PID control	<b>Range:</b> 4...20 mA; 0...20 mA (isolated current sinking or sourcing)	<b>Sinking:</b> 30V DC @ 0 mA max.; 3V @ 20 mA min. <b>Sourcing:</b> 600 W max load
<b>USB Communication</b>	Provides complete access to all programming and operation features		<b>Requirements:</b> USB 2.0 A to Mini-B, five-pin cable
<b>RS-485 Communication</b>	Supports Modbus and BACnet/MSTP		
<b>Accessories</b>	Programming kit; wall mount kit		
<b>Temperature Inputs</b>	Two of 2-wire 10k type II thermistor; 25...170° F (-3.9...76.7° C) or custom field-defined		
	3-wire platinum 100Ω RTD; 25...250° F (-3.9...121.1° C) or custom field-defined		
	<b>Units of Measure:</b> °F and °C	<b>Energy Rate Units:</b> kBtu/hr; Btu/min; kW; Tons; J/Sec; and field programmed custom units	<b>Operating Mode:</b> T1 < T2; T1 > T2; absolute; Defines how reverse energy flows are handled (T1 should be installed in the same pipe as the flow sensor)
	<b>Zeroing:</b> Compensate for variances between temperature elements by adjusting T2 reading to match T1 reading.	<b>Constant:</b> Single point correction for variances in specific heat of transfer liquid.	<b>Energy Total units:</b> kBtu; Mbtu; kWh; MWh; kJ; and field programmed custom units
<b>Units of Measure</b>	Rate	US gpm; US gal/sec; gal/hr; US mgal/day; lps; lpm; lph; ft <sup>3</sup> /Sec; ft <sup>3</sup> /min; ft <sup>3</sup> /hr; m <sup>3</sup> /sec; m <sup>3</sup> /min; m <sup>3</sup> /hr; acre-ft/sec; acre-ft/min; acre-ft/hr; bbl/sec; bbl/min; bbl/hr; and field programmed custom units 0.00...999999999	
	Total	US mgal; liters; ft <sup>3</sup> ; m <sup>3</sup> ; acre-ft; bbl; and field programmed custom units 0.00...999999999	

## Control. Manage. Optimize.

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[www.badgermeter.com](http://www.badgermeter.com)

The Americas | Badger Meter | 4545 West Brown Deer Rd | PO Box 245036 | Milwaukee, WI 53224-9536 | 800-876-3837 | 414-355-0400  
 México | Badger Meter de las Américas, S.A. de C.V. | Pedro Luis Ogazón N°32 | Esq. Angelina N°24 | Colonia Guadalupe Inn | CP 01050 | México, DF | México | +52-55-5662-0882  
 Europe, Middle East and Africa | Badger Meter Europa GmbH | Nurtinger Str 76 | 72639 Neuffen | Germany | +49-7025-9208-0  
 Europe, Middle East Branch Office | Badger Meter Europe | PO Box 341442 | Dubai Silicon Oasis, Head Quarter Building, Wing C, Office #C209 | Dubai / UAE | +971-4-371 2503  
 Czech Republic | Badger Meter Czech Republic s.r.o. | Maříkova 2082/26 | 621 00 Brno, Czech Republic | +420-5-41420411  
 Slovakia | Badger Meter Slovakia s.r.o. | Racianska 109/B | 831 02 Bratislava, Slovakia | +421-2-44 63 83 01  
 Asia Pacific | Badger Meter | 80 Marine Parade Rd | 21-06 Parkway Parade | Singapore 449269 | +65-63464836  
 China | Badger Meter | 7-1202 | 99 Hangzhong Road | Minhang District | Shanghai | China 201101 | +86-21-5763 54