

# KIMRAY BK2900 FLOW MONITOR

## INTRODUCTION

The BK2900 flow monitor incorporates state-of-the-art, digital signal processing technology, designed to provide exceptional flexibility at a very affordable price. Though it is designed for use with Kimray flow sensors, this monitor can be used with almost any flow sensor producing a low amplitude AC output or contact closure signal.

## OPERATION

This monitor can accept low-level frequency input signals typically found in turbine flow sensors. The output signal for these types of sensors is a frequency proportional to the rate of flow. The BK2900 monitor uses the frequency information to calculate flow rate and total flow. Through the use of the programming buttons, you can select rate units, total units and unit time intervals among other functions. All BK2900 flow monitors come pre-configured from the factory, when ordered with a Kimray flow sensor. If required, the monitor can easily be re-configured in the field. Finally, you can choose between simultaneously showing rate and total, or alternating between rate and grand total.

The monitor provides advanced communication capabilities over an RS485 bus using Modbus RTU and control outputs.

The package is a polycarbonate NEMA 4X enclosure.

## APPLICATIONS

The BK2900 monitor is suitable for application in a wide variety of metering needs. A few of the more common industries are:

Secondary oil recovery applications

Remediation and reclamation

Fracture/refracture

Coal bed methane

Regulatory compliance and environmental accountability

Industrial chemicals

Aggressive chemical processing applications

Liquid batching and water cooling



## KEY DESIGN FEATURES

- Robust alarm parameters provide faster warning when something changes in the process or pipeline.
- Greater control and greater visibility of batch operations.
- Advanced connectivity options allow you to connect meters to your network for remote monitoring and process automation capabilities.
- Updated display and totalization options provide more flow information, including simultaneous display of rate and total as well as standard, batch and grand totals.
- Various mounting options provide a BK2900 model for your operation.

ORDER CODE	DESCRIPTION
KSB29AM-CS	B2900 FLOW MONITOR METER MOUNT
KSB29AR-CS	B2900 FLOW MON. REMOTE MOUNT
KSB29AS-CS	B2900 FLOW MON. SWIVEL MOUNT

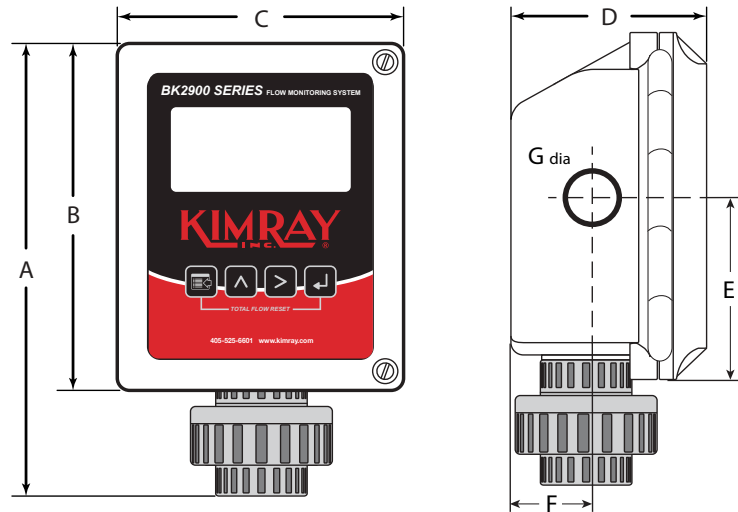
## PRODUCT DATA SHEET

## SPECIFICATIONS

<b>Display</b>	Common	Simultaneously shows Rate and Total 5 x 7 Dot Matrix LCD, STN Fluid			
		6 Digit Rate, 0.5 inch (12.7 mm) numeric			
		7 Digit Total, 0.5 inch (12.7 mm) numeric			
		Engineering Unit Labels 0.34 in. (8.6 mm)			
	Annunciators	Alarm 1 (A), Alarm 2 (A), Battery Level (■■■■■), RS485 Communications (COM)			
<b>Power</b>	Auto switching between internal battery and external loop power; includes isolation between loop power and other I/O				
	Battery	3.6V DC lithium D Cell gives up to 6 years of service life <b>Note:</b> Modbus enabled at baud rate of 19,200 or higher without loop power reduces battery life to 1 year			
	Loop	4...20 mA, two wire, 25 mA limit, reverse polarity protected, 7V DC loop loss			
<b>Inputs</b>	Magnetic Pickup	Frequency Range	1...3500 Hz		
		Frequency Measurement Accuracy	±0.1%		
		Over Voltage Protection	28V DC		
		Trigger Sensitivity	30 mV <sub>p-p</sub> (High) or 60 mV <sub>p-p</sub> (Low) - (selected by circuit board jumper)		
	Amplified Pulse	Direct connection to amplified signal (pre-amp output from sensor)			
<b>Outputs</b>	Analog 4...20 mA	4...20 mA, two-wire current loop 25 mA current limit			
		One pulse for each <b>Least Significant Digit</b> (LSD) increment of the totalizer			
	Totalizing Pulse	Pulse Type (selected by circuit board jumper)	Opto-isolated (Iso) open collector transistor Non-isolated open drain FET		
		Maximum Voltage	28V DC		
		Maximum Current Capacity	100 mA		
		Maximum Output Frequency	16 Hz		
		Pulse Width	30 mSec fixed		
	Status Alarms	Type	Open collector transistor Adjustable flow rate with programmable dead band and phase.		
		Maximum Voltage	28V DC		
		Maximum Current	100 mA		
Pullup Resistor		External required: 2.2 k ohm minimum, 10 k ohm maximum			
<b>Modbus Digital Communications</b>	Modbus RTU over RS485, 127 addressable units / 2-wire plus ground network, selectable baud rate: 9600, 19200, 38400, 57600 or 115200, long integer and single precision IEEE754 formats; retrieve: flow rate, job totalizer, grand totalizer, alarm status and battery level; write: reset job totalizer, reset grand totalizer				
<b>Data Configuration and Protection</b>	Two four-digit user selectable passwords; level one password enables job total reset only, level two password enables all configuration and totalizer reset functions				
<b>Certifications</b>	Safety	Class I Division 1, Groups C, D; Class II, Division 1 Groups E, F, G; Class III for US and Canada. Complies with UL 913 and CSA C22.2 No. 153			
	Entity Parameters	4...20 mA Loop: Vmax = 28V DC	I <sub>max</sub> = 26 mA	C <sub>i</sub> = 0.5 µF	L <sub>i</sub> = 0 mH
		Pulse Output: Vmax = 28V DC	I <sub>max</sub> = 100 mA	C <sub>i</sub> = 0 µF	L <sub>i</sub> = 0 mH
		Reset Input: Vmax = 5V DC	I <sub>max</sub> = 5 mA	C <sub>i</sub> = 0 µF	L <sub>i</sub> = 0 mH
		RS485: Vmax = 10V DC	I <sub>max</sub> = 60 mA	C <sub>i</sub> = 0 µF	L <sub>i</sub> = 0 mH
		Turbine Input: Voc = 2.5V	I <sub>sc</sub> = 1.8 mA	C <sub>a</sub> = 1.5 µF	L <sub>a</sub> = 1.65 H
EMC	IEC61326-1; 2004/108/EC				
<b>Measurement Accuracy</b>	Common Accuracy	0.05%			
<b>Response Time (Damping)</b>	Common Response Time	1...100 seconds response to a step change input, user adjustable			
<b>Environmental Limits</b>	Common Limits	-22...158° F (-30...70° C); 0...90% humidity, non-condensing;			
<b>Materials and Enclosure Ratings</b>	Polycarbonate, stainless steel, polyurethane, thermoplastic elastomer, acrylic; NEMA 4X/IP 66 meter, remote and swivel mount; NEMA/UL/CSA Type 4X (IP-66)				
<b>Engineering Units</b>	Liquid	US Gallons, Liters, Oil Barrels (42 gallon), Liquid Barrels (31.5 gallon), Cubic Meters, Million Gallons, Cubic Feet, Million Liters, Acre Feet			
	Gas	Cubic Feet, Thousand Cubic Feet, Million Cubic Feet, Standard Cubic Feet, Actual Cubic Feet, Normal Cubic Meters, Actual Cubic Meters, Liters			
	Rate Time	Seconds, minutes, hours, days			
	Totalizer Exponents	0.00, 0.0, X1, x10, x100, x1000			
	K-factor Units	Pulses/US Gallon, Pulse/cubic meter, pulses/liter, pulses/cubic foot			

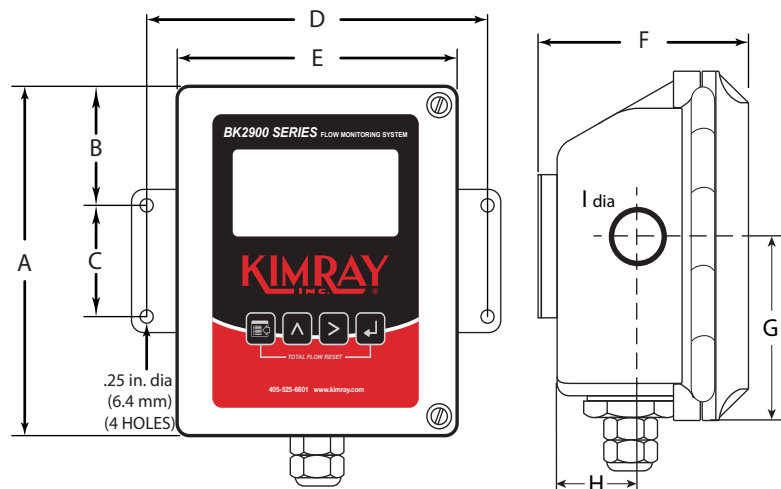
## MOUNTING OPTIONS AND DIMENSIONS

### Meter Mount



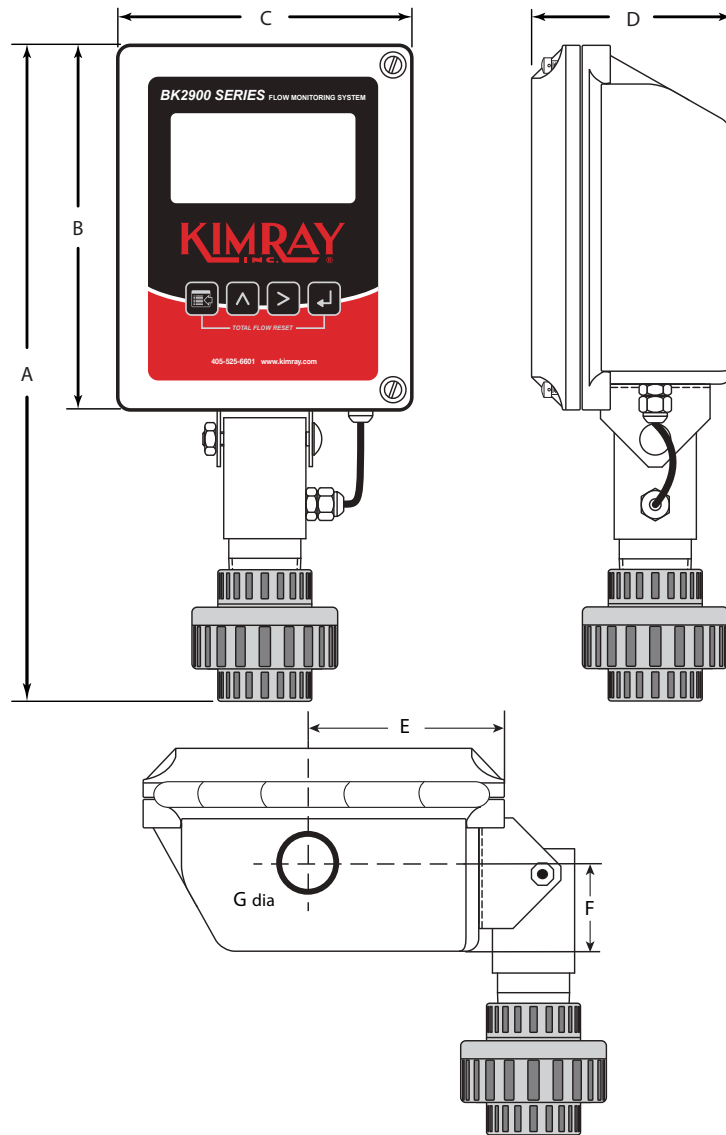
A	B	C	D	E	F	G dia
9.25 in. (235.0 mm)	7.00 in. (177.8 mm)	5.75 in. (146.0 mm)	4.00 in. (101.6 mm)	3.45 in. (87.6 mm)	1.50 in. (38.1 mm)	0.875 in. (22.2 mm)

### Remote Mount



A	B	C	D	E	F	G	H	I dia
7.00 in. (177.8 mm)	2.40 in. (61.0 mm)	2.25 in. (57.2 mm)	7.00 in. (177.8 mm)	5.75 in. (146.0 mm)	4.38 in. (111.2 mm)	3.45 in. (87.6 mm)	1.50 in. (38.1 mm)	0.875 in. (22.2 mm)

**Swivel Mount**



A	B	C	D	E	F	G dia
12.25 in. (311.2 mm)	7.00 in. (177.8 mm)	5.75 in. (146.0 mm)	4.00 in. (101.6 mm)	3.45 in. (87.6 mm)	1.50 in. (38.1 mm)	0.875 in. (22.2 mm)



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