



LIQUID FLOW METER

DESIGNED TO WITHSTAND THE MOST RIGOROUS
FLOW MEASUREMENT APPLICATIONS

KIMRAY
INC.®

TURBINE FLOW METER

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MONITOR



EXPLOSION-PROOF ENCLOSURE



MODEL BK2900

MONITOR



MODEL BK3000

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EXPLOSION-PROOF ENCLOSURE

TURBINE FLOW METER

MODEL 1100



KEY DESIGN FEATURES

- Rugged 316 stainless steel construction offers long service life in severe operating environments
- Available in NPT, BSP, Victaulic, Flange, or Hose Barbed end connections
- Field replaceable repair kits allow for turbine replacement without loss of accuracy
- Offers accurate and repeatable flow measurement in ranges from 0.6 to 5000 GPM (20 - 171,000 BPD)
- Both the Flow Meter and the repair kits are factory calibrated

INTRODUCTION

The Model 1100 Turbine Flow Meter is designed to withstand the demands of the most rigorous flow measurement applications. Originally developed for the secondary oil recovery market, the Model 1100 is an ideal meter for liquid flow measurement on or off the oilfield.

The meter features a rugged 316 stainless steel housing and rotor support assemblies, CD4MCU stainless steel rotor, and abrasive-resistant tungsten carbide rotor shaft and journal bearings. The Model 1100 maintains measurement accuracy and mechanical integrity in the corrosive and abrasive fluids commonly found in oilfield water flood projects and many industrial applications.

Designed to operate with the Model B2800 Flow Monitor, the Model 1100 turbine meter meets a wide range of measurement requirements. This makes it ideal for applications such as pipelines, production/injection fields, in-situ mining operations, offshore facilities and other industrial applications.

HOW IT WORKS

Fluid entering the meter passes through the inlet flow straightener which reduces its turbulent flow pattern and improves the fluid's velocity profile. Fluid then passes through the turbine, causing it to rotate at a speed proportional to fluid velocity. As each turbine blade passes through the magnetic field at the base of the transducer, an AC voltage pulse is generated in the pickup coil. These pulses produce an output frequency proportional to the volumetric flow through the meter.

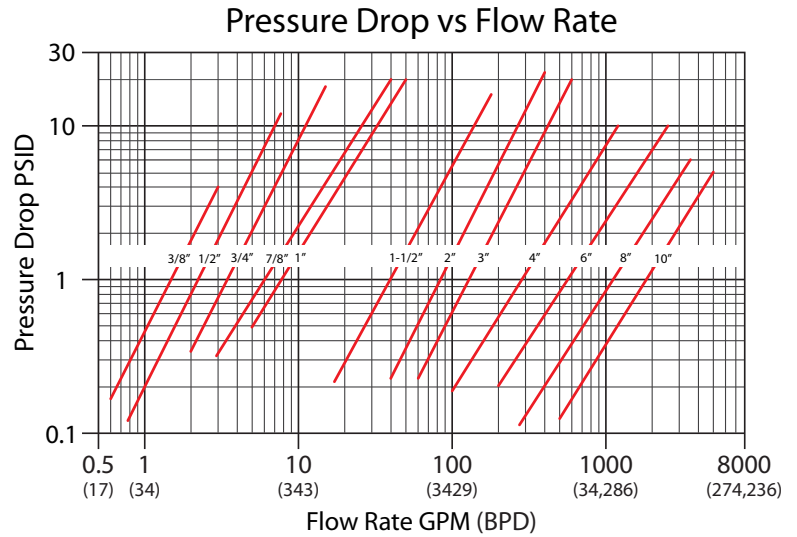
ACCUKIM[®]

While the standard Kimray turbine meter is highly accurate and precise, sometimes you need more. Kimray offers AccuKim[®] flow meters for those situations. AccuKim has an accuracy rating of $\pm 0.5\%$ of reading. AccuKim is available in all the same sizes available with the standard Kimray Turbine Meters. Simply add "HA" to the end of the order code when ordering. (i.e. KSB110-375HA)

MODEL 1100

SPECIFICATIONS

Body	316 Stainless Steel
Rotor	CD4MCU Stainless Steel
Rotor Support	316 Stainless Steel
Rotor Shaft	Tungsten Carbide
Turndown Ratio	10:1
Flow Accuracy - Standard	±1% of reading
Flow Accuracy - AccuKim	±0.5% of reading
Repeatability	± 0.1%
Calibration	Water (NIST traceable calibration)
Pressure Rating	5,000 psi (maximum)
Turbine Temperature	-150 °F to +350 °F (-101 °C to 177 °C)
End Connections	NPT, Victaulic®, Flange, Hose Barbed



ORDER CODE	METER SIZE	END CONNECTION	END TO END LENGTH	FLOW RANGES		APPROX. K-FACTOR PULSES/GAL.	REPAIR KIT PART NUMBER
				GPM	BPD		
KSB110-375-1/2	3/8"	1/2" x 1/2" Male NPT	3"	.6 - 3	20 - 100	18,000	KSB251-102
KSB110-500-1/2	1/2"		3"	.75 - 7.5	25 - 250	13,000	KSB251-105
KSB110-750-1/2	3/4"		3"	2 - 15	68 - 515	3,300	KSB251-108
KSB110-375	3/8"	1" x 1" Male NPT	4"	.6 - 3	20-100	18,000	KSB251-102
KSB110-500	1/2"		4"	.75 - 7.5	25 - 250	13,000	KSB251-105
KSB110-750	3/4"		4"	2 - 15	68 - 515	3,300	KSB251-108
KSB110-875	7/8"		4"	3 - 30	100 - 1000	3,100	KSB251-109
KSB111-110	1"		4"	5 - 50	170 - 1700	870	KSB251-112
KSB111-115	1-1/2"	1-1/2" x 1-1/2" Male NPT	6"	15 - 180	515 - 6000	330	KSB251-116
KSB111-121	1-1/2"	2" x 2" Male NPT	6"	15 - 180	515 - 6000	330	KSB251-116
KSB111-120	2"	2" x 2" Male NPT	10"	40 - 400	1300-13000	52	KSB251-120
KSB311-066	1-1/2"	Grooved End	6"	15 - 180	515-6000	330	KSB251-116
KSB311-004	3"	3" x 3" MALE NPT	12-1/2"	60 - 600	2100 - 21000	57	KSB251-131
KSB111-130	3"	Grooved End	12-1/2"	60 - 600	2100 - 21000	57	KSB251-131
KSB311-084	4"	4" x 4" MALE NPT	12"	100 - 1200	3400 - 41000	29	KSB251-141
KSB111-140	4"	Grooved End	12"	100 - 1200	3400 - 41000	29	KSB251-141
KSB311-085	6"	6" x 6" MALE NPT	12"	200 - 2500	6800 - 86000	7	KSB251-161
KSB111-160	6"	GROOVED END	12"	200 - 2500	6800 - 86000	7	KSB251-161
KSB111-180	8"		12"	250 - 3,500	8600 - 120000	3	KSB251-181
KSB111-200	10"		12"	500 - 5,000	17000 - 170000	1.6	KSB251-200

Sizes up to 10 inch available in NPT, Victaulic®, Flange, Hose Barbed. Contact Kimray for prices

TURBINE FLOW METER

QuikSert®



KEY DESIGN FEATURES

- Modified flow straighteners for enhanced fluid dynamics
- Unique “between-the-flange” design eliminates need for mating flanges
- Superior materials of construction for high performance in aggressive environments
- Accurate ($\pm 1\%$ of reading standard, $\pm 0.5\%$ optional) and reliable (repeatability $\pm 0.1\%$) flow measurement solution
- Wafer-style mounting configuration allowing for limited space requirements
- Both the Flow Meter and the repair kits are factory calibrated

INTRODUCTION

The QuikSert in-line turbine flow meter was developed for applications where accuracy and dependability are of concern to the operator. QuikSert's stainless steel body incorporates a helical turbine with tungsten carbide shaft and bearings. It provides an efficient, long service life and a cost-effective solution for your measurement requirements.

Simple in design and construction, QuikSert utilizes modified upstream and downstream flow straighteners for a high degree of flow accuracy. Its between-the-flange design eliminates the need for mating flanges, requiring less space in the flow line, lowering costs and providing easy, one-man installation.

The meter produces a sine-wave signal proportional to its volumetric flow rate. With optional Kimray electronics, QuikSert provides local flow rate and volume totalization and will interface with most instruments, PLCs and computers.

HOW IT WORKS

Fluid entering the meter first passes through an inlet flow straightener that reduces its turbulent flow pattern. Fluid then passes through the turbine, causing the turbine to rotate at a speed proportional to fluid velocity. As each turbine blade passes through the magnetic field generated by the meter's magnetic pick-up, an AC voltage pulse is generated. These pulses provide an output frequency that is proportional to volumetric flow.

ACCUKIM®

While the standard Kimray turbine meter is highly accurate and precise, sometimes you need more. Kimray offers AccuKim flow meters for those situations. AccuKim has an accuracy rating of $\pm 0.5\%$ of reading. AccuKim is available in all the same sizes available with the standard Kimray Turbine Meters. Simply add “HA” to the end of the order code when ordering. (i.e. KSB131-038HA)

SPECIFICATIONS

QuikSert®

Body and internal wetted parts	316L Stainless Steel
Bearings	Tungsten Carbide
Turbine	CD4MCU Stainless Steel
Shaft	Tungsten Carbide
Turndown Ratio	10:1
Flow Accuracy - Standard	±1% of reading
Flow Accuracy - AccuKim	±0.5% of reading
Repeatability	± 0.1%
Calibration	Water (NIST traceable calibration)
Turbine Temperature	-150 °F to +350 °F (-101 °C to 177 °C) Temperatures to +450 °F (+232 °C) with high-temp pickup, consult Kimray for details
End Connections	Wafer-style ASME/ANSI B16.5-1996

ORDER CODE	BORE SIZE X LINE SIZE	MAXIMUM PRESSURE DROP (PSI)	DIMENSIONS DIAMETER X LENGTH (IN)	FLOW RANGES		APPROX. K-FACTOR PULSES/GAL.	REPAIR KITS
				GPM	BPD		
KSB131-038	3/8" x 1"	3.75	2 x 4	.6-3	20-100	18,000	KSB253-102
KSB131-050	1/2" x 1"	6.5	2 x 4	.75-7.5	25-250	13,000	KSB253-105
KSB131-075	3/4" x 1"	18	2 x 4	2-15	68-515	3,300	KSB253-108
KSB131-088	7/8" x 1"	20	2 x 4	3-30	100-1000	3,100	KSB253-109
KSB131-100	1" x 1"	20	2 x 4	5-50	170-1700	870	KSB253-112
KSB132-050	1/2" x 2"	12	3.62 x 2.5	.75-7.5	25-250	13,000	KSB253-205
KSB132-075	3/4" x 2"	18	3.62 x 2.5	2-15	68-515	3,300	KSB253-208
KSB132-088	7/8" x 2"	20	3.62 x 2.5	3-30	100-1000	3,100	KSB253-209
KSB132-100	1" x 2"	20	3.62 x 2.5	5-50	170-1700	870	KSB253-212
KSB132-150	1-1/2" x 2"	16	3.62 x 2.5	15-180	515-6000	330	KSB253-216
KSB132-200	2" x 2"	9	3.62 x 2.5	40-400	1300-13000	52	KSB253-220
KSB133-300	3" x 3"	10	5 x 4.25	60-600	2100-21000	57	KSB253-330
KSB134-400	4" x 4"	10	6.18 x 5	100-1200	3400-41000	29	KSB253-440
KSB136-600	6" x 6"	10	8.5 x 5.75	200-2500	6800-86000	7	KSB253-660
KSB138-800	8" x 8"	10	10.62 x 6.25	350-3500	1200-120000	3	KSB253-880
KSB139-900	10" x 10"	10	12.75 x 6.75	500 - 5000	17000 - 170000	1.6	KSB253-990

MONITOR

MODEL BK2800



KEY DESIGN FEATURES

- User friendly front panel programming NEMA 4X enclosure suitable for outdoor monitoring (meter, remote and swivel mount versions)
- Large 8 digit 3/4" display for easy viewing
- Battery (1.5 VDC) and Loop-powered (4-20 mA) versions available
- Six mounting options: meter, remote, swivel, hand-held, panel or explosion-proof

INTRODUCTION

The BK2800 is an advanced microprocessor-based flow monitor that is also low cost and simple to operate. When ordered with a Kimray turbine meter, the BK2800 is configured at the factory for units of rate and total. Or, the unit may be easily programmed in the field. The monitor has a large two-line display and is available in power and mounting options to suit almost any application.

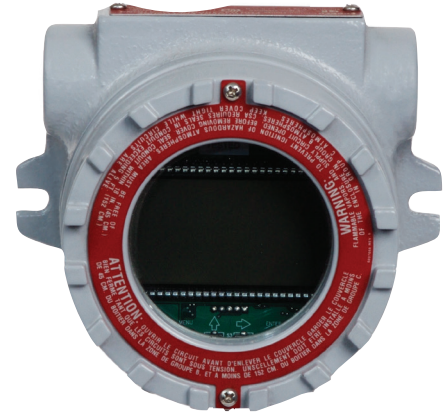
HOW IT WORKS

The BK2800 flow monitor accepts a low-level frequency input, such as the input from a Kimray turbine meter, to calculate flow rate and total. These calculations are then displayed in user selected units of measurement. All BK2800 flow monitors come pre-calibrated from the factory if ordered with a Kimray flow meter. However, they can be easily reconfigured in the field. The BK2800 is available in a battery-powered or loop-powered version. The battery version utilizes one "D" size, 1.5 volt alkaline battery that provides up to 3-1/2 years of service.

The loop-powered BK2800 offers a 2-wire 4-20 mA output for electronic integration. The meter mount, remote, swivel and hand-held monitors are equipped with a large 8 digit 3/4" numerical LCD making extended range viewing practical. The second 8 character 3/8" alphanumeric display provides for selectable units viewing in run mode and prompts variables in programming mode. Additionally, the user can choose between displaying rate, total or alternating between both rate and total.

SPECIFICATIONS

LCD Display	Rate & total, fixed or toggle modes of operation 8 digit, 0.7 inches (18 mm) numeric (top line) 8 character, 0.35 inches (9 mm) alphanumeric (bottom line); resettable
Battery Power	1 "D" size 1.5 VDC alkaline battery included. Less than 1 milliwatt (~3.5 years on 1 "D" battery)
Loop-Powered	4-20 mA, two-wire current loop. 25 mA maximum consumption
Units of Measure: (Rate/total) (Simplified Version - user selectable)	GPM/gallons, LPM/liters, M3PD/cubic meters, BPD/barrels, M3PH/cubic meters
Units of Measure: (Total) (Advanced Version - user selectable)	Gallons, Oil Barrels, Liters, Cubic Meters, MGal, Cubic Ft, MLiters, MCF, MMCF, Acre Ft, Liquid Barrels, Lbs, Kgs
CERTIFICATIONS	
CSA Intrinsically Safe	Class I, Division 1, Groups C & D Class II, Division 1, Groups E, F & G
CE	IEC 61326-1
CSA: (Panel Mount Only)	Ordinary Area
CSA Hazardous Locations (Explosion-Proof Model Only)	Class I, Division 1, Groups B, C & D (Explosion-Proof Model Only) Class II, Groups E, F & G Class III, Type 4, T6 @ 70 C



EXPLOSION-PROOF ENCLOSURE

Model B311 Meter & Flow Monitor Packages (Measured in Barrels)

ORDER CODE	MOUNTING STYLE	METER SIZE	END CONNECTION
KSB311-067	Meter Mount	1"	1" x 1" Male NPT
KSB311-068	Meter Mount	1-1/2"	1-1/2" x 1-1/2" Male NPT
KSB311-069	Meter Mount	2"	2" x 2" Male NPT
KSB311-071	Swivel Mount	1"	1" x 1" Male NPT
KSB311-072	Swivel Mount	2"	2" x 2" Female NPT
KSB311-076	Swivel Mount	1-1/2"	1-1/2" x 1-1/2" Male NPT
KSB311-083	Swivel Mount	1"	1" x 1" Male NPT
KSB311-084	Remote Mnt w/Cable & Brkt	1"	1" x 1" Male NPT
KSB311-085	Meter Mount	1"	1" x 1" Male NPT
KSB311-086	Remote Mnt w/Cable & Brkt	2"	2" x 2" Male NPT
KSB311-088	Swivel Mount	1-1/2"	2" x 2" Male NPT

MONITOR

MODEL BK2900



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

INTRODUCTION

The Kimray BK2900 Flow Monitor offers advanced digital signal processing technology in an easy-to-access package. Enclosed in a spacious polycarbonate NEMA 4X housing, the electronics are located on a single board, designed for straightforward and convenient field installation. The BK2900 enclosure features an LCD display with push-button programming as well as a pre-drilled hole for external wiring connections, such as Modbus RTU and other outputs.

HOW IT WORKS

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, and the monitor can easily be re-configured in the field.

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

SPECIFICATIONS

Display	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)			
Power	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 Note: 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			
Inputs	Magnetic Pickup	Frequency Range	1...3500 Hz		
		Frequency Measurement Accuracy	±0.1%		
		Over Voltage Protection	28V DC		
		Trigger Sensitivity	30 mVp-p (High) or 60 mVp-p (Low) - (selected by circuit board jumper)		
	Amplified Pulse	Direct connection to amplified signal (pre-amp output from sensor)			
Outputs	Analog 4...20 mA	4...20 mA, two-wire current loop			
		25 mA current limit			
	Totalizing Pulse	One pulse for each Least Significant Digit (LSD) increment of the totalizer			
		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		
Modbus Digital Communications	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				
Data Configuration and Protection	Two four-digit user selectable passwords; level one password enables job total reset only, level two password enables all configuration and totalizer reset functions				
Certifications	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 _{max} = 26 mA	C _i = 0.5 µF	Li = 0 mH
		Pulse Output: Vmax = 28V DC	I _{max} = 100 mA	C _i = 0 µF	Li = 0 mH
		Reset Input: Vmax = 5V DC	I _{max} = 5 mA	C _i = 0 µF	Li = 0 mH
		RS485: Vmax = 10V DC	I _{max} = 60 mA	C _i = 0 µF	Li = 0 mH
Turbine Input: Voc = 2.5V		I _{sc} = 1.8 mA	Ca = 1.5 µF	La = 1.65 H	
EMC	IEC61326-1; 2004/108/EC				
Measurement Accuracy	Common Accuracy	0.05%			
Response Time (Damping)	Common Response Time	1...100 seconds response to a step change input, user adjustable			
Environmental Limits	Common Limits	-22...158° F (-30...70° C); 0...90% humidity, non-condensing;			
Materials and Enclosure Ratings	Polycarbonate, stainless steel, polyurethane, thermoplastic elastomer, acrylic; NEMA 4X/IP 66 meter, remote and swivel mount; NEMA/UL/CSA Type 4X (IP-66)				
Engineering Units	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			

MONITOR

MODEL BK3000



EXPLOSION-PROOF ENCLOSURE

KEY DESIGN FEATURES

- Flexible power options include solar, battery, and 4-20mA loop power
- Robust alarm parameters provide faster warning when something changes in the process or pipeline
- Multiple enclosure options ensure there's a KSB3000 model for your operation
- Updated display provides more information at your fingertips
- Advance connectivity options allow you to connect meters to your network for remote monitoring and process automation capabilities

INTRODUCTION

The BK3000 Series flow meter from Kimray provides you with a flexible, durable, easy-to-use platform for your flow metering applications. The BK3000 Series makes it easy to monitor flow, with a crisp dot-matrix display capable of simultaneous display of flow rate and flow total. With a wide variety of enclosure options for both liquid and gas applications, from intrinsically safe and explosion-proof (flameproof) ratings, to an innovative solar-powered model, there's a BK3000 to suit your needs. Intrinsically safe models are housed in a UV-resistant, NEMA 4X-rated, enclosure available in direct, panel, pipe, DIN-rail or swivel mounts.

HOW IT WORKS

The BK3000 Series was designed with smart management of unit power in mind. All units feature extremely low power consumption in normal operating conditions and are both 4-20mA loop and battery-powered*. You'll never have to worry about losing power, and the onboard battery will last up to 8 years.

The BK3000 Series also provides you with powerful operating features. Multi-point linearization tables are supported in all models, providing increased reading accuracy. Accessing the powerful advanced programming mode is as easy as pressing a single button. The standard communications interface is 4-20mA and total pulse, while the advanced interface adds two control alarms and Modbus RTU over RS485.

Kimray's trusted flow metering technology is now available with more options and features than ever before with the BK3000 Series.

*Solar version available as battery-powered monitor only

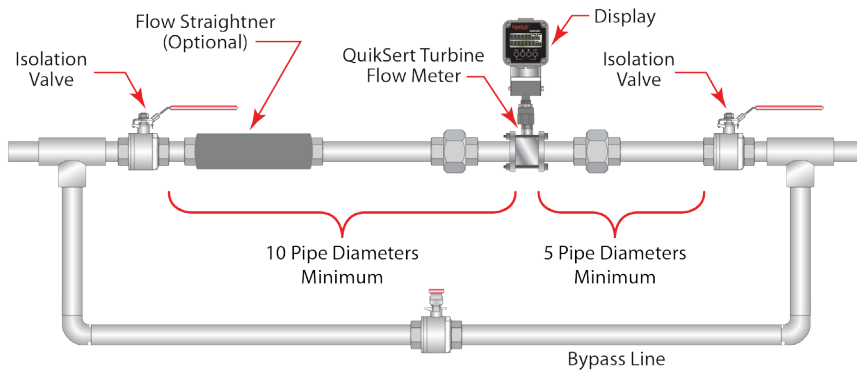
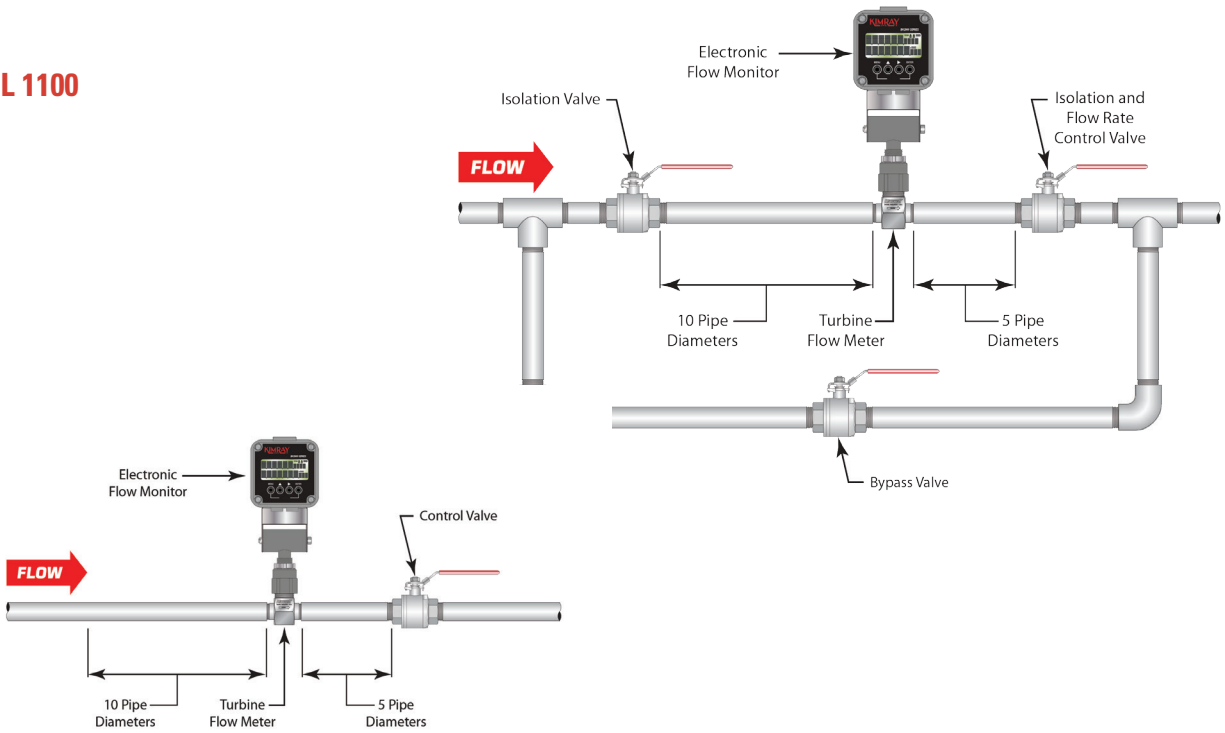
ORDER CODE	DESCRIPTION
KSB30AM-CS	KSB B3000 ADVANCE METER MOUNT
KSB30AR-CS	KSB B3000 ADVANCE REMOTE MOUNT
KSB30AS-CS	KSB B3000 ADVANCE SWIVEL MOUNT
KSB30BM-CS	MONITOR B3000 BASE BP MM
KSB30BR-CS	KSB B3000 BASE REMOTE MOUNT
KSB30BS-CS	KSB B3000 BASE SWIVEL MOUNT
KSB30SM-CS	KSB B3000 SOLAR METER MOUNT
KSB30SR-CS	KSB B3000 SOLAR REMOTE MOUNT
KSB30SS-CS	KSB B3000 SOLAR SWIVEL MOUNT
KSB30XR-CS	KSB B3000 BASE EXP REMOTEMOUNT
KSB30YR-CS	MONITOR B3000 ADV XP RM
KSB30ZRCS	MONITOR B3000 ADV BP RM XP

SPECIFICATIONS

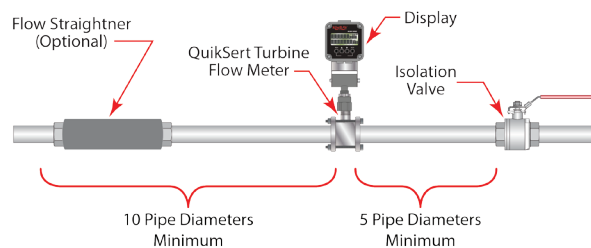
Display	Common	Simultaneously shows Rate and Total			
		5 x 7 Dot Matrix LCD, STN Fluid			
		6 Digit Rate, 0.5 inch (12.7 mm) numeric			
		7 Digit Total, 0.5 inch (12.7 mm) numeric			
	Explosion Proof	Engineering Unit Labels 0.34 in. (8.6 mm)			
6 Digit Rate, 0.37 inch (9.4 mm) numeric					
7 Digit Total, 0.37 inch (13 mm) numeric					
Annunciators		Alarm 1 (A), Alarm 2 (A), Battery Level (■■■■), RS485 Communications (COM)			
Power	Auto switching between internal battery and external loop power; explosion proof includes isolation between loop power and other I/O				
	Battery	3.6V DC lithium D Cell gives up to 6 years of service life Note: 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			
	Solar Battery	Internal battery (3.6V DC Nicd) provides up to 30 days of power after 6...8 hours exposure of the integrated photovoltaic cell to direct sunlight.			
Inputs	Magnetic Pickup	Frequency Range	1...3500 Hz		
		Frequency Measurement Accuracy	±0.1%		
		Over Voltage Protection	28V DC		
		Trigger Sensitivity	30 mVp-p (High) or 60 mVp-p (Low) - (selected by circuit board jumper)		
	Amplified Pulse	Direct connection to amplified signal (pre-amp output from sensor)			
Outputs	Analog 4...20 mA	4...20 mA, two-wire current loop 25 mA current limit			
	Totalizing Pulse	One pulse for each Least Significant Digit (LSD) increment of the totalizer			
		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			
Modbus Digital Communications	Modbus RTU over RS485, 127 addressable units / 2-wire network, 9600 baud, 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.(None on Solar and Explosion Proof)				
Data Configuration and Protection	Two four-digit user selectable passwords; level one password enables job total reset only, level two password enables all configuration and totalizer reset functions				
Certifications	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			
		Explosion: Class I Division 1 Groups B, C, D; Class II, Division 1, Groups E, F, G; Class III for US and Canada Complies with UL 1203 and CSA C22.2 No. 30			
		ATEX II 2 G Ex d IIC T4 Gb and ATEX II D Ex tb IIIC T125 °C Db Complies with Directive 94/9/EC.			
Entity Parameters	Base	4...20 mA Loop: Vmax = 28V DC	I _{max} = 26 mA	C _i = 0.5 µF	L _i = 0 mH
	Base & Solar	Pulse Output: Vmax = 28V DC	I _{max} = 100 mA	C _i = 0 µF	L _i = 0 mH
	Base & Solar	Reset Input: Vmax = 5V DC	I _{max} = 5 mA	C _i = 0 µF	L _i = 0 mH
	Base	RS485: Vmax = 10V DC	I _{max} = 60 mA	C _i = 0 µF	L _i = 0 mH
	Base & Solar	Turbine Input: Voc = 2.5V	I _{sc} = 1.8 mA	C _a = 1.5 µF	L _a = 1.65 H
	EMC	2004/108/EC			
Measurement Accuracy	Common Accuracy	0.05%			
Response Time (Damping)	Common Response Time	1...100 seconds response to a step change input, user adjustable			
Environmental Limits	Common Limits	-22...158° F (-30...70° C); 0...90% humidity, non-condensing;			
Materials and Enclosure Ratings	Polycarbonate, stainless steel, polyurethane, thermoplastic elastomer, acrylic; NEMA 4X/IP 66 meter, remote and swivel mount; NEMA/UL/CSA Type 4X (IP-66) EXPLOSION PROOF: Copper free, epoxy-coated, aluminum, buna seal, NEMA 4X/IP66				
Engineering Units	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			

TURBINE FLOW METER

MODEL 1100

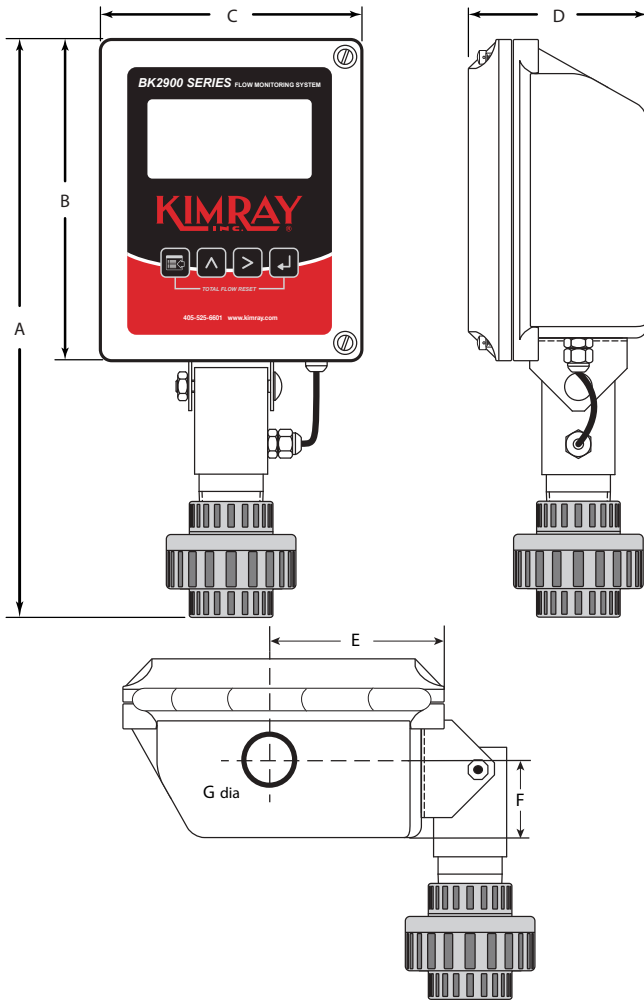


QUIKSERT

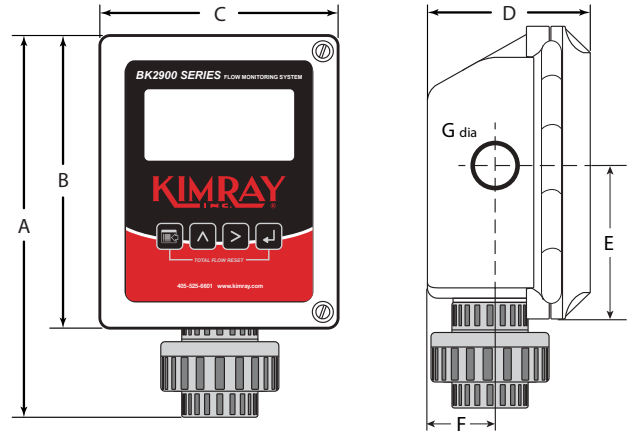


MOUNTING OPTIONS AND DIMENSIONS

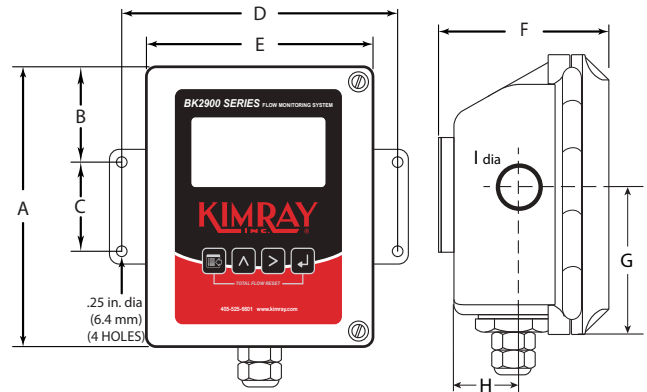
SWIVEL MOUNT



METER MOUNT



REMOTE MOUNT



	Swivel Mount	Meter Mount	Remote Mount
A	12.25 in. (311.2 mm)	9.25 in. (235.0 mm)	7.00 in. (177.8 mm)
B	7.00 in. (177.8 mm)	7.00 in. (177.8 mm)	2.40 in. (61.0 mm)
C	5.75 in. (146.0 mm)	5.75 in. (146.0 mm)	2.25 in. (57.2 mm)
D	4.00 in. (101.6 mm)	4.00 in. (101.6 mm)	7.00 in. (177.8 mm)
E	3.45 in. (87.6 mm)	3.45 in. (87.6 mm)	5.75 in. (146.0 mm)
F	1.50 in. (38.1 mm)	1.50 in. (38.1 mm)	4.38 in. (111.2 mm)
G	dia 0.875 in. (22.2 mm)	dia 0.875 in. (22.2 mm)	3.45 in. (87.6 mm)
H			1.50 in. (38.1 mm)
I			dia 0.875 in. (22.2 mm)

Mounting options and dimensions shown above are for BK2900



WHO WE ARE

Kimray designs and manufactures oil and gas control products. Based on over 65 years of pioneering product development, we provide products and services that work better, smarter and are more inventive. We generate meaningful solutions by staying curious and engaging in customers' needs. Our product ideas are fueled by a deep desire to make a difference that is both personal and unique to the customer.

We have made it our life's work to provide products and services that are positively impactful. Through the years this pursuit has built strong relationships. Our customers have known that when buying from Kimray, it's about much more than the product. The relationships between Kimray representatives and our customers extend from before the sale through the life of the product. Those relationships, along with quality Kimray products are the result of a company striving for excellence for our customers, our company and our community.

Visit Kimray.com to learn more about our company and the products we create.



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