Digital Flow Sensor For water

KLFMW Series

Ordering Code

KLFMW — □ — □ — □ — □ — □ — □

①	②	③	④	⑤	⑥	⑦
Series	Flow Rate Range	Port Size	Thread Type	Mounting Bracket	Output Method	Wiring
KLFMW	4：0.5~4 L/min	03：3/8”	G：G thread	–：No Bracket R：Mounting Bracket	D：NPN output + Analog output (4~20mA)	03: 3m
	16：2~16 L/min					
	40：5~40 L/min	04：1/2”				
	100：10~100 L/min	10：1”				

Specification

Series KLFMW				
Type	**KLFMW 4**	**KLFMW 16**	**KLFMW 40**	**KLFMW 100**
Medium	Water, Ethylene Glycol Aqueous Solution (Viscosity Below 3 cP)			
Detection Method	Karman Vortex Street Type			
Rate Flow Range(L/min)	0.5~4	2~16	5~40	10~100
Display Flow Range(L/min)	0.35~5.50 (Less than 0.35, it will display 0.00)	1.70~22.00 (Less than 1.7, it will display 0.0)	3.5~55.0 (Less than 3.5, it will display 0.0)	7~140 (Less than 7, it will display 0)
Set Flow Range (L/min)	0.35~5.50	1.70~22.00	3.5~55.0	7~140
Minimum Setting Unit	0.01	0.01	0.1	1
Using Fluid temperature	0~90℃ (No condensation, no freezing)			
Display Unit	Instantaneous flow rate L/min, cumulative flow rate L			
Accuracy	Display value: ±3% F.S. / Analog output: ±3% F.S.			
Repeat Accuracy	±2% F.S.			
Temperature Characteristics	±5% F.S.(25℃)			
Using Pressure Range	0~1 MPa			
Max. Pressure	1.5 MPa			
Pressure Loss	45 kPa or less at maximum flow rate			
Accumulated Flow Range	99999999.9L		999999999L	
Hysteresis	Variable			
Power Supply	DC12~24V±10%			
Current Consumption	≦50mA			

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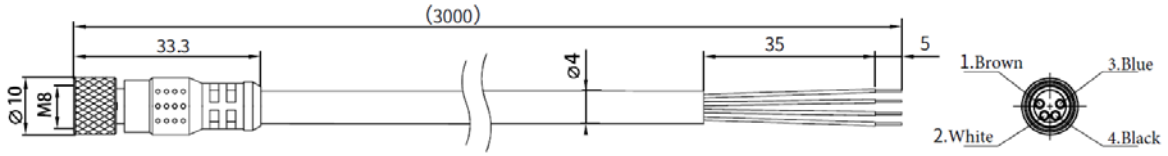
Specification

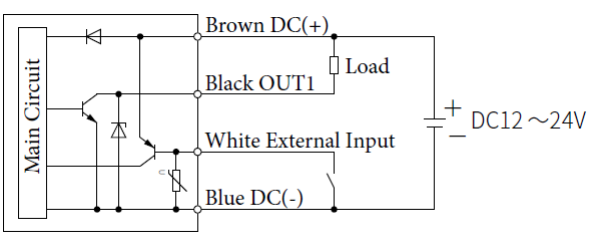
Series KLFMA						
Type			**KLFMW 4**	**KLFMW 16**	**KLFMW 40**	**KLFMW 100**
Switch Output	Output Type		NPN open collector			
	Output Mode		Hysteresis mode/upper and lower limit comparison mode/accumulated pulse output mode			
	Maximum Load Current		80mA			
	Maximum Supply Voltage		DC28V			
	Internal Voltage Drop		NPN: 1V or less (load current 80mA)			
	Response Time		0.5S / 1S / 2S			
	Short Circuit Protection		Yes			
	Analog output	Flow rate	Easy Mode / Hysteresis Mode / Window Comparator Mode			
		Temperature				
Output Mode - Current Output			Current output: 4-20mA; maximum load impedance: 600Ω			
Environ-mental Resist-ance	Protection Level		IP 65			
	Voltage Resistance		AC1000V (1 minute between lead and plastic housing)			
	Insulation Resistance		50 MΩ or more (DC500V, between lead and plastic housing)			
	Temperature Range		During operation: 0~50℃ (no condensation and no freezing)			
	Humidity Range		During operation and storage: 35-85% R.H. (no condensation and no freezing)			
Material of fluid contact part			SUS304、FKM、PBT+30%GF/PPS+40%GF、AL/POM/PVDF/PPS			

Cable specifications and internal circuits

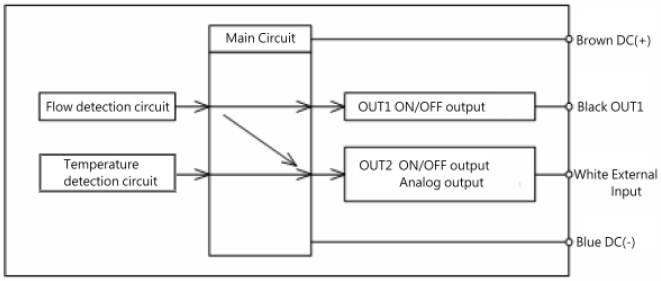


No.	Function	Color
1	DC(+)	Brown
2	OUT2	White
3	DC(-)	Blue
4	OUT1	Black

1. The installation and removal of cables should be performed after the power is turned off.
2. Please use a separate wiring path. If the same line is used as the power line and high-voltage wire, it may cause malfunction due to interference signals.
3. The switching power supply used must have a grounding wire. The switching power supply without a grounding wire will cause the switching interference signal to overlap.



△**NPN+ Analog Output**



△**Temperature-related output is available only through OUT2.**

By using the button operation, OUT2 can be configured to output either temperature-related data or flow-related data.

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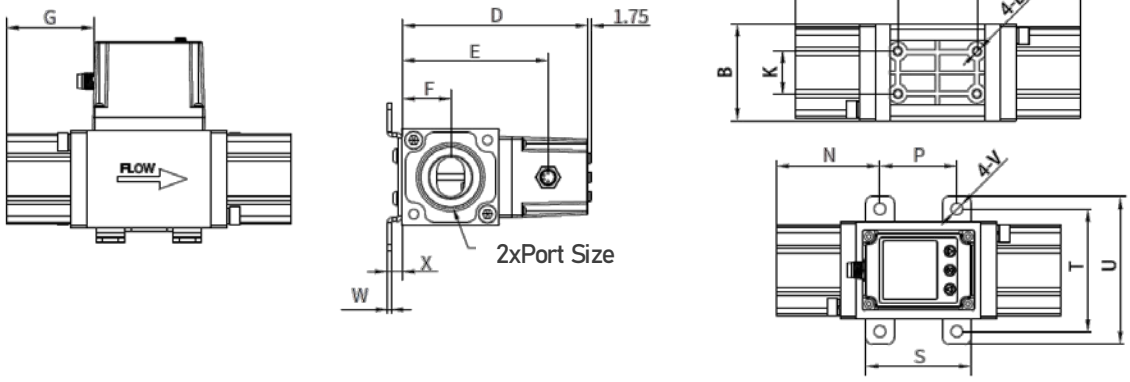
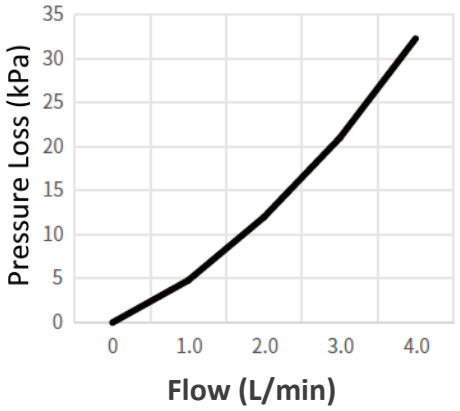
Dimensions

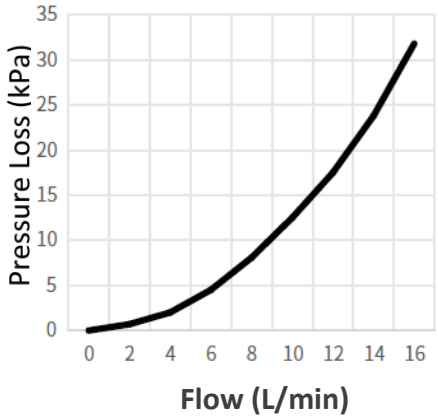


Series	Port Size	A	B	D	E	F	G	H	J	K	L	Mounting Bracket Size							
												N	P	S	T	U	V	W	X
KLFMW 4	G3/8	81	38	74	55.2	19	13.8	25.5	30	16	2.2	24	33	45	47.9	58	4.5	1.5	1.8
KLFMW 16	G3/8	89	38	74	55.2	19	17.8	29.5	30	16	2.2	28	33	45	47.9	58	4.5	1.5	1.8
KLFMW 40	G1/2	109	38	74	55.2	19	27.8	39.5	30	16	2.2	38	33	45	47.9	58	4.5	1.5	1.8
KLFMW100	G1"	135	46	88	69.2	23	40.8	48.5	38	20	3.5	49.3	36.5	50	58	70	5.5	2	7

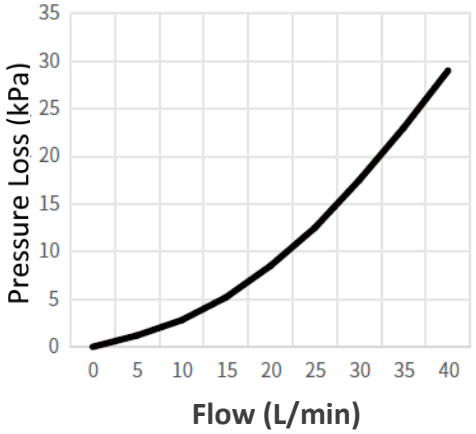
Flow curve



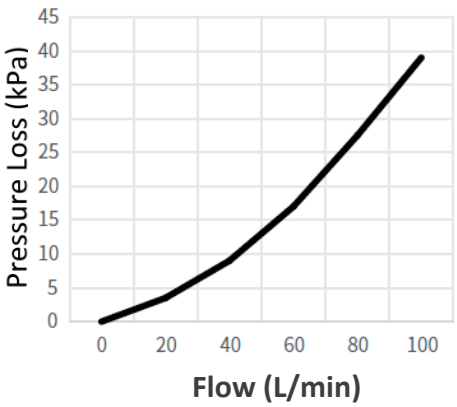
▲KLFMW4



▲KLFMW16



▲KLFMW40



▲KLFMW100

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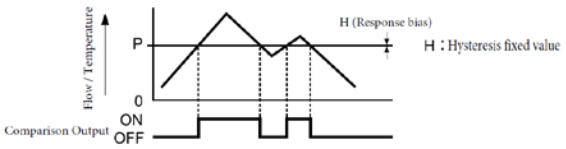
About output mode and output action

For comparison output 1 and comparison output 2, the output mode can be selected from simple mode, hysteresis mode, and window comparison mode.

Mode	Conditions (flow rate L)		Level switch NO/NC switch	Output Level	Display	Warning light
Simple Mode	> H1+H or (H2+H)		NO	High	out1 or (out2)	On
			NC	Low		Off
	< H1-H or (H2-H)		NO	Low		Off
			NC	High	out1 or (out2)	Off
Hysteresis Mode	> H1+H or (H2+H)		NO	High	out1 or (out2)	On
			NC	Low		On
	< L1-H or (L2-H)		NO	Low		Off
			NC	High	out1 or (out2)	Off
Window Comparison Mode	In window	L1+H < L < H1+H or (L2+H < L < H2+H)	NO	High	out1 or (out2)	Off
			NC	Low		Off
	Out window	< L1-H or (L2-H)	NO	Low		On
			NC	High	out1 or (out2)	On
		> H1+H or (H2+H)	NO	Low		On
			NC	High	out1 or (out2)	On

Simple Mode

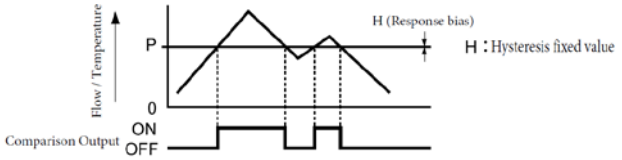
Comparison Output Mode With ON/OFF Control



[Note 1] P is "Hi" for comparison output 1 and "H2" for comparison output 2.
[Note 2] After setting the hysteresis value, the output signal changes when it is higher than H1+H or H2+H when rising.
[Note 3] The hysteresis value H is preset to 0.

Window Comparator Mode

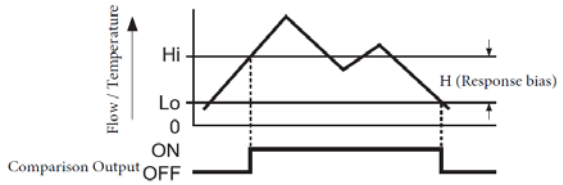
ON/OFF To Set Pressure



[Note 1] The Hi and Lo of comparison output 1 are Hi and Li, and the Hi and Lo of comparison output 2 are H2 and L2.
[Note 2] After setting the hysteresis value, the output signal will change when it is higher than L1+H and H1+H (or higher than L2+H and H2+H) during rising.
[Note 3] The hysteresis value H is preset to 0.

Hysteresis Mode

Set The Response Deviation Of The Comparison Output



[Note 1] Comparison output 1 Hi and Lo are H1 and L1,
Comparison output 2 Hi and Lo are H2 and L2.
[Note 2] After setting the hysteresis value, the output signal changes when it is higher than
H1+H or H2+H when rising.
[Note 3] The hysteresis value H is preset to 0.

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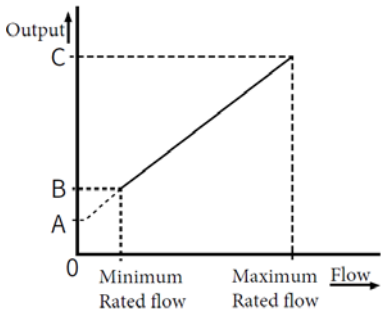
Flow/Analog Output

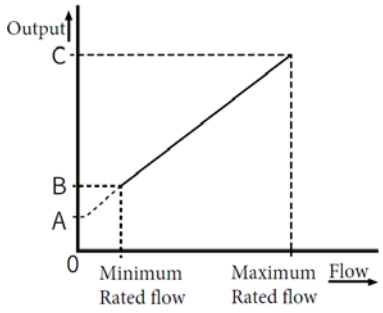
	A	B		C
		4 /16/40	100	
Analog Output	4mA	6 mA	5.6 mA	20 mA

No.	Rated flow L/min		Instantaneous Flow Alarm hreshold L
	Minimum	Maximum	
KLFMW 4	0.5	4	5.5
KLFMW 16	2	16	22
KLFMW 40	5	40	55
KLFMW 100	10	100	140



Temperature/Analog Output

	A	B	C	D
Current output	2.4mA	4 mA	20 mA	21.6 mA



Alarm function

Display	Error	Content
Exceed transient range	Transient flow exceeds range	The flow rate exceeds the displayed flow rate range
Exceed cumulative range	Cumulative flow exceeds range	The cumulative value exceeds the cumulative flow rate range
Exceed upper temperature limit	Temperature exceeds upper limit	The fluid temperature exceeds 110℃
Exceed lower temperature limit	Temperature exceeds lower limit	The fluid temperature is lower than -10℃

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Troubleshooting methods

Phenomenon	Possible reason	Cause investigation method	Countermeasures
No display	Poor connection	Confirm the cable connection status	Please connect the cables correctly.
Flow rate display fluctuates greatly	Piping is connected in reverse	Confirm whether the product installation direction is consistent with the flow direction.	Please ensure that the installation direction meets the flow direction requirements.
	Foreign matter mixed or attached to the flow path of the sensor	1. Confirm whether there is any possibility of foreign matter being mixed in. 2. Confirm whether there is any foreign matter attached.	1. Recommend to install a 40 μ filter. 2.Please remove foreign matter.
	Insufficient water flow	Confirm whether the flow path is filled with water.	Please keep the flow path filled with water.
	Flow rate is pulsating	Confirm whether there is any supply pressure fluctuation and whether the compressor or pump of the pressure source has characteristic pulsation.	1. Please replace it with a pump with less pulsation. 2. Please set up a gas tank to reduce pressure fluctuations. 3. Please replace it with an elastic pipe such as a rubber hose.
Buttons not responding	Button is locked	Confirm each button	Confirm whether the button is locked.