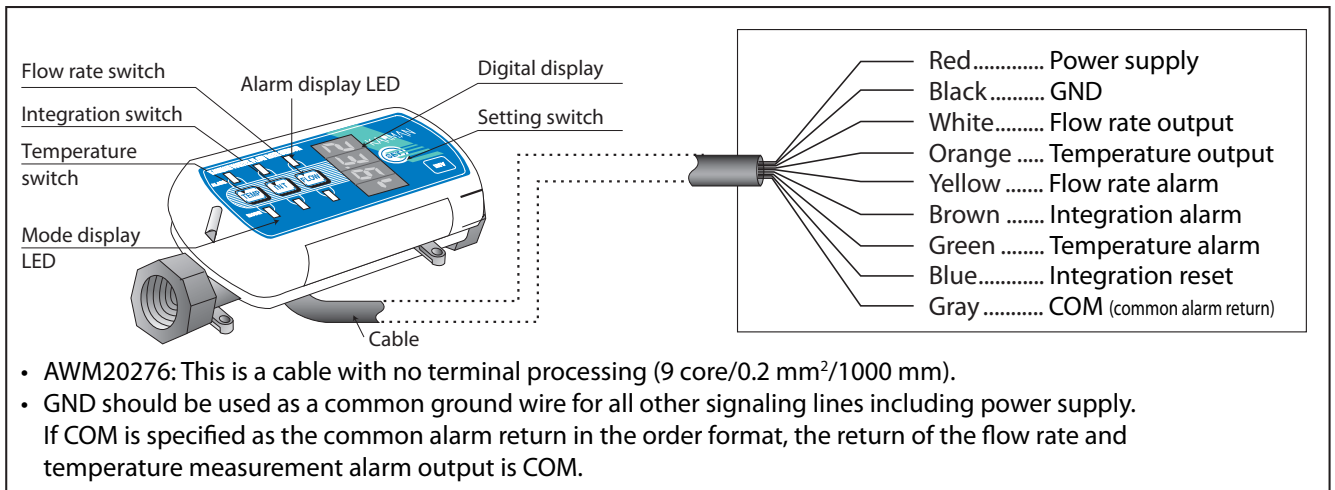


Karman Vortex System Flow Sensor KSL-80L/KSL-160L

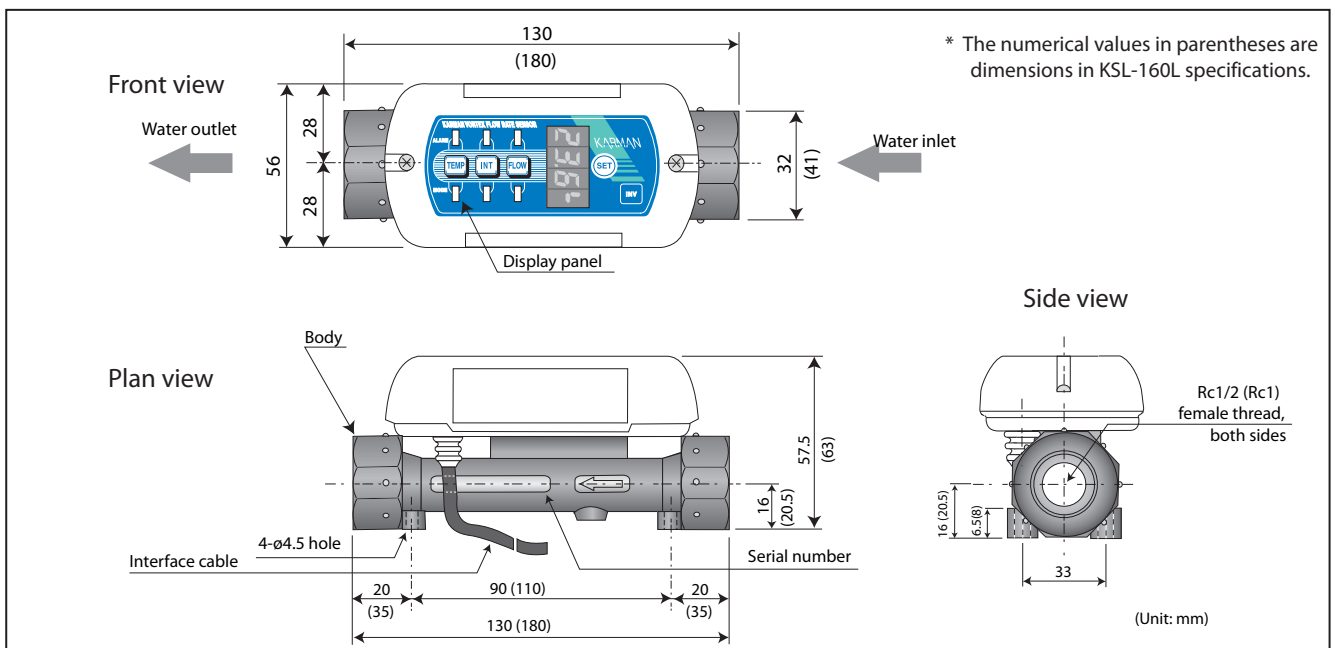
Features

- As a sensor for monitoring the cooling water of equipment, a cumulative total of 60,000 units have been delivered to leading semiconductor and LCD equipment manufactures in the world.
- Measures and displays the flow rate, temperature, and integrated values.
- Analog output
- Alarm output
- The digital display is turned depending on the installation status.
- Digital display

Electric wiring



Dimensions

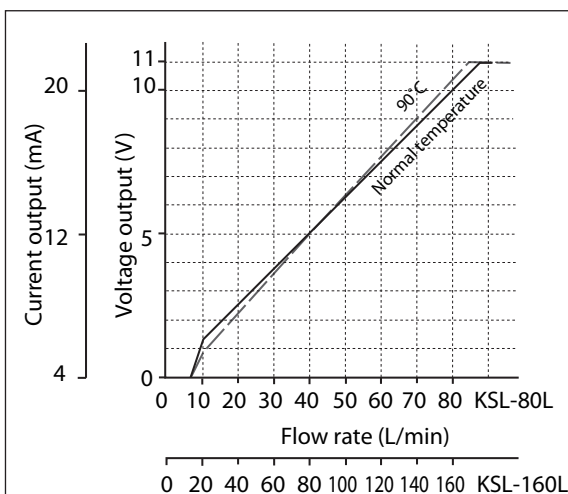


Specifications

Model	KSL-80L	KSL-160L
Flow rate	10 to 80 L/min	20 to 160 L/min
Integration	0 to 999999 L	
Temperature detection range	0 to 99°C	
Output	0 to 10 V or 4 to 20 mA (flow rate, temperature)/pulse (integration)	
Alarm	MOS-FET ON or OFF (flow rate, integration, temperature)	
Maximum operating pressure	1 MPa (below 10kgf/cm ²)	
Fluid temperature	0 to 60°C	
Ambient temperature	0 to 40°C (Non-freezing)	
Flow direction	Specified direction	
Power supply	DC12V±5% or DC24V±10%	
Current consumption	30 mA max. (70 mA max. in 4 to 20 mA specification)	
Accuracy	FS±2.0%	
Material of body	SUS304	
Materials of vibrator	Resin (LCP)	
Applicable fluid	Industrial water or service water	
Sealing O-ring	Fluororubber	
Coupling of pipings	Rc 1/2	Rc 1
Cable	AWM20276 9 cores/0.2 mm ² /1000mm	
Weight	380g	500g

Note) The KSL-160L has the following accuracies:
 Accuracy of FS±2% in a range from 20 to 140 L/min
 Accuracy of FS±5% in a range from 140 to 150 L/min
 Accuracy of FS±10% in a range from 150 to 160 L/min

Flow rate characteristics



- The flow rate characteristics are temperature dependent as shown in the above graph.

Caution:

To maintain accuracy, secure a straight-pipe length of 7D or more on the upstream side and 5D or more on the downstream side. Moreover, be sure to install valves, branches, gauges, etc. on the downstream side.
 (D: Diameter. For 80L, D = 13.5 mm; for 160L, D = 19.0 mm.)

Order format

KSL	Flow rate	Power supply	Output		Alarm			Common alarm return
	Flow rate	Power supply	Flow rate	Temperature	Flow rate	Integration	Temperature	Common alarm return
	80L 10 to 80 L/min	12V DC12V	V 0 to 10V I 4 to 20mA		A	A	A	COM Floating status
	160L 20 to 160 L/min	24V DC24V	P Pulse output V 0 to 10V I 4 to 20mA		B	B	B	G Connected to GND

Example KSL-80L-24V-V-A-B-A-COM

* When the output of the flow rate is set to "P" (pulse output), the temperature output is "V" or "I."
 In temperature output, the pulse output cannot be selected. (The order format of the output is "PV" or "PI.")
 Example: KSL-80L-24V-PV-A-B-A-COM

* To improve the performance, the shape and specifications are subject to change without prior notice.

Definition of alarm output and display LED

Measurement value	Alarm	
	A	B
Higher than the setting value	Red light out ON	Red lamp OFF
Lower than the setting value	Red lamp OFF	Red light out ON

* The alarm output uses the common return for the flow rate, integration, and temperature. For the common return, "COM: floating status" or "G: Connected to GND" can be selected.

The alarm is conductive when the MOS-FET is ON and non-conductive when it is OFF. The alarms for flow rate, for integration, and for temperature can be set independently.