

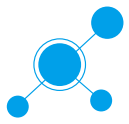
Liquid Type Identification Sensor

ES-5000 Series

*Can you check
what the liquid is?*



TOYOKO KAGAKU



Liquid Identification Sensor

Since the Liquid Type Identification Sensor detects variation in numerical values according to liquid type and / or concentration, it is possible to identify the liquid type even it cannot be identified visually, and detect liquid leakage in environment where water is constantly present.

Also, when the value fluctuates due to a change in the liquid, a signal can be output by freely setting the threshold value. (There are 2 output signals.)

Furthermore, by using an optical fiber for the detection unit, it can be used in an explosion-proof area and the liquids that there is a risk of explosion.



Example of use

Liquid leak sensor that can distinguish between water and other liquids

In the case of outdoor piping, it is possible to detect and warn of liquid leakage from the piping without detecting it with rainwater.

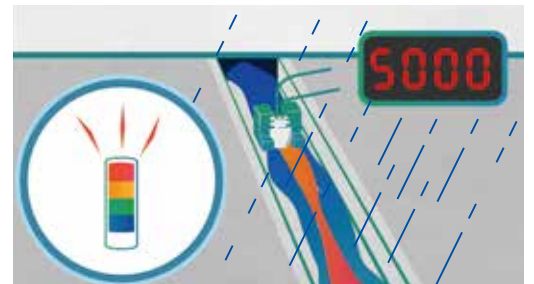
This application is possible only with Liquid Identification Sensor that can distinguish between water and other liquids.



Normal Operation



In rainy weather



In case of leakage in rain

Liquid level management and Liquid Identification in the tank

If installed in a certain position (level), the sensor is enable to use as a liquid level sensor.

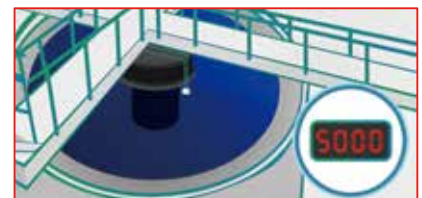
By utilizing the liquid type identification function, it is no longer just a liquid level sensor. Example, this sensor can distinguish between "a moderately mixed liquid state" and "a liquid in which the liquid separates and the oil floats over time".



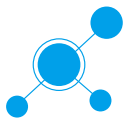
When the water level is lower than the quantitative position



When the liquid reaches the fixed quantity position



When the liquid separates



Product composition

【Control Unit】

- Master Unit … ES-5000CM
- Wireless Unit … ES-5000CS



【Detection Unit】

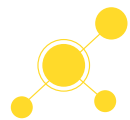
- ES-5000F-5M(-0500) Fiber Length:5m
- ES-5000F-10M(-0500) Fiber Length:10m



Liquid Identification Sensor Specification

Control Unit	
Power Voltage	DC12~24V
Output	NPN Transistor Open Collector, 2 Output
	Below 100mA/30V
	Load current : below 100mA
Ambient Temperature	-25~55°C
Ambient Humidity	35~85%RH(No condensation)
Material	PC(Cover, Case)
Protective Structure	IP50
Wiring Specification	O.D. ϕ 4.0, 4 cores
Installation Method	35mm width, DIN Rail

Detection Unit		
Cable	Specification	Plastic Optical Fiber
	Length	5m, 10m
	Minimum Bend Radius	2mm
Operating Temperature Range		-10~60°C
Material	Detection Unit Body	PFA Synthetic Quartz (Lens)
	Cable	PFA(Cable Covering)
	Bracket	SUS (Teflon Coating)
Waterproof Performance		Equivalent IP67

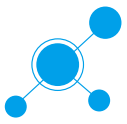


Detection Principle

In a normal situation, the light emitted from the control unit passes through the detection unit and returns without reducing the amount of light. However, when the liquid touches the detector, the light is transmitted toward the liquid and the amount of light to control unit decreases.

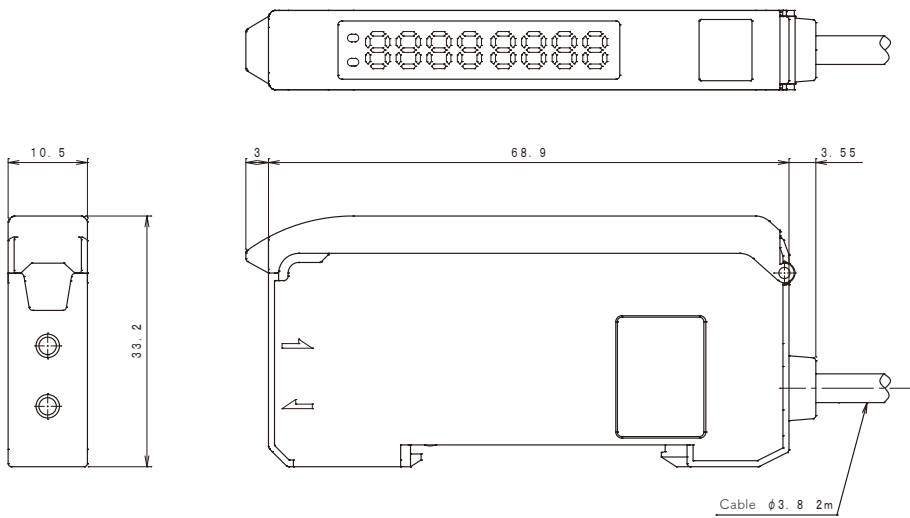
Since the rate of decrease in the amount of light differs depending on the type of liquid, the mechanism is such that the rate of decrease in the amount of light is quantified and discriminated.



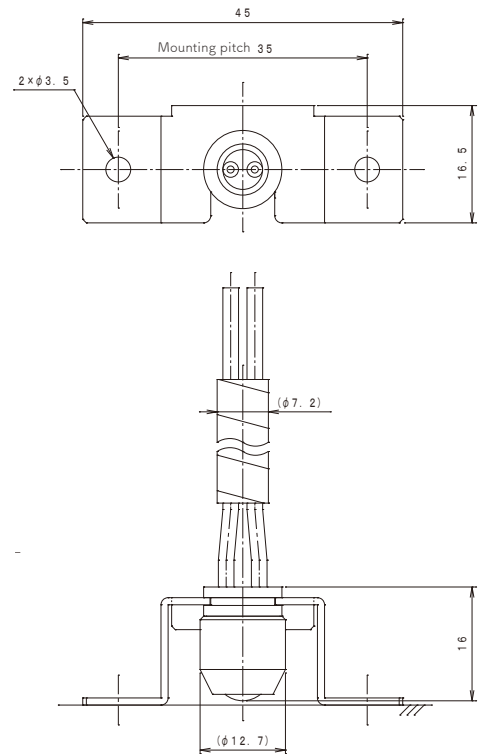


Liquid Identification Sensor Drawing

【Control Unit】



【Detection Unit】

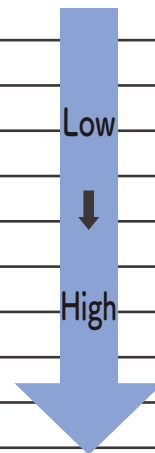


※Reference Data

Basically, the higher the refractive index of the liquid, the lower the value of the control unit for our product.

The right table shows the refractive index of a typical liquid. Please refer to them prior to consider your application.

Liquids	Refractive Index	Application
Atmosphere	1.000293	
Water	1.333	
Seawater		
Acetone		Nail Varnish Remover
Ethyl alcohol		Liquor etc.
Sugar water (20%)		
Saline (20%)		
Isopropyl alcohol		Disinfectant, Paint remover
Chloroform		Solvent
Toluene		Organic Solvent
Sugar Water (80%)		
Benzene		Organic Solvent



For product inquiries, please feel free to contact the following.

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Product explanation video

