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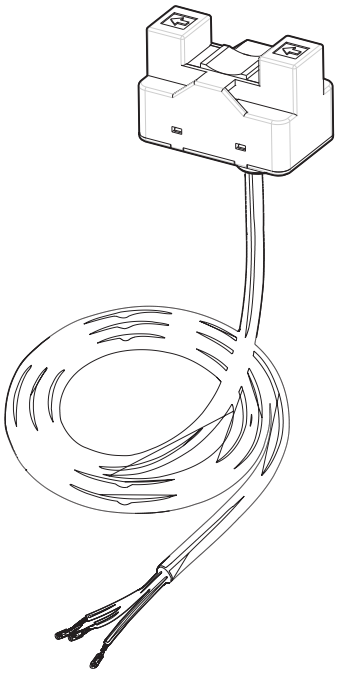
Level sensor
UE-S13 series user manual



Thank you for your purchase.

Please read the instructions thoroughly and carefully in order to use the product correctly and reasonably.

Level sensor

UE-S13

Instructions for Use

⚠ Attention

Do not install and use the sensor in the following environment to avoid product failure.

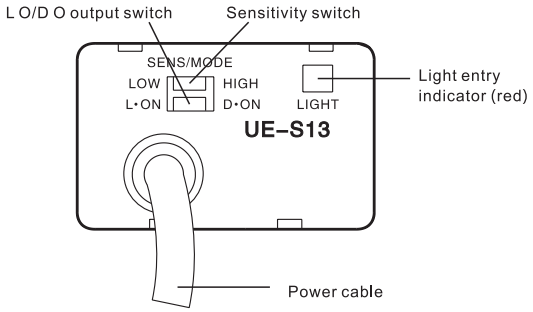
- Dusty, vaporous environment
- Environment with corrosive gases
- Environment that water, oil, etc. can be directly sputtered into the sensor
- The environment that can cause strong vibration and oscillation of the sensor

⚠ Warning

UE-S13 is only used to detect the target, not for safety circuit to ensure personal safety.
UE-S13 has no explosion-proof structure and should not be used in situations containing any combustible gases, liquids or powders.
UE-S13 is a DC sensor. The use of AC may cause fire. Please use it within the rated range.
UE-S13 is a non-waterproof design. Do not use it in liquid.

Name of part

■ Amplifier UE-S13



Product Specification

■ Type

Appearance	Sensing type	Out put	Mode	Cabel length	Model
	Through beam	NPN/PNP	Dark ON Light ON	1m	UE–S13 UE–S13P

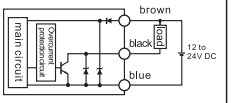
■ Product Description

Model	UE–S13	UE–S13P
Applicable	A transparent tube FEP with an outer diameter of 6-13 mm (thickness of 1 mm) or a substance having the same transparency	
Standard tested object	Liquids (high viscosity or turbid liquids may be partially undetectable)	
Light source	GaAs Infrared (940nm)	
Action indicator	Light on when entering (red)	
Supply voltage	DC 12-24V ±10%, pulsation (P-P) less than 5%	
Control output	Load power supply voltage DC 5-24V, load current less than 100mA, residual voltage less than 0.8V (load current 100mA) residual voltage less than 0.4 V (load current 40mA) NPN collector open circuit	Load power supply voltage DC 5-24V, load current less than 100mA, residual voltage less than 0.8V (load current 100mA) residual voltage less than 0.4 V (load current 40mA) PNP collector open circuit
Ambient brightness	Incandescent lamp/sunlight: below 3000lx	
Ambient temperature	Working: -10 to + 55° C, Storage: -25 to +65° C（No ice, no dew）	
Ambient humidity	Working: 5 to 85%RH , Storage: 5 to 95%（no dew）	
Vibration resistance	10 - 500 Hz complex amplitude of 1.0 mm or acceleration of 150 m/s², X, Y, Z direction each three times (11 min/time)	
Impact resistance	500 m/s² X.Y.Z direction each 3 times	
Protection Level	IP67	
Connection type	Cable type (cable length 1m)	
Weight	about 55g	
Material	Polycarbonate	
Accessories	Cable ties 2pc, Antiskid tube 2pcs, user manual	

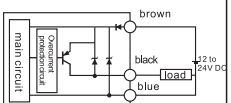
GaP red LED(Maximum luminescence wavelength is 700 nm)

Input/Output Circuit

■ NPN

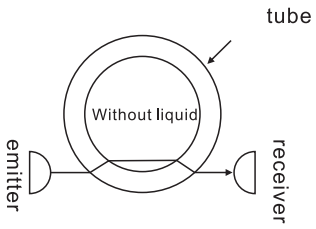
Model	Mode	Timing charts	Operation mode selector	Input/Output Loop
UE–S13	Dark ON	Incident (with no liquid) / Interrupted (with liquid); Light indicator (red) on/off; Output transistor ON/OFF; Load1 (relay) Operates/Releases; Load 2 H/L	D·N (DARK ON)	
	Light ON	Incident (with no liquid) / Interrupted (with liquid); Light indicator (red) on/off; Output transistor ON/OFF; Load1 (relay) Operates/Releases; Load 2 H/L	L·N (LIGHT ON)	

■ PNP

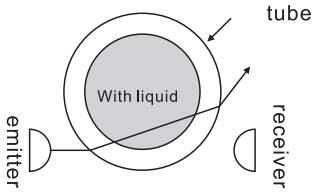
Model	Mode	Timing charts	Operation mode selector	Input/Output Loop
UE–S13P	Dark ON	Incident (with no liquid) / Interrupted (with liquid); Light indicator (red) on/off; Output transistor ON/OFF; Load1 (relay) Operates/Releases; Load 2 H/L	D·N (DARK ON)	
	Light ON	Incident (with no liquid) / Interrupted (with liquid); Light indicator (red) on/off; Output transistor ON/OFF; Load1 (relay) Operates/Releases; Load 2 H/L	L·N (LIGHT ON)	

Operation

■ The EE-SPX613 detects the level of liquid by detecting the difference in refractive index between the air and liquid.
(1) 1. If there is no liquid in the pipe, the emitted beam will reach the receiver after it is refracted by the pipe. (Light incident.)



2. If there is liquid in the pipe, the emitted beam will pass through the liquid and not reach the receiver.(Light interrupted.)

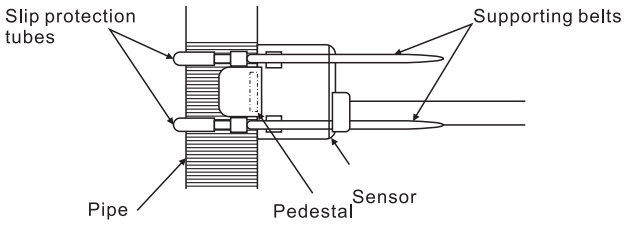


■ If the diameter of the pipe is close to 6 mm, some of the emitted beam may reach the receiver because the angle of refraction is small, thus making the stable operation of the UE-S13 difficult.
In such cases, set the sensitivity selector to Low and check that UE-S13 operation is stable.
If there are floating materials on the surface on the liquid, some of the emitted beam may reach the receiver after it is reflected by the floating materials, thus making the stable operation of the UE-S13 difficult. In such cases, set the sensitivity selector to Low to stabilize operation.
For normal use, set the sensitivity selector to High to account for reduced sensitivity caused by deterioration of the emitter due to age and stains on the pipe.

Guide to Use

■ Mounting

• The UE-S13 may not operate correctly if it is attached to an unsuitable pipe (e.g., opaque pipe).
• Always use the supporting belts and slip protection tubes that are provided with the UE-S13 when attaching the UE-S13 to a pipe, as shown in the following illustration, and make sure that the pipe is in the center of the sensor slot and not separated from the pedestal. When tightening the supporting belts, make sure that the pipe will not be deformed.



When fixing, do not deform the pipe

■ Wiring

Do not impose any excessive force on the cable. Do not pull the cable with any tractive force exceeding 30 N.
• When extending the cable, use an extension cable with conductors having a total cross-section area of 0.15 mm2. The total cable length must be 5 m maximum.

■ Adjustment

• The UE-S13 requires 10 ms to be in stable operation after power is supplied. If separate power supplies are used for the UE-S13 and load,be sure to supply power to the UE-S13 before supplying power to the load.
• Make sure that smoke, air bubbles, or water droplets are not able to form either inside or outside the pipe. Otherwise, a malfunction may occur.
• Do not impose any force exceed

■ Others

Operating Environment

• Do not use the UE-S13 outdoors.
• Do not use the UE-S13 in places where water, oil, or chemical may be sprayed onto the UE-S13.
The exterior coverings of the UE-S13 are made of polycarbonate. Keep the coverings away from any alkaline, aromatic hydrocarbon, or aliphatic chloride hydrocarbon solvents, all of which will damage the coverings.
• Do not use the UE-S13 in places where the UE-S13 is subject to direct sunlight, corrosive gas or salt air.

Dimensions

■ UE-S13