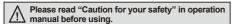
Liquid level sensor for mounting pipe (through-beam)

Features

- Detects liquid in a transparent/semitransparent pipe diameter Ø6 to 13mm, thickness 1mm
- Compact size: W23×H14×L13mm
- Selectable Light ON/Dark ON operation mode by operation mode switching button
- Easy to check operation status by operation mode indicator [green LED (Light ON: ON, Dark ON: OFF)], operation indicator [red LED]
- Built-in reverse polarity and output short-circuit protection circuits
- IP64 of protection structure (IEC standards)





Model

Model	Pipe diameter	Sensing type	Power supply	Control output
BL13-TDT	ø6 to 13mm	Through- beam	12-24VDC ±10%	NPN open collector output
BL13-TDT-P				PNP open collector output

Specifications

Madal	NPN output	BL13-TDT	
Model	PNP output	BL13-TDT-P	
Sensing type		Through-beam	
Applicable pipe		ø6 to 13mm(thickness: 1mm) transparent pipe (FEP(fluoroplastic) or with equivalent transparency)	
Standard sensing target		Liquid in a pipe ×1	
0 0		Max. 2ms	
Response time Power supply		12-24VDC ±10%(Ripple P-P: Max. 10%)	
		Max. 30mA	
Current consumption		Infrared LED(950nm)	
Light source Operation mode		Light ON/Dark ON switching by operation mode switching button	
Operation	i illoue	0 0 7 1	
Control output		NPN or PNP open collector output •Load voltage: Max. 30VDC •Load current: Max. 100mA •Residual voltage: Max. 1V	
Protection circuit		Reverse polarity protection circuit, output short-circuit protection circuit	
Indicator		Operation indicator: Red LED, Operation mode indicator: Green LED	
Insulation resistance		Min. 20M Ω (at 500VDC megger)	
Noise resistance		±240V the square wave noise(pulse width: 1μs) by the noise simulator	
Dielectric strength		1,000VAC 50/60Hz for 1 minute(between all terminals and case)	
Vibration		1.5mm amplitude or 300m/s ² at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours	
Shock		500m/s²(approx. 50G) in each of X, Y, Z directions for 3 times	
	Ambient illumination	Sunlight/Incandescent lamp: Max. 3,0001x for each(Receiver illumination)	
Environ- ment	Ambient temperature	10 to 55°C, storage: -25 to 65°C	
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH	
Protection		IP64(IEC standards)	
Material		Case: PC	
Cable		ø2.5, 3-wire, Length: 1m (AWG28, Core diameter: 0.08mm, Number of cores: 19, Insulator diameter: ø0.9)	
Accessor	у	Binding band 2EA, Anti-slip tube 2EA	
Approval		C€	
Unit weig	ht	Approx. 30g	

X1: This may not detect the liquid with low transparent, with high viscosity, or with floating matters.

*The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.

NEW

(C) Door/Area sensor

(D) Proximity

(E) Pressure

(I) SSR/

(K) Timer

(M) Tacho/ Speed/ Pulse meter

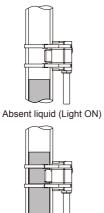
(N) Display unit

(P) Switching mode powe supply

(R) Graphic/ Logic panel

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Operation mode

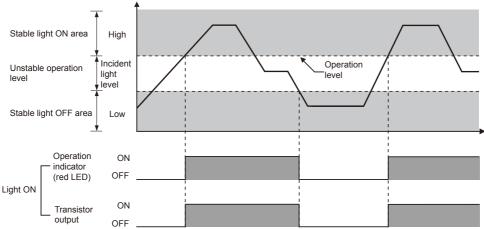


Operation mode	Light ON
Receiver operation	Received light Interrupted light
Operation indicator (red LED)	ON OFF
Transistor output	ON OFF

Operation mode	Dark ON
Receiver operation	Received light Interrupted light
Operation indicator (red LED)	ON OFF
Transistor output	ON OFF

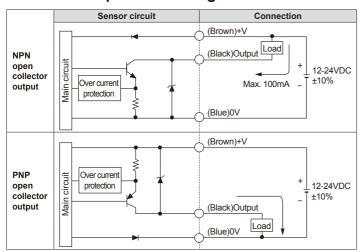
Operating timing diagram

Present liquid (Dark ON)

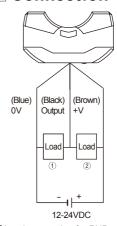


**The waveforms of 'Operation indicator' and 'Transistor output' are for Light ON, it is operated as reverse in Dark ON.

■ Control output circuit diagram



Connection

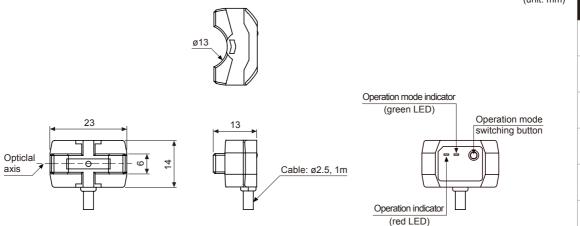


①Load connection for PNP output ②Load connection for NPN output

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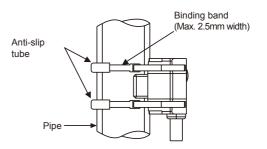
Liquid Level Sensor

■ Dimensions



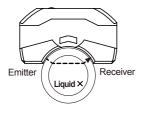
Installation

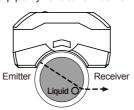
- If installing this unit at an opaque pipe, it is not possible to detect accurately. Install this unit at the rated pipe.
- Fix a pipe and this sensor tightly with binding bands and anti-slip tubes as the right figure and cut the spare part of binding bands with scissors or a knife.
- When connecting binding bands, be careful not to transform a pipe.



XPrinciple of operation

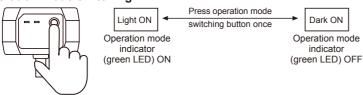
It detects whether there is liquid or not in a pipe by refractive index of light.



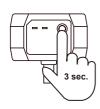


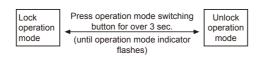
Functions

• Operation mode switching



• Operation mode lock setting





(A) Photo electric sensor

(B) Fiber optic sensor

(C) Door/Area sensor

(D) Proximity sensor

(E) Pressure sensor

> (F) Rotary encoder

(G) Connector/ Socket

(H) Temp. controller

(I) SSR/ Power controller

(J) Counter

(K) Timer

(M) Tacho/ Speed/ Pulse meter

(N) Display unit

(O)

(P) Switching mode power supply

(Q) Stepper

motor& Driver&Controlle

(R) Graphic/ Logic panel

Field network device

T) Software

(U) Other

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