

# Optical Level Switch

## Operational Principle

Refraction index of plastic and air varies in big range. Infrared light can be easily reflected totally between plastic and air. In contrast, infrared light would totally penetrate through plastic while plastic and liquid are taken place. Optical switch operates by sensing the difference of refraction index between various mediums, which causes different degree of refraction and penetration.

When dry, the transmitted light is reflected by the prism back to the receiver. When the sensor is wetted in liquid, only part of the transmitted light would be reflected back to the receiver while most is lost into the liquid. The received light then changes the signal and controls the switching accordingly.

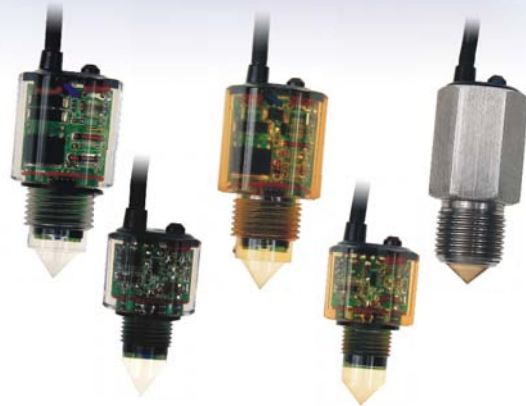
Optical switch is equipped with infrared source and receiver. They are to detect and verify the status of infrared light reflection and penetration between the mediums in order to trigger the alarm output.

## Product Feature

- NPN, PNP open collector output to energize relay or PLC.
- Enclosure material of PC, Polysulfone, SUS304 for acidity and alkaline; applicable in grease, waste water, liquid solution, liquor, alcohol...etc.
- Over-current and reverse polarity protected
- LED Status indication.

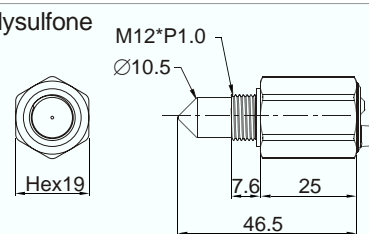
## Product Specification

1. Material: PC, Polysulphone or SUS304, SUS316
2. Protection: IP68
3. Operation Temperature: -10~125°C
4. Ambient Temperature: -10~80°C
5. Ambient light: Max. 5000 Lux (visible light)
6. Operation Pressure: Max.10kg/cm<sup>2</sup>(PC,Polysulfone)  
Max.40kg/cm<sup>2</sup>(SUS304)
7. Power Supply: 10~28 Vdc
8. Load Current: Max. Load 100mA
9. Overload Current Protection: 100mA(3/8"G/PF)
10. Connection Thread:  
M12 x 1 or 3/8"G(PF)or 3/8"(NPT)
11. Lead Wire: 2m CABLE(dia. 3.8) 3C PVC 22 AWG;  
custom made if over 2m

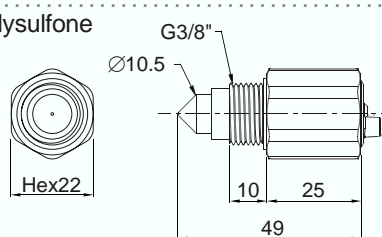


## Product Dimension

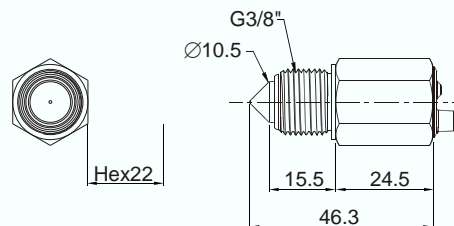
PC or Polysulfone



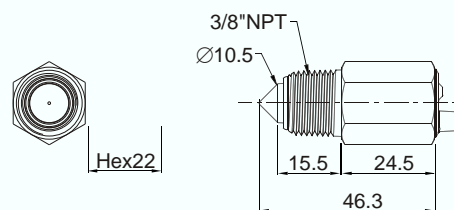
PC or Polysulfone



SUS304 or SUS316



SUS304 or SUS316





## Wiring

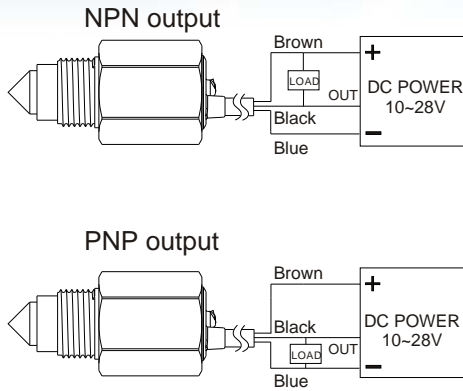


Fig.3

## Order Information

SD20

**Housing Material**

P: PC  
 G: Polysulfone  
 4: SUS304 {3/8"G(PF)}  
 6: SUS316 {3/8"G(PF)}

**Connection Thread**

M2: M12x1.0  
 (PC, Polysulfone)  
 AR: 3/8"PF(G)  
 AU: 3/8"NPT  
 (SUS304, SUS316)

**Output Form**

P0: PNP N.C    P1: PNP N.O  
 N0: NPN N.C    N1: NPN N.O

★ NO: Wet, In Liquid    NC: Out of Liquid

## Application Example

### Liquid Level Control:

In Fig.4(a), two optical switches are installed individually in upper and lower level of the tank. When liquid rises to cover the upper optical switch, it will stop fill in liquid. When liquid drops down and lower optical switch is not covered by liquid, it will start filling up. Liquid has to be maintained in between upper and lower optical switches.

### Motor Protection:

In Fig.4(b), optical switch is installed in lower level of the tank to prevent pump burning caused by the lack of water/liquid.

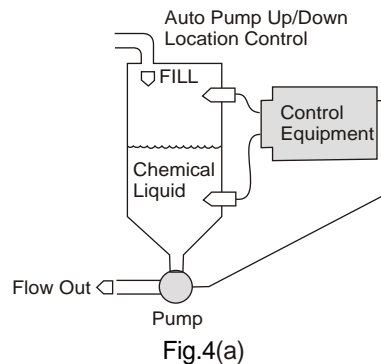


Fig.4(a)

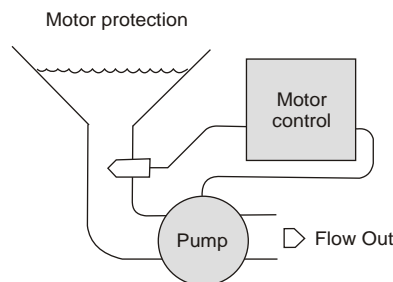


Fig.4(b)