Model LLS-□□□□

INSTRUCTION MANUAL

! WARNING

This sheet primarily describes precautions
required in installing and operating the product. Before operating the product, read the sheet thoroughly to acquire sufficient knowledge of the product. For your convenience, keep the sheet at your disposal.

! CAUTION

Failure to follow these instructions may result in serious injury or death:
Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices,etc.)
Failure to follow these instructions may result in product damage:
Do not use this unit over rated voltage;
Do not use this unit where there is flammable or explosive gas;
Do not use this unit in the environment with incompatible chemical properties.

Features

- High performance modulated sensor ASIC ensures high noise immunity
- High response time: 1ms
- Built in Power on delay prevent false output as sensor powering up
- Rejection of ambient/DC light/interference using with advanced modulation scheme and built in digital filter
- Selectable Light on / dark on Mode
- Polysulfone or 316 stainless steel with glass lens for high chemical resistance to most acids
- IP67

Ordering information

LLS DT M 12 I N L F G – G (Light source code)

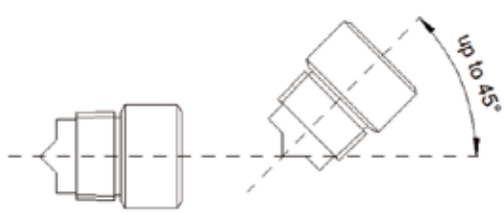
Connection		Cable
	C	Connector
Temperature resistance		Normal
	G	High temperature resistance
Degree of protection		Normal
	F	Corrosion resistant
Operation mode	L	Light on
	D	Dark on
	S	Selectable
Output	N	NPN
	P	PNP
	D	5V
	A	Analog
Thread direction : Non-threaded structures needn' t be filled in	I	Inward installation
	O	Outward installation
Core dimension	Number	Unit : mm
Series code	M	Screw thread
	G	Common metal
	ELS	Metal pressure resistant
	E	Slot type(photoelectric)
	R	Ring type(capacitive)
Sensing method	DT	Immersion type
	ET	Pipe-mount type
Item	LLS	Liquid level sensor

Specifications

Model	Plastic			Metal	
	Normal	Corrosion resistant	High temperature resistant	Normal	Pressure resistant
Sensing object	Clean solution without viscosity				
Accuracy	±1mm				
Power supply	DC10~24V (voltage ripple of 10%(p-p) max.)				
Current consumption	10mA Max (no including the load)				
Output	NPN / PNP				
Load current	Max. 100mA				
Operation mode	Light on; dark on; light on / dark on switchable				
Operation indicator	Orange	Orange	——	Orange	——
Circuit protection	Power on delay, power supply reverse polarity protection, output short-circuit protection, output reverse polarity protection				
Response time	1ms				
Ambient illumination	Incandescent lamp: Max. 1,000lx / Sunlight: Max. 5,000lx				
Ambient temperature *(1)	-20 ~ 55℃	-20 ~ 55℃	-40 ~ 100℃	-20 ~ 55℃ or -40~100℃	-40 ~ 100℃
Ambient humidity	Operation: 35 ~ 85% / Storage: 35% ~ 95% (with no condensation)				
Insulation resistance	Min. 20MΩ (500VDC)				
Protection degree	IEC: IP67				
Connection method	Outgoing cable, length: 30cm, 3-wire or 4-wire				
Line color definition	3-wire Light on: Brown (VDC), Blue (GND), Black (Output) 3-wire Dark on: Brown (VDC), Blue (GND), Black (Output) 4-wire: Brown (VDC), Blue (GND), Black (Output), White (Mode)				
Weight	Approx. 20G			Approx. 80G	
Material	Polyamide	Polysulfone		Stainless steel + Polysulfone	Stainless steel + glass
Accessory	Nut, Seal ring				

*(1) with no icing and condensation

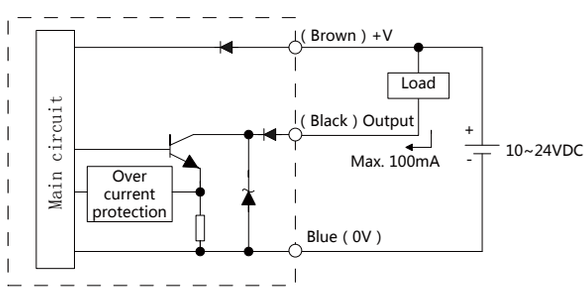
Installation



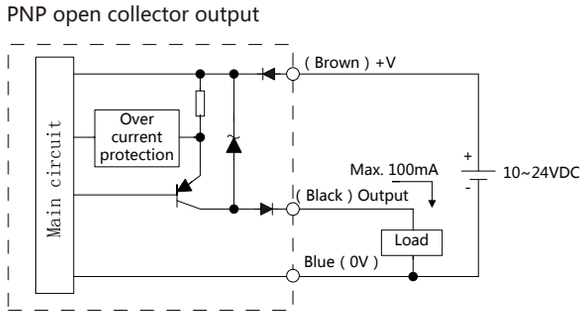
Control output circuit diagram

- 3-wire

NPN open collector output

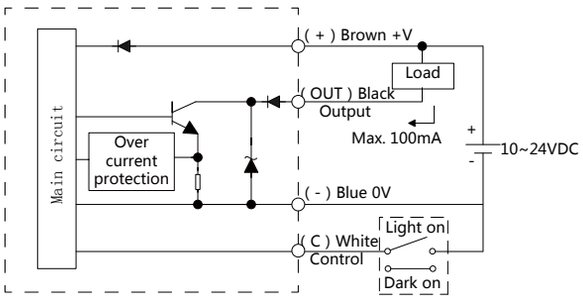


PNP open collector output

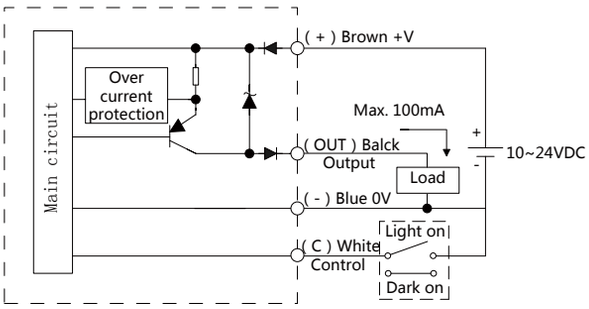


- 4-wire

NPN open collector output

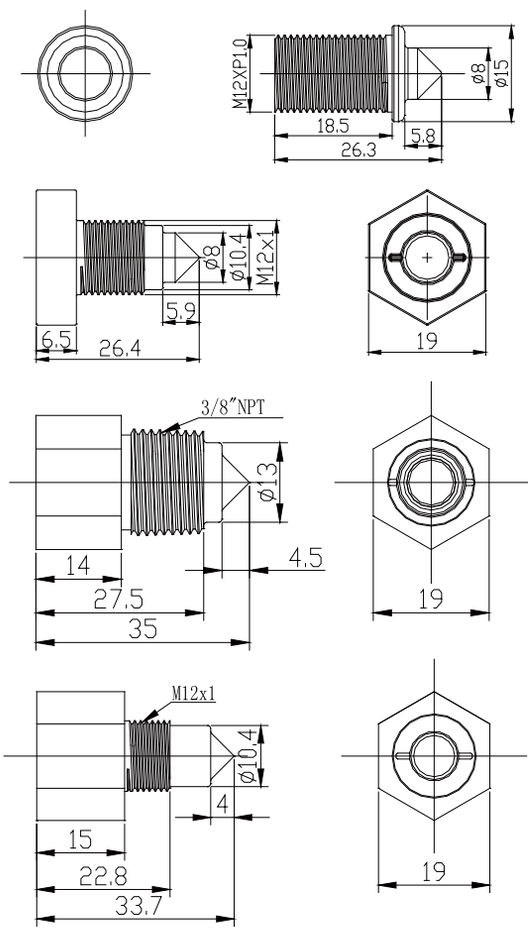


PNP open collector output



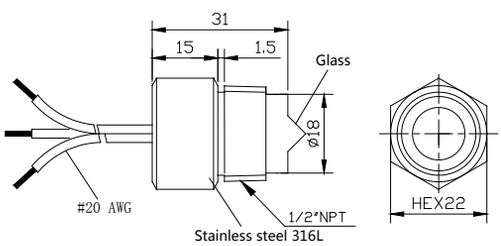
Dimension

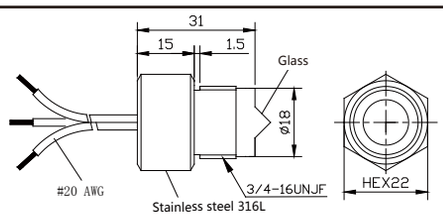
- Plastic structure



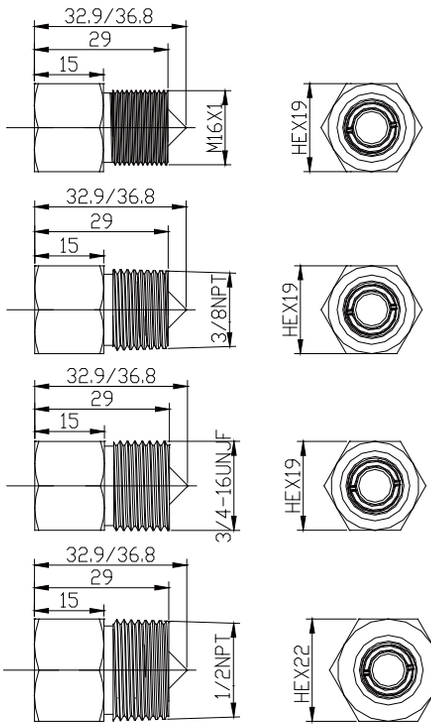
- Metal structure

Stainless steel + Glass

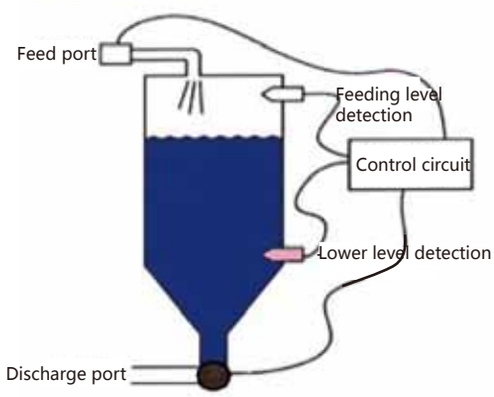




Stainless steel + Polysulfone



Application



Caution for using

1. Please make sure the wiring is correct before power-on.
2. Use a visor or a hood so that excessive light (e.g. sunlight, spotlight) does not directly enter into the inclination angle of the sensor.
3. When installing the sensor, the Angle between the center line of the detection cone head and the detection liquid level is suggested to be less than 45 degrees to avoid misoperation.
4. If the sensor is installed directly on a flat surface, the reflection off the surface may cause malfunction. Make sure there is enough space between the sensor and the surface.
5. If the sensor is wired with a high voltage line or power line, it may cause product damage or malfunction. Use separate wiring or a dedicated conduit.
6. Please use short cables for wiring the sensors. Power surge from extended wiring may cause product malfunction;
7. When the lens is stained by foreign substances, clean the lens lightly with dry cloth. Do not use chemical or organic solvents.

Main product

- Photoelectric sensor
- Light curtain
- Proximity sensor
- Pressure sensor
- Liquid level sensor
- Label sensor
- Hall sensor
- Pressure meter
- Counting sensor
- Counting machine
- Dust sensor
- Distance sensor