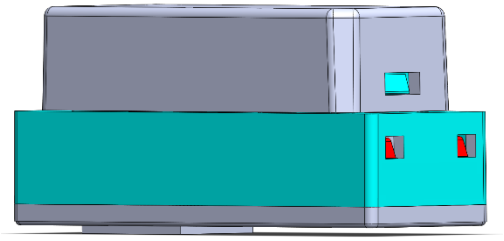
MX0400



IR distance measuring sensor
Range: 15mm to 150mm
Analog output type

Description

MX0400 is an integrated low voltage IR proximity sensor unit, including an IR-LED, a PSD(position sensitive detector) and a signal processing IC. Based on detection distance, this sensor converts light intensity to an analog output signal. Because of adopting the triangulation method, it is not affected by the variety of environmental factors, such as temperature, texture, color and surface roughness of the object.

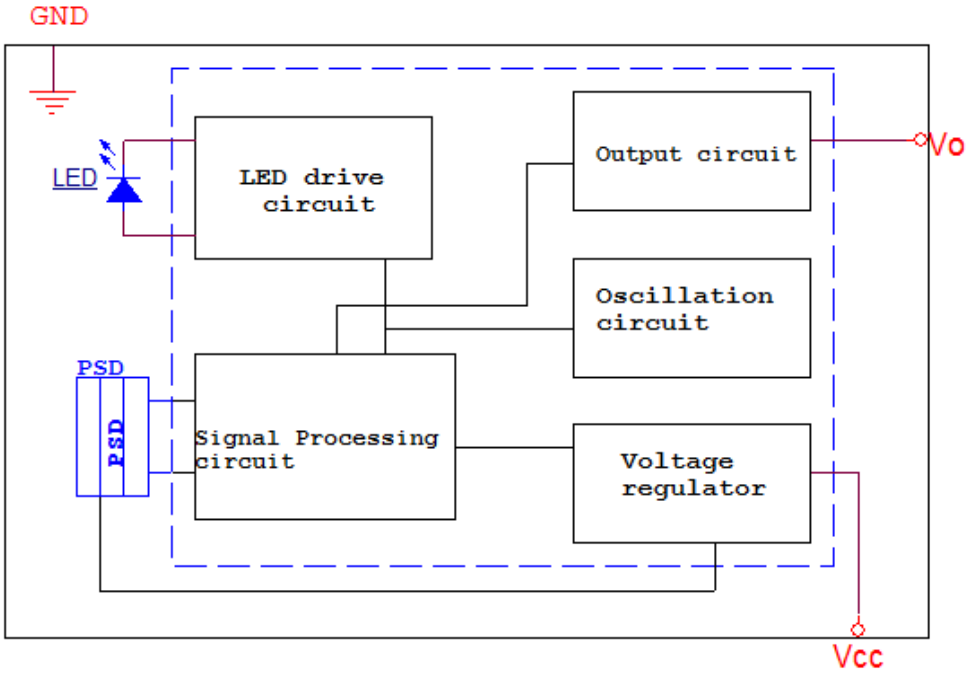
Applications

Cleaning robot
Human detection
Unmanned aerial vehicle

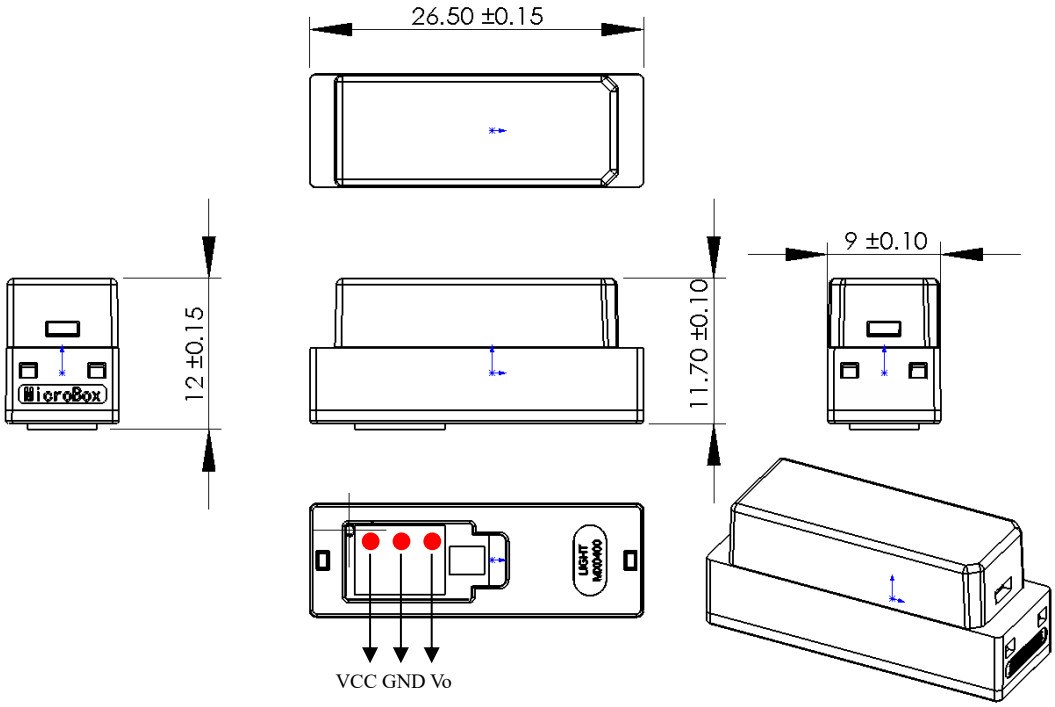
Features

Accuration: Calculated by IC
Output type: Analog voltage output
Measuring range: 15 mm to 150 mm
Measuring cycle: 16ms
Size: 26.5mm × 9mm × 12mm

Schematic



Outline



Connector: XINFUER GH-3AB-LCP

pin	Note
Vcc	4.5V-5.5V
GND	NA
Vo	0-2.5V

Absolute maximum ratings

Parameter	Symbol	Ratings	Unit
Supply voltage	Vcc	0 to +6.8	V
Output terminal Voltage	Vo	-0.3 to +0.3	V
Operating temperature	Topr	-10 to +60	℃
Storage temperature	Tstg	-40 to +70	℃

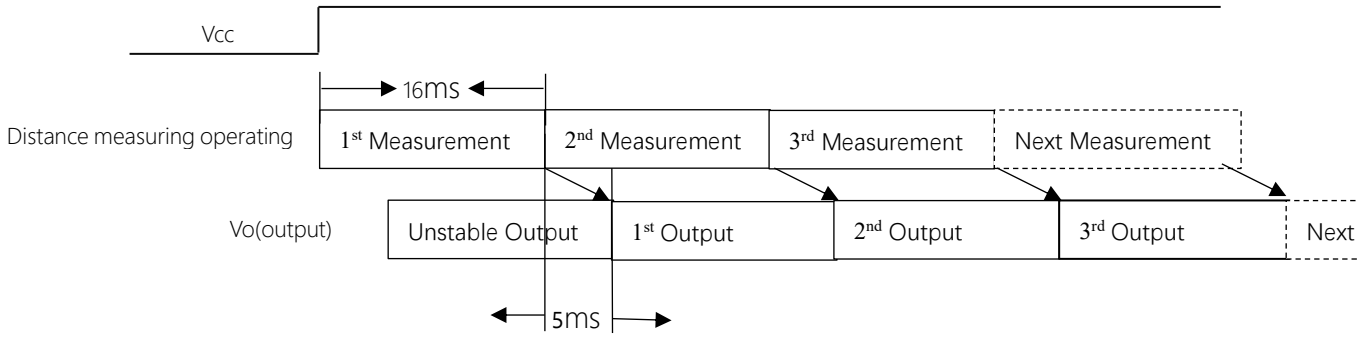
Operating supply voltage

Symbol	Rating	Unit
Vcc	4.5 to 5.5	V

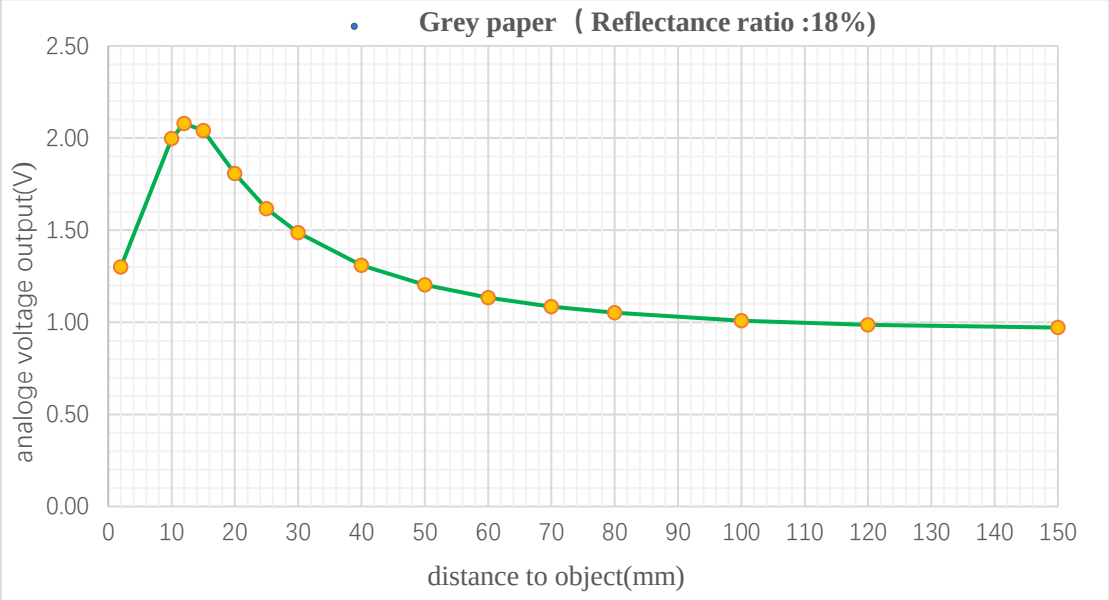
Electro-optical characteristics

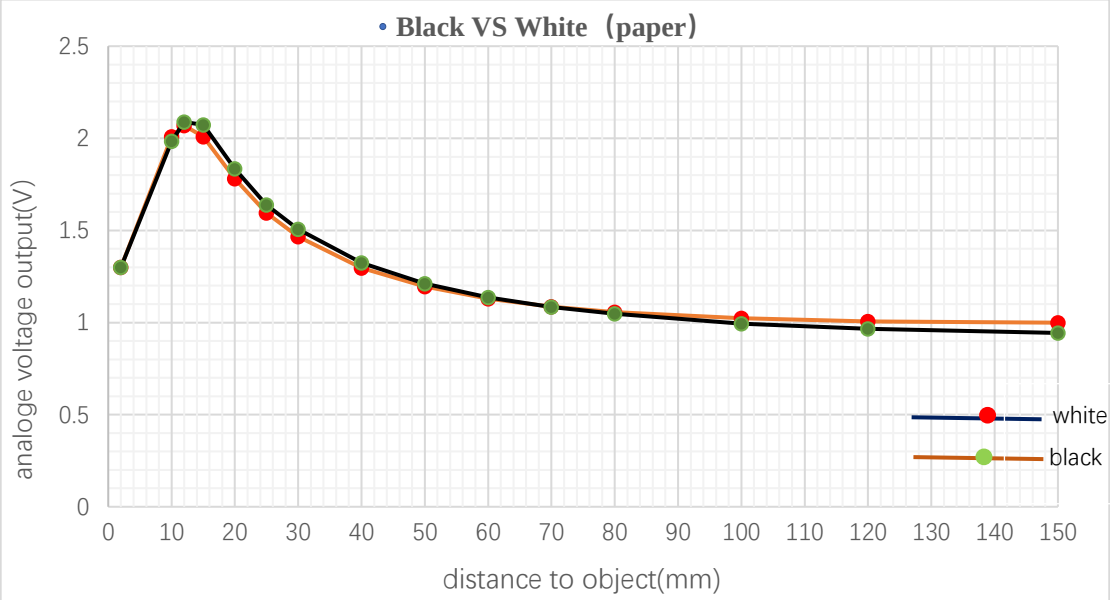
Item	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Measuring distance range	ΔL	NA	15		150	mm
Output terminal Voltage	Vo	L=20mm		1.81		V
Output voltage difference	Δvo	15mm-150mm	0.94		2.1	V
Average supply current	Icc	L=150mm		10		mA

Timing charting



Output distance characteristics





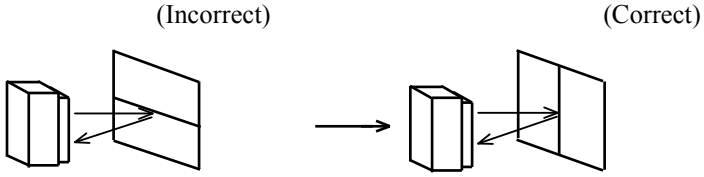
■Notes

[Advice for the optics]

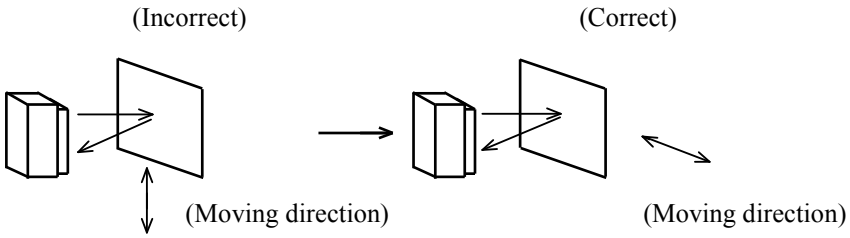
- Lens of this device shall be kept cleanly. There are cases that dust, water or oil and so on deteriorate the characteristics of this device. Please consider in actual application.
- In case that protection is set in front of the emitter and detector portion, the protection cover which has the most efficient transmittance at the emitting wavelength range of LED for this product (λ=870nm±70nm), shall be recommended to use. The face and back of protection cover should be mirror polishing. Also, as there are cases that the characteristics may not be satisfied with according to the distance between the protection cover and this product or the thickness of the protection cover, please use this product after confirming the operation sufficiently in actual application.

[Advice for the characteristics]

- In case that there is an object near to light exits of the sensor between the sensor and the detected object, please use this device after confirming sufficiently what the characteristics of this sensor do not change by the object.
- When the detector surface receive direct light from the sun, tungsten lamp and so on, there are cases that it can not measure the distance exactly. Please consider the design that the detector does not receive direct light from such light source.
- Distance between sensor and mirror reflector can not measure exactly.
- In case that reflective object has boundary line clearly, there is cases that distance can not measure exactly. At that time, if direction of boundary line and the line between emitter center and detector center parallels, it is possible to decrease deviation of measuring distance.



- In order to decrease measuring error by moving direction of object, we recommend to mount the sensor like below drawing.



- In order to stabilize power supply line, we recommend to connect a by-pass capacitor of 10μF or more between Vcc and GND near this product.

[Notes on handling]

- Please don't do washing. Washing may deteriorate the characteristics of optical system and so on. Please confirm resistance to chemicals under the actual usage since this product has not been designed against for washing.
- There are some possibilities that the sensor inside the case package with lens may be exposed to the excessive mechanical force. Please be careful not to cause any excessive pressure on the case package with lens and also on the sensor's PCB at the assembly and inserting of the set.