Infrared Reflective Sensor User Manual

1. Features

Sensor	ST188
Voltage comparator chip	LM393
Operating voltage	3.0V-5.3V
Dimensions	30.2mm*11.9mm
Fixing hole size	2.0mm

Operating principle:

An infrared sensor contains two parts: an infrared transmitter and an infrared receiver.

The infrared transmitter consists of an infrared LED array as a luminophor, and a PN junction made of a special material with high infrared radiation efficiency, which usually is GaAs. When a current injected into the PN junction by a forward bias voltage, it can excite a source of infrared light with a center wavelength range of 830nm-950nm. The power of the infrared light excited is proportional to the current injected. However, in the case that the injected current excesses the maximum rating, the power of the infrared light may decline as the current increases.

The infrared receiver is a semiconductor device for translating the infrared light signal into the electrical signal. And the core component of it is a PN junction made of a special material. Its PN junction has a different structure from the general purpose diode, enabling more infrared light to be received. As the intensity of the infrared light enhances, more current can be generated.

2. Applications

This module can be applied to intellectual robot, obstacle avoidance car, counter device in the pipeline, black and white lines tracking device, etc.

3. Interfaces

Pin No.	Symbol	Descriptions
1	DOUT	Digital output
2	AOUT	Analog output
3	GND	Power ground
4	VCC	Positive power supply (3.0V-5.3V)

4. How to use

We will illustrate the usage of the module with an example of obstacle detection by connecting a development board.

① Download the relative codes to the development board.

② Connect the development board to a PC via a serial wire and the module to the development board. Then, power up the development board and start the serial debugging software. Here is the configuration of the connection between the module and the development board.

Port	STM32 MUC pin
DOUT	GPIOA.4
AOUT	GPIOA.6
GND	GND
VCC	3.3V

Port	Arduino pin
DOUT	D2
AOUT	A0
GND	GND
VCC	5V

Here is the configuration of the serial port.

Baud rate	115200
Data bits	8
Stop bit	1
Parity bit	None

③ The detected result can be checked by a signal indicator on the module. The signal indicator will turn on, when the sensor is close to a barrier. And it will turn off, when the sensor is away from the barrier.

Also, you can find that the serial output changes along with the distance from the sensor to the barrier.