LFM-3 Line Following Sensor Module

The LFM-3 is a sensor module that can detect a white line on a black surface or a black line on a white surface. The LEDs will light when the sensors detect a white or reflective surface. The output from each sensor is a variable voltage of ~0v for black, non-reflective surfaces to ~4.5 to 4.9v for white or reflective surfaces. The voltage swing is sufficient to be read as a digital input as well as a analog voltage.

The sensors are Sharp GP2S40 reflective surface sensors that use infrared light to detect a white or reflective surface at a range of about 4mm-8mm. The sensor module can detect lines at larger distances, up to about 15mm. Adjust the height above the surface according to your need.

Usage:

Mount the LFM-3 to your robot with a minimum of 4mm clearance. Connect 5V and ground to the module and connect the 3 outputs to your microcontroller — either to a digital I/O line or an ADC line. A low voltage output indicates a black or non-reflective surface, a high voltage output indicates a white or reflective surface.

The sensor spacing is designed to work optimally with a 3/4" line such as electrical tape.

For more information, please visit http://www.wrighthobbies.net

Specifications

Size:	55mm x 22mm
Voltage:	5V
Mounting Holes:	3mm (4-40), 50mm On Center
Range:	4mm to 15mm
Output Voltage:	~0V to ~4.9V

Assembly Instructions

- Insert the 3 **GP2S40** sensors into the Q1, Q2 and Q3 locations on the BOTTOM side of the PCB, be sure to align the sensor to the outline on the board, matching the cut corner of the sensor with the cut corner of the outline on the PCB. Solder the pins and cut off the excess.
- Bend the leads of the 3 **2.2K ohm resistors** (striping is red/red/red) close to the body so the leads are perpendicular to the body of the resistor. Insert the resistors into the R3, R5 and R7 locations on the TOP side of the PCB. Solder the pins and cut off the excess.
- Bend the leads of the 3 **10K ohm resistors** (striping is brown/black/orange) close to the body so the leads are perpendicular to the body of the resistor. Insert the resistors into the R2, R4 and R6 locations on the TOP side of the PCB. Solder the pins and cut off the excess.
- Bend one lead of the **47 ohm resistor** (striping is yellow/purple/black) back against the body of the resistor so the two leads are parallel to each other. Insert the resistor into the R1 location on PCB. The resistor should be standing up. Solder the pins and cut off the excess.
- Insert the 3 **2N4403** PNP transistors into locations Q4, Q5 and Q6 on the TOP side of the PCB, aligning the flat face of the transistors with the flat side of the outline on the PCB. Solder the pins and cut off the excess.
- Insert the 3 LEDs into locations D1, D2, D3 on the TOP side of the PCB, aligning the flat side of the LED (short pin) with the flat side of the outline on the PCB. Solder the pins and cut off the excess.

Note: An optional 5-pin male header is included that can be installed in J1 if desired. The male pin header allows for the use of a removable connector instead of soldering wires directly to the PCB.



The LFM module Mounted on an Tamiya Universal Plate





Top and Bottom view of the LFM-3













