

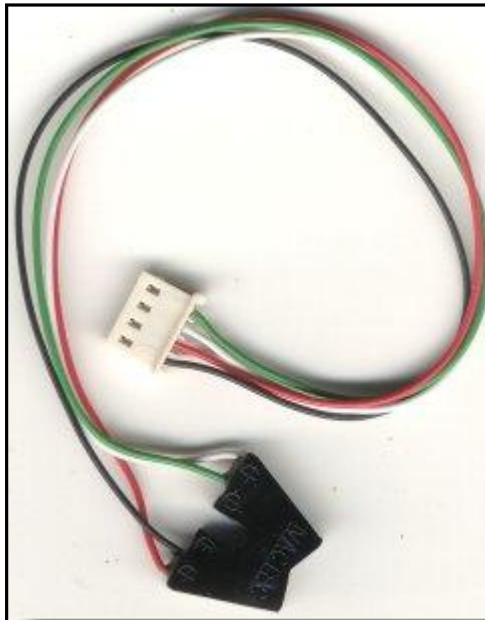
# Dios - Edge Sensor

## Dios 28/40 Interface to IR Edge Sensor

If you have ever built an automated Sumo bot then you know you need some sort of sensor to tell the bot it is near the edge of the Dohyo. In this application note we will build a simple sensor that has the capability to measure different intensities of light with out the use of AtoD.

Don't worry about where to get all the parts I will offer a complete package off all the parts in this application note.

The heart of our sensor is a small opto sensor.

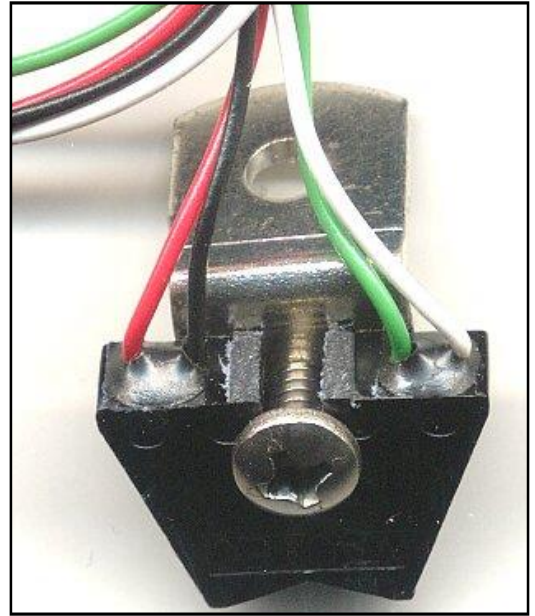


It consists of a IR transmitter and an IR receiver pair. This particular sensor has a small female header on the opposite end for easy connection on your bot.

We will need to connect small bracket to the sensor to allow us to mount it under the bot.

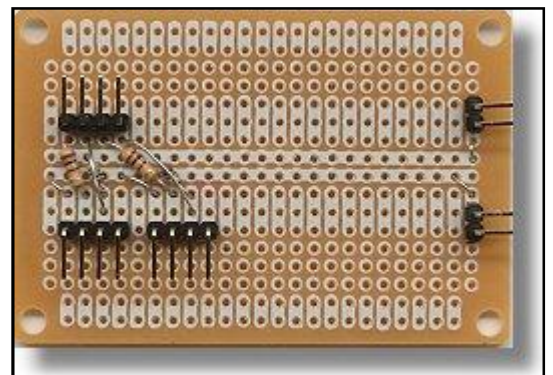


Start by screwing the 6-32 machine screw into the angle bracket as shown. There should be slightly less than 1/4" clearance on the screw.

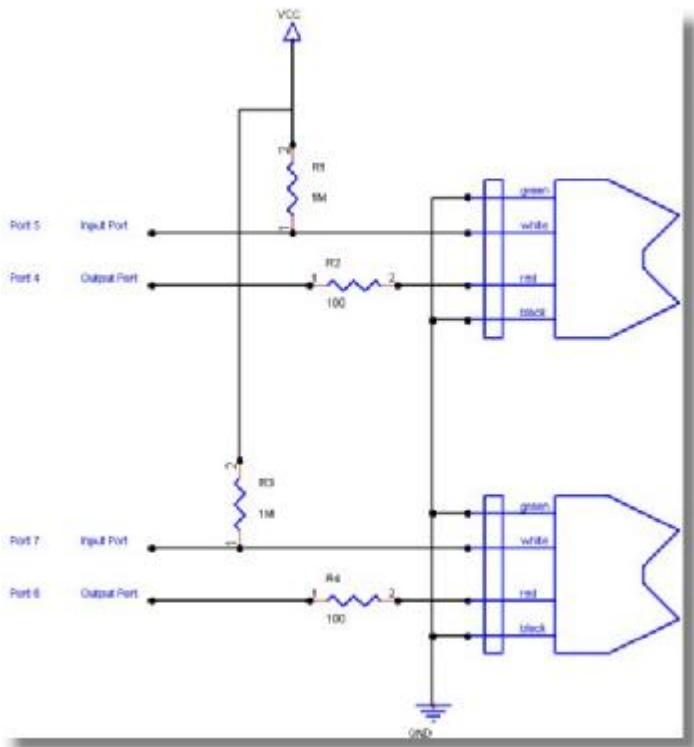


Next insert the machine screw into the slot as shown. If the screw wont fit loosen it slightly. The screw itself is a tight fit. You can use a small Philips screwdriver to tighten so that it is positioned as shown.

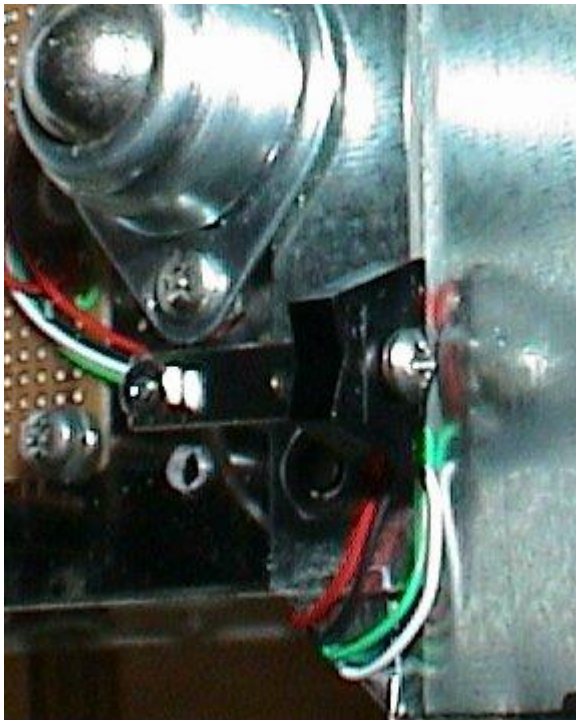
Next we need to connect a couple of resistors to each sensor as shown. On my bots I place them on a small universal PCB as shown. You can wire yours to the cable or what ever way is convenient.



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The sensors will need to be mounted under your bot as close to the front as possible. The more the sensors a shielded from ambient light the better. Here are a couple of pictures showing sensors under a bot.



A few things about lighting. I found that certain incandescent bulbs can interfere with the sensor. They must put out a range of IR very close to the sensor. Once I shielded the sensor from the light I had no more problems.

## Software

```
func main()

    dim sense1,sense2

loop:
    sense1 = checksensor(4,5) 'Output port, Input Port
    sense2 = checksensor(6,7) 'Output port, Input Port
    print sense1," ",sense2
    goto loop

endfunc

'Pass the port numbers oport = output port, iport = input
port
func checksensor(oport,iport)
    dim stat,count
    output oport
    input iport
    high oport
    count = 0

loop:
    stat = IOPORT(iport)
    if count >400 then count = 400 : goto done
    if stat = 0 then goto done
    count = count + 1
    goto loop

done:
    low oport
    exit count
endfunc
```

A little about the program. Its very simple we turn on the transmit LED and start measuring how long it takes the receive LED to change state. Once it does we return the count. The brighter the reflection the faster it will change state.

You may change the port settings if you need to use ports other than 4, 5, 6, and 7.

The sensor works best about 1/2" from the surface. I found at this distance I get a reading of about 2 from a white table. When the sensor is over a piece of black tape I get a reading of 6-9. Off the edge and it goes off the scale and returns 400.

To use the sensors in your bot just copy the checksensor function to your bots control program. Its only about 100 bytes.

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## Related Products

DiosPro 28 .....	<a href="http://kronosrobotics.com/xcart/customer/product.php?productid=16429">http://kronosrobotics.com/xcart/customer/product.php?productid=16429</a>
DiosPro 40 .....	<a href="http://kronosrobotics.com/xcart/customer/product.php?productid=16428">http://kronosrobotics.com/xcart/customer/product.php?productid=16428</a>
EZRS232 Driver .....	<a href="http://kronosrobotics.com/xcart/customer/product.php?productid=16167">http://kronosrobotics.com/xcart/customer/product.php?productid=16167</a>
Dios Componets Package .....	<a href="http://kronosrobotics.com/xcart/customer/product.php?productid=16172">http://kronosrobotics.com/xcart/customer/product.php?productid=16172</a>
Dios Carrier 1 Kit .....	<a href="http://kronosrobotics.com/xcart/customer/product.php?productid=16170">http://kronosrobotics.com/xcart/customer/product.php?productid=16170</a>
Dios Carrier 2 Kit .....	<a href="http://kronosrobotics.com/xcart/customer/product.php?productid=16171">http://kronosrobotics.com/xcart/customer/product.php?productid=16171</a>
Dios WorkBoard Deluxe Kit .....	<a href="http://kronosrobotics.com/xcart/customer/product.php?productid=16452">http://kronosrobotics.com/xcart/customer/product.php?productid=16452</a>
IROpto Sensor .....	<a href="http://kronosrobotics.com/xcart/customer/product.php?productid=16326">http://kronosrobotics.com/xcart/customer/product.php?productid=16326</a>
9 Pin Cable .....	<a href="http://kronosrobotics.com/xcart/customer/product.php?productid=16259">http://kronosrobotics.com/xcart/customer/product.php?productid=16259</a>