**1490 Digital Compass Sensor**

This sensor provides eight directions of heading information by measuring the earth's magnetic field using hall-effect technology. The 1490 sensor is internally designed to respond to directional change similar to a liquid filled compass. It will return to the indicated direction from a 90 degree displacement in approximately 2.5 seconds with no overswing. The 1490 can operate tilted up to 12 degrees with acceptable error. It is easily interfaced to digital circuitry and microprocessors using only pull-up resistors.

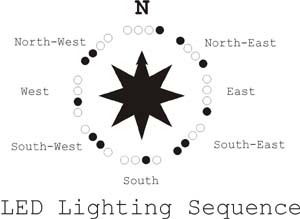
***Specifications:***

|  |  |
| --- | --- |
| **Power** | 5-18 volts DC @ 30 ma |
| **Outputs** | Open collector NPN, sink 25 ma per direction |
| **Weight** | 2.25 grams |
| **Size** | 12.7 mm diameter, 16 mm tall |
| **Pins** | 3 pins on 4 sides on .050 centers |
| **Temp** | -20 to +85 degrees C |

**1490 Digital Compass**

The sensor used on the PC Board is the 1490 digital compass manufactured by Robson Company, see figure 2. This sensor is a solid-state Hall effect device. It is sensitive enough to detect the Earth's weak magnetic field. When rotated it can display the position of the four cardinal points on a compass, North (N), South (S), East (E) and West (W). As well as the intermediate directions: North East (NE), North West (NW), South East (SE), and South West (SW), see figure 3.





The sensor is dampened to approximate the speed of a liquid filled compass. The dampening prevents over swinging the direction. In addition the built in hysteresis prevents flutter when near a switching direction. The 1490 device is sensitive to tilt. Any tilt greater than 12 degrees will create directional errors.

The bottom of the device has 12 leads arranged in four groups of three leads. Looking at the device from the top each group of leads are labeled 1, 2 and 3. The leads labeled 1 are connected to Vcc (+5V). Leads numbered 2 are connected to ground. And the leads labeled 3 are our output leads. The output leads of the device are equivalent to an open collector of an NPN transistor, see figure 4. Each output is capable of sinking 20 mA continuously or up to 25 mA intermittently.

