Study of triaxial fluxgate sensor

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CONTEXT

Trifluxgate sensor is a device that can determine the magnetic field characteristic in many directions. For the three-dimensional magnetic field, it contains six magnetic field sensors [1]. To work in the area where a lot of magnetic field exists, this device can show the direction, sense, and the amount of the detected magnetic field. It has a lot of utilization in the scientific development [2]. The electronic compasses, the metal detector, and the terrestrial magnetic field are the first utilization of the triaxial fluxgate sensor.

PURPOSE

It comes to realize a device capable to treat the six signal from the six fluxgate sensor.

THE SIX FLUXGATES SENSORS DISPOSITION

The three axes give the coordinates of the magnetic fields detected by the six sensors. To treat the electric data from the six sensors numerically, it is necessary to use an electronic circuit containing the analogical/digital converters. This circuit returns the continuous values of the captured signals to a discreet shape signal. The PIC16F876A is a integrated circuit programmable [8] to digitize the continuous sensor output voltage. It contains four analogic inputs.

ELECTRONIC SCHEMATIC DIAGRAM OF THE PIC16F876A

This electronic schematic diagram show the connection between the sensor and the integrated circuit programmable. The sensor output connect to the pin 2, 3, 4, 5. The pin 11, 12, 21, 22, 23, 24, 25, 26, 27, 28 give the digitals values. It is necessary to program this integrated circuit before using. This program is made by the mkroC for PIC software. The output digital value is in binary number. To keep this value in decimal number, the LCD screen [8] can read this binary number and change it to the decimal number. This circuit show the PIC16F876A electronic simulation it is no power supply.

CONCLUSION

Numerical treatment of the magnetic field sensor output voltage is very interesting. The magnetic field sensor gives an analogical voltage. The PIC 16F876A can change this analog voltage to digital voltage. PIC 16F876A must be programmed before of its using. The detected magnetic field can treat to the informatics support after it binary conversion.

BIBLIOGRAPHY


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